DEPARTMENT OF LABOR AND INDUSTRY
BOARD OF ELECTRICITY

VIA EMAIL
May 4, 2026

Legislative Reference Library
sonars@lrl.leg.mn

Re: In the Matter of the Proposed Amendments to Rules Relating to the Minnesota Electrical Code, *Minnesota Rules*, Chapter 1315; Revisor's ID Number RD-04985

Dear Legislative Reference Library:

The Minnesota Board of Electricity ("Board") intends to adopt rules that amend the Minnesota Electrical Code contained in Minnesota Rules, Chapter 1315. The Board is considering rule amendments that incorporate by reference and adopt the 2026 National Electrical Code/NFPA 70®, with any Minnesota amendments.

We published a Dual Noice in the May 4, 2026, edition of the *State Register*.

We have prepared a Statement of Need and Reasonableness. As required by Minnesota Statutes, sections 14.131 and 14.23, we are sending you an electronic copy of the Statement of Need and Reasonableness at the same time that we are sending our Notice of Intent to Adopt Rules.

If you have any questions or concerns, please contact me at Krystle.conley@state.mn.us or by phone at 651-284-5315.

Sincerely,

Krystle A. Conley

Krystle Conley
Rulemaking Coordinator
Office of General Counsel
Department of Labor and Industry

Enclosure: Statement of Need and Reasonableness

MINNESOTA POLLUTION CONTROL AGENCY

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendments to Rules Governing Air Toxics Regulations, *Minnesota Rules*, Chapter 7007; and Proposed New Rules Governing Air Toxics Regulations, *Minnesota Rules,* Chapter 7012
Revisor's ID Number R-04807

Minnesota Pollution Control Agency

May 2026

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Acronyms, abbreviations, and definitions

ADAF	Age Dependent Adjustment Factor
AERA	Air Emissions Risk Analysis
AERMOD	AMS/EPA Regulatory Model
ALJ	Administrative Law Judge
AMS	American Meteorological Society
APA	Administrative Procedures Act
ATRP	Air Toxics Reduction Plan
ATSDR	Agency for Toxic Substances and Disease Registry
BPIP	Building Profile Input Program
CAA	Clean Air Act
CAH	Court of Administrative Hearings
CAL EPA	California Environmental Protection Agency – Office of Environmental Health Hazard Assessment
CDP	Compliance Determination Protocol
CEMS	Continuous Emissions Monitoring System
EAW	Environmental Assessment Worksheet
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
GPPP	General Public Preclusion Plan
HAP	Hazardous Air Pollutant
HBV	Health Based Value
HHRAP	Human Health Risk Assessment Protocol
IHB	Inhalation Health Benchmark
IRIS	Integrated Risk Information System
ISV	Intrusion Screening Value
IUR	Inhalation Unit Risk
MAAQS	Minnesota Ambient Air Quality Standards
MDH	Minnesota Department of Health
Minn. R.	*Minnesota Rules*
Minn. Stat.	*Minnesota Statutes*
MMB	Minnesota Management and Budget
MNRISKS	Minnesota air toxics risk-screening tool
MPCA or Agency	Minnesota Pollution Control Agency
NAAQS	National Ambient Air Quality Standards
NACAA	National Association of Clean Air Agencies
NESHAP	National Emission Standards for Hazardous Air Pollutants
NSPS	New Source Performance Standards
PFAS	Per-and polyfluoroalkyl substances
PM	Particulate matter
PPRTV	Provisional Peer-Reviewed Toxicity Values

General information:

1. **Availability:** Links to the *State Register* notice, this Statement of Need and Reasonableness (SONAR), and the proposed rule will be available during the public comment period on the Agency's Proposed Rules website: https://www.pca.state.mn.us/get-engaged/proposed-rules.
2. **Revisor ID Number:** Unique identifier that the Minnesota Office of the Revisor of Statutes assigns to all rulemaking projects. More information about the Revisor is available at https://www.revisor.mn.gov/.
3. **Agency contact for information, documents, or alternative formats:** Upon request, this SONAR can be made available in an alternative format, such as large print, braille, or audio. To make a request, contact Rule Coordinator Erica Backstrom, Minnesota Pollution Control Agency, 520 Lafayette Rd., St. Paul, MN 55155-4194; telephone 218-302-6659; 1-800-657-3864; email erica.backstrom@state.mn.us; or use your preferred telecommunications relay service.
4. How to read a *Minnesota Statutes* citation: *Minn. Stat.* § 999.09, subd. 9(f)(1)(ii)(A) is read as *Minnesota Statutes*, section 999.079, subdivision 9, paragraph (f), clause (1), item (ii), subitem (A).
5. How to read a *Minnesota Rules* citation: *Minn. R.* 9999.0909, subp. 9(B)(3)(b)(i) is read as *Minnesota Rules*, chapter 9999, part 0909, subpart 9, item B, subitem (3), unit (b), subunit (i).

RAA	Risk Assessment Advice
RASS	Risk Assessment Screening Spreadsheet
RFC	Request for Comments
RfC	Reference Concentration
SONAR	Statement of Need and Reasonableness
STRATA	Screening Threshold for Regulated Air Toxics Analysis
T-BACT	Toxic Best Available Control Technology
TPY	Tons per year
VOC	Volatile organic compound

Introduction and overview

Introduction

The Minnesota Pollution Control Agency (MPCA or Agency) is proposing new rules governing air quality in Minnesota. The main purpose of the rules is to implement and govern regulation of facilities that emit air toxics as directed by the Minnesota Session Law — 2023, H.F. No. 2310, chapter 60, article 8, section 5 (the Session Law). Per the Session Law, this rule applies only to facilities with an air permit located in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, or Washington counties, herein referred to as "the seven metropolitan counties." The Session Law exempts facilities holding option B registration permits. In short, registration option B permits are for facilities that only purchase or use less than 2,000 gallons per year of volatile organic compounds (VOC) containing material.

Air pollution

Air pollution is the presence of substances in the air that are harmful to humans, other living beings, or the environment. These substances are often referred to as pollutants or air pollutants. Air pollutants include gases, such as carbon monoxide, sulfur dioxide and nitrogen oxide; compounds and metals, such as asbestos and mercury; ground-level ozone, which is created by chemical reactions between oxides of nitrogen produced by combustion and volatile organic compounds (VOCs); and fine particulate matter, such as dust or soot from burning wood. Most air pollution originates from human-made sources, including mobile sources that burn fossil fuels for transportation, like cars, trucks and buses; and stationary sources using combustion or industrial processes, like refineries, factories and power plants.

In general, air pollution is divided into two groups: criteria pollutants and air toxics. There are six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, sulfur dioxide, ground-level ozone, and particulates. Lead is considered both a criteria pollutant and an air toxic. The Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to set the National Ambient Air Quality Standards (NAAQS) for criteria pollutants to protect the nation's public health and the environment. To develop the NAAQS, EPA uses human health-based and environmentally based criteria to establish acceptable levels of pollutants allowed in outdoor air.

Air toxics are pollutants that are known or suspected to cause cancer or other serious health effects, or adverse environmental and ecological effects. These are typically all pollutants that are not criteria pollutants. The CAA lists 188 pollutants as hazardous air pollutants (HAPs). HAPs are the subset of air toxics that are federally regulated but there are hundreds more air pollutants that are considered air toxics but are not HAPs. Unlike criteria pollutants, air toxics do not have federally set NAAQS. This has resulted in levels of air toxics that are not as closely monitored as criteria pollutants.

Minnesota Statute 116.062(c) defines air toxics as:

- Hazardous air pollutants listed under the federal Clean Air Act.
- Chemicals reported to the Toxic Release Inventory.
- Chemicals for which the Department of Health has developed health-based values or risk assessment values.
- Chemicals for which the risk to human health has been assessed by either the federal Environmental Protection Agency's Integrated Risk Information System; or
- Chemicals reported by facilities in the agency's most recent triennial emissions inventory.

Under the Minnesota Session Law — 2023, H.F. No. 2310, chapter 60, article 8, section 5, this rule must implement and govern regulation of facilities (except option B facilities) that emit air toxics in the seven

metropolitan counties. Based on the Session Law's directive and the above definition of air toxics, these state air toxics rules will regulate a broader number of air toxics than the 188 federally regulated HAPs.

Minnesota Legislature's directive to MPCA

The Session Law directs the commissioner to adopt rules under Minnesota Statutes, chapter 14, to implement and govern regulation of facilities that emit air toxics.

As required by the Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, the rules must address, at a minimum:

- Air toxics to be regulated;
- Types of facilities to be regulated;
- Performance tests conducted by facilities to measure air toxics emissions including the methods, procedures, protocols, and frequency;
- Monitoring of air emissions, including continuous emissions monitoring systems and monitoring of production inputs and other parameters;
- Reporting requirements;
- Recordkeeping requirements related to air toxics emissions;
- Frequency of facility inspections and inspection activities that provide information about air toxic emissions.

In developing the rules, the MPCA is required by the Session Law to establish testing, monitoring, reporting, record-keeping, and inspection requirements for facilities that reflect:

- The different risks to human health and the environment posed by the specific air toxics and amounts emitted by a facility, such that facilities posing greater risks are required to provide more frequent evidence of permit compliance, including but not limited to performance tests, agency inspections, and reporting;
- The facility's record of compliance with air toxics emission limits and other permit conditions;
- Any exposure of residents of an environmental justice area to the facility's air toxics emissions.

Current federal regulations for air toxics, known as National Emission Standards for Hazardous Air Pollutants (NESHAP), regulate HAPs for certain stationary source standards. NESHAPs do not cover every air toxic possible, are limited to only HAPs, and do not necessarily regulate every HAP emitted from a facility. In Minnesota, there are limited state rules regulating air toxics. Since air toxics are known to be harmful to human health and the environment, the legislature directed the MPCA to develop rules to regulate facilities that emit air toxics; this helps to fill regulatory gaps in current federal and state rules.

Overview of the proposed rules

The proposed rules create a new process for air toxics facilities to demonstrate that air toxics emissions do not pose an unacceptable risk to human health or the environment. This process will allow MPCA to regulate and govern facilities that emit air toxics. The first step of the process is for the facility to calculate its actual air toxics emissions, gather other facility information such stack height, their distance to the fence line, etc., and complete a screening threshold analysis to determine if the facility has emissions of any air toxics above the screening threshold values. Screening threshold values are values that are calculated using air dispersion model output from the seven metropolitan counties and inhalation health benchmarks (IHBs). These screening threshold values are not calculating the risk at a facility but instead are an action level for further refinement at the facility.

Under the new process, screening threshold values assist the MPCA in regulating facilities that emit air toxics by helping determine which facilities have a higher risk to human health and the environment and may need more explicit requirements such as monitoring, recordkeeping, and reporting.

If the facility completes the screening threshold analysis and finds that there are no emissions above the screening threshold values, there is no further action required by the facility. Please note, the facility will have to complete and certify a screening threshold analysis every five years after the initial analysis is completed and certified, using its most recent air toxics emissions data.

If the screening threshold analysis shows that a facility's emissions are above the screening threshold values, the facility will proceed to the next step and will have two options: (1) to develop a compliance determination protocol (CDP) that outlines operational changes and/or permit limits to get and stay below thresholds, or (2) to complete an air emissions risk analysis (AERA) that models the facility's risks. If the air toxics facility develops a CDP, the facility will have to complete and certify a screening threshold analysis every 10 years after the initial analysis is completed and certified.

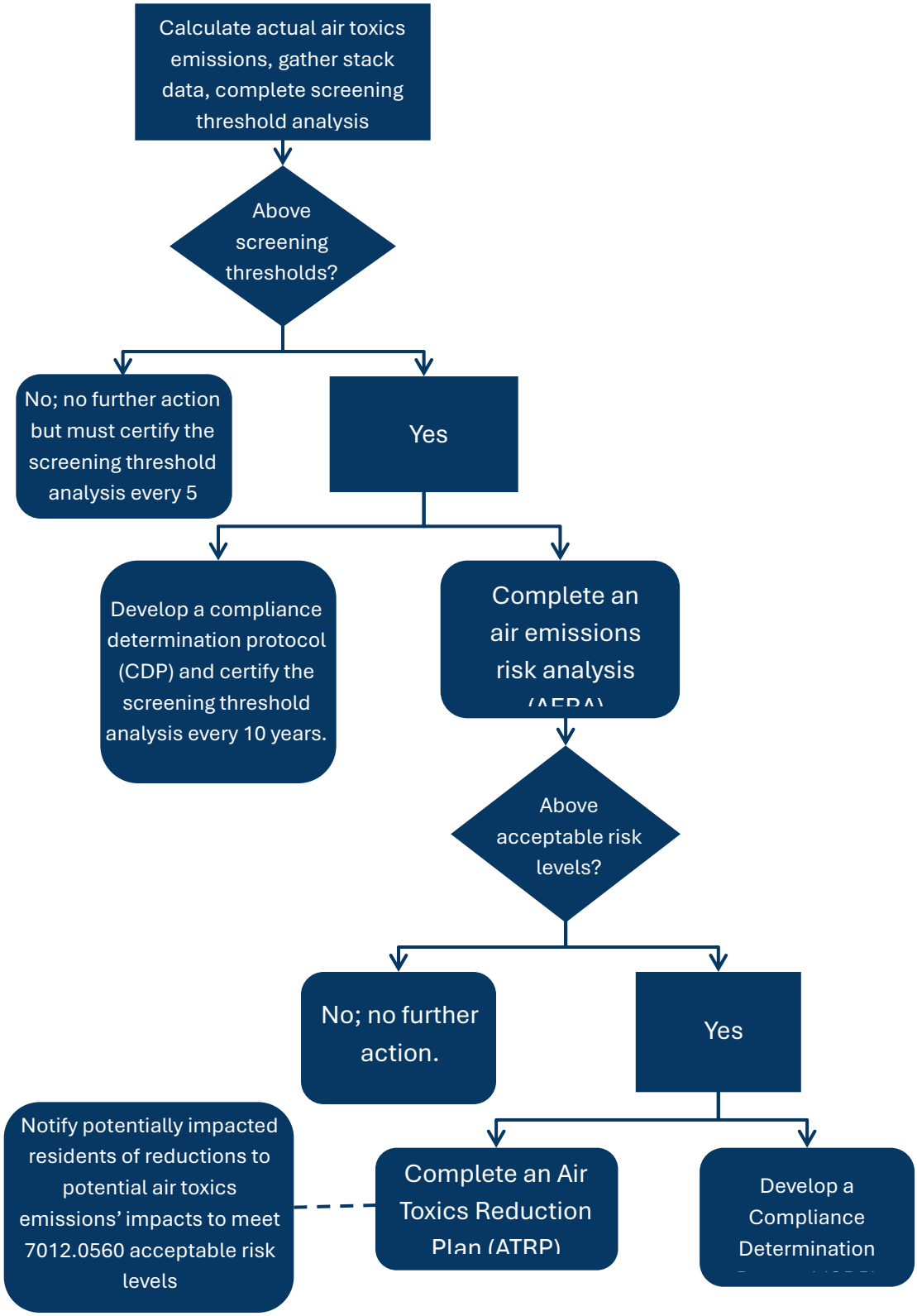
If a facility decides to complete an AERA, the facility will have to estimate risk levels using dispersion model output and IHBs. Risk levels that are estimated through this process are compared to acceptable risk levels. These acceptable risk levels are the level that is likely to pose little or no risk to human health, including sensitive populations.

Under the new process, acceptable risk levels assist the MPCA in regulating facilities that emit air toxics by helping determine which facilities pose an unacceptable risk to human health and the environment and need to take action to reduce modeled risk. Actions may include changes in materials used or adding additional control equipment to reduce emissions.

If the risk levels estimated in an AERA show that the facility's risks are below acceptable risk levels, then no further action is required by the facility. The facility may be subject to an additional screening threshold analysis if it makes changes, but the facility will not have to continue to complete and certify screening threshold analyses on a regular frequency.

If the risks estimated in an AERA show that the facility's risks are above acceptable risk levels, then the facility must develop and complete an air toxics reduction plan (ATRP). At this point, the facility also has the option to limit actual emissions to get and stay below screening threshold values by developing a CDP. If the facility is above acceptable risk levels and completing an ATRP, the facility will have to provide a notification to potentially impacted residents that the facility is required to reduce their potential air toxics emissions' impacts and the actions taken to meet acceptable risk levels.

Figure 1. Proposed Rules Process Flowchart



SONAR purpose and public comment

The Minnesota Administrative Procedure Act (APA) requires an agency to prepare, review, and make available a Statement of Need and Reasonableness (SONAR) when a new rule or amendment is proposed. The SONAR demonstrates the need for and the reasonableness of the proposed rule amendments. Minn. Stat. § 14.131 of the APA lays out the specific requirements of a SONAR. There are also several additional statutory requirements associated with proposed administrative rules. These additional statutory requirements are also fulfilled in this document.

A Request for Comments (RFC) on planned amendments to the rules governing air quality was published in the *State Register* on July 24, 2023. The MPCA considered comments received during this comment period and throughout other informal comment periods in developing the rules. Themes from the formal comments received through the RFC period have been considered throughout this document but are not addressed directly.

Statement of general need

The Minnesota APA requires the MPCA to explain the facts establishing need for the proposed rulemaking. This SONAR identifies the following needs that require action: statutory direction, health risks from air toxics, gaps in current regulatory structure, air monitoring, and environmental justice.

Statutory direction

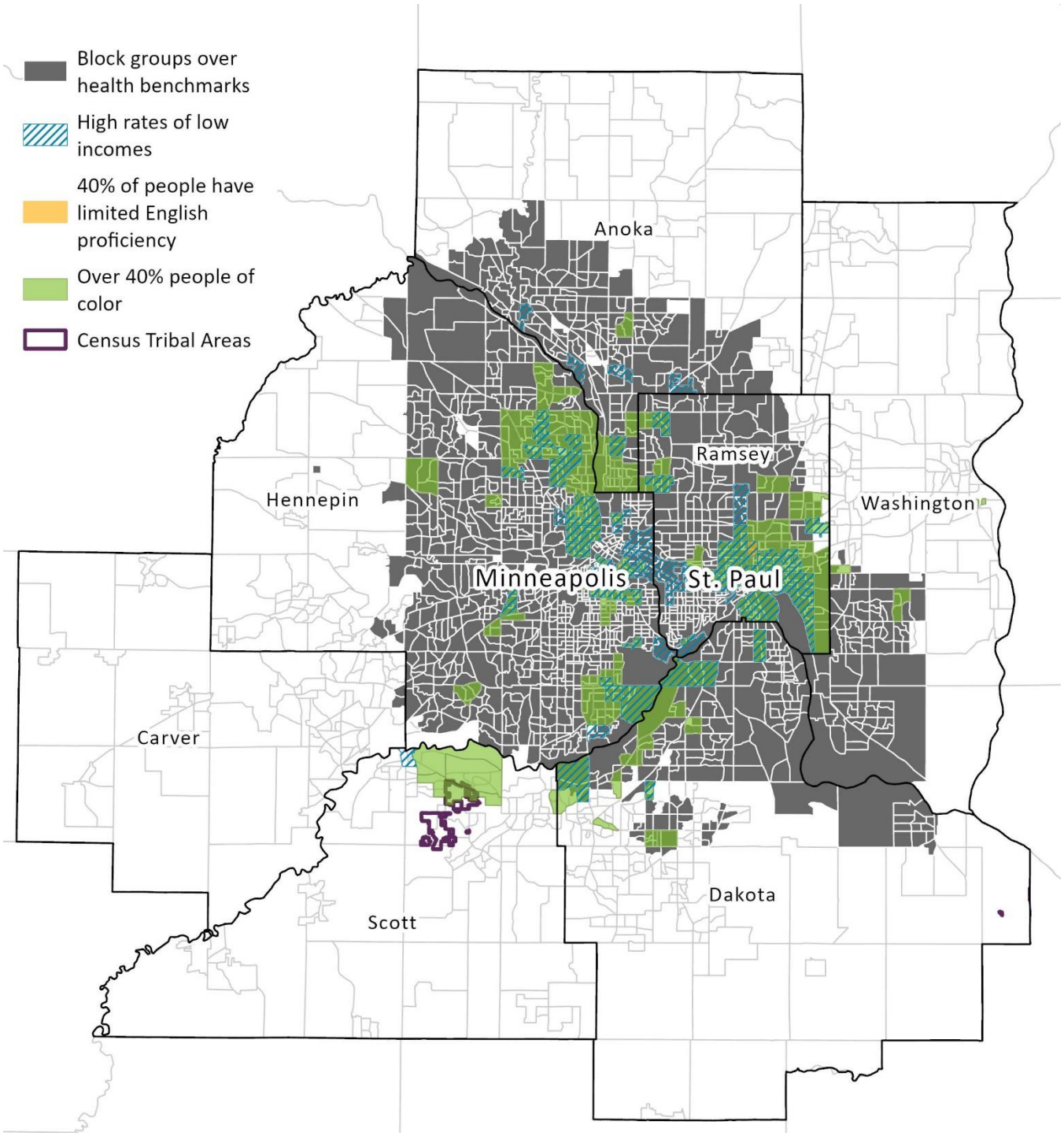
The purpose and need of the proposed rule is to fulfill the requirement set forth in Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5 to require regulation of air toxics emitted by air permitted facilities in the seven metropolitan counties of Minnesota. Even though this proposed rule is required under 2023 Minnesota Session Law, the need for air toxics regulations has been expressed by MPCA risk assessors for decades. The intended outcome of the proposed rulemaking is to regulate facilities emitting air toxics that may increase health risks and thus pose risks to human health and the environment. The MPCA needs these rules to improve the understanding of human health risks from air toxics emitted by facilities, to regulate facilities that emit air toxics, and to reduce air toxics emissions' impacts. The proposed rules are needed to serve a dual purpose. First, it will help air toxics facilities to understand their emissions and the impact on human health and the environment. Second, it will enable the MPCA to require risk reduction actions by air toxics facilities that pose a potential risk to human health and the environment. The proposed air toxics rules help the MPCA ensure that air toxics facilities' emissions are protective of human health and the environment.

Health risks from air toxics

Air toxics are those pollutants that are known or suspected to cause cancer or other serious health effects, or adverse environmental and ecological effects. The MPCA has a tool called MNRISKS that takes emissions data reported by facilities, and models risks associated with those emissions and emissions from other sources. The most current risk analysis using MNRISKS is based on voluntarily reported air toxics emissions from facilities from 2017. This risk analysis for the seven metropolitan counties is depicted in Figure 1.

Based on this analysis as depicted in Figure 1, people living in 77.7% of block groups (subsets of a census tract) in the seven metropolitan counties are exposed to air toxics pollution that is above health benchmarks. A health benchmark is the amount of air pollution considered unlikely to result in adverse health effects over a given period of time. An estimated 25% of these over-benchmark block groups are located in areas of concern for environmental justice (indicated by orange, green, striped blue, or outlined purple areas in Figure 1). To date, air toxics reporting has been voluntary for facilities in Minnesota. Since the emissions reporting was voluntary, the true extent of impacts may be greater than what is shown on the map. The proposed rules are needed to help reduce air toxics emissions and address air toxics emissions exceeding health benchmarks in these block groups.

Figure 2. 2017 MNRISKS modeling shows seven metropolitan counties emissions data from voluntarily reported air toxics and environmental justice areas of concern.



According to the Minnesota State Demographic Center's PopFinder[1], this proposed rule will affect the approximately 3,222,455 residents who live in the seven metropolitan counties of Minnesota. As of 2023, there are 5,800,386 residents living state-wide in Minnesota, therefore, this rulemaking will improve the MPCA's understanding of air toxics and health risks for 56% of the state's population. As a result, the proposed rules will regulate the air toxics emissions that over half of Minnesotans are exposed to.

The proposed rules are needed to set enforceable screening threshold values and acceptable risk levels that air toxics facilities in the seven metropolitan counties must comply with. These screening threshold values and acceptable risk levels are needed to limit the risk of air toxics on human health and the environment. If the facility's emissions exceed the screening threshold values or acceptable risk levels, the facility must either develop a CDP or complete an ATRP. These are compliance documents required within the proposed rules and are needed to help ensure that the air toxics facility stays at or below either the screening threshold values or the acceptable risk levels. As the MPCA has seen with its voluntary Facility Focus program, the air toxics facility is usually unwilling to limit air toxics emissions below health benchmarks unless it is mandatory. Therefore, these rules are needed to protect the public from health risks posed by air toxics. The Background section contains details on these voluntary efforts.

Gaps in current air toxics regulatory structure

At the federal level, only 188 air toxics are regulated through National Emissions Standards for Hazardous Air Pollutants (NESHAPs). But there are hundreds of air toxics that are known or suspected to cause serious health effects or adverse environmental and ecological effects. Relying on federal laws, including NESHAPs, to regulate air toxics leaves a gap in the regulation of possible air toxics, and therefore in MPCA's ability to protect and improve human health and the environment.

Currently, there are no Minnesota state regulations broadly controlling air toxics emissions. For over 20 years, the MPCA has used air emissions risk assessments (AERAs) to estimate the potential risk from a facility, but does not currently have requirements in rule for AERAs. Additionally, there have not been clear thresholds or levels in rule to require additional evaluation or risk reduction if there are high modeled risk from facilities. The proposed rules are needed to require facilities to complete an AERA if previous screening analyses warrant it.

Both the screening threshold values and the acceptable risk levels are needed in rule to assist the MPCA in regulating facilities that emit air toxics to protect human health and the environment. The screening threshold values are needed to provide clear, actionable, health-based levels to help determine which facilities have a higher risk to human health and the environment and may need site-specific requirements such as monitoring, recordkeeping, and reporting, or additional analysis (AERA) to explicitly determine the risk from the facility's impacts. The acceptable risk levels are needed as part of the AERA process to provide clear, actionable, health-based levels for facilities that pose an unacceptable risk to human health and the environment, and therefore need to take action to reduce modeled risk.

The proposed rule is needed to regulate air toxics emitted by air toxics facilities that may not have been regulated in any other capacity. This rule will require air toxics facilities in the seven metropolitan counties to limit their air toxics emissions to levels that do not pose an unacceptable risk to human health and the environment.

Although air quality in Minnesota meets current federal NAAQS for criteria pollutants, these air quality standards do not cover the vast majority of air toxics, and environmental conditions are changing. For example,

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[1] *PopFinder for Minnesota, Counties, & Regions. Retrieved from: https://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/pop-finder1.jsp*

Minnesotans are experiencing a steady increase in seasonal smoke exposure from wildfires, triggering air quality alerts and heightening concerns about the health impacts of smoke and air pollution. The proposed rules are needed to address air toxics that are not currently regulated in other ways and whose impacts on human health may be exacerbated as environmental conditions change.

The Minnesota Pollution Control Agency and the Minnesota Department of Health (MDH) work together on the intersection of air quality and health. The agencies joint "Life and Breath: Twin Cities Metro Area Report" includes estimated annual health impacts of air pollution by ZIP code across the seven metropolitan counties covered in this rulemaking. In 2019, this report estimated that about 5 to 10% of all residents who died in 2013, and 1 to 5% of all residents who visited the hospital or emergency room (ER) for heart and lung problems, did so partly because of fine particles in the air or ground-level ozone. Many air toxics are also particulates.

This report also estimated that if the 2013 air pollution (fine particles and ground-level ozone) was reduced by 10% this could prevent 200 to 500 early deaths, nearly 70 hospitalizations, and 150 ER visits.[2] The proposed rules are needed to close the gap in MPCA's regulatory authority that allowed facilities to operate legally while still emitting air toxics that increased health risks. The proposed rules are needed to further fulfill the MPCA's mission to protect and improve the environment and human health.

Air monitoring

The Session Law directed the MPCA to require "monitoring of air emissions, including using continuous emissions monitoring systems for certain facilities, and monitoring of production inputs or other production parameters".

Air monitoring is an important but limited tool for understanding air quality. Ambient air monitoring collects samples from the ambient air and helps us understand the total amount of a pollutant present in a location. Ambient air is defined in 40 CFR § 50.1 (c) as the portion of the atmosphere, external to buildings, to which the general public has access. Typically, this is all air that is not within the property boundary of a facility. The MPCA maintains an ambient air pollution monitoring network approved by the USEPA, and the primary objective is to determine if Minnesota is meeting the national ambient air quality standards (NAAQS) for criteria pollutants.

Besides monitoring criteria pollutants, Minnesota also has 24 sites that monitor air toxics. This includes HAPs, carbonyls, metals and VOCs.[3] These ambient air monitors are not specifically focused on air toxics emissions from any one facility but measure the cumulative mix of air toxics from multiple sources (*e.g*. permitted facilities, traffic, wood burning). Air monitoring instruments are complex, expensive, and require staff to set up and maintain, retrieve and analyze data samples, confirm the quality and accuracy of the results, and manage the data. All of this restricts the number of air monitors that the MPCA can operate. Additionally, site locations depend on logistics such as access, power, internet availability, and equipment safety.[4]

Ambient air monitors are limited in the pollutants they can monitor, number, geographic spread, and the ability to associate monitored levels with a specific source. Given the amount of staff time required to maintain the existing monitoring network, it would not be possible for the MPCA to establish, operate, and maintain sufficient numbers of monitors to characterize emissions from all facilities within the entire seven metropolitan counties.

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[2] Minnesota Pollution Control Agency and Minnesota Department of Health. Life and breath – How air pollution affects public health in the Twin Cities. Retrieved from: https://www.pca.state.mn.us/sites/default/files/aq1-64.pdf.

[3] The Minnesota Pollution Control Agency interactive map. Air monitoring - Active statewide monitoring sites. Retrieved from: https://data.pca.state.mn.us/views/Airmonitoring-Activestatewidemonitoringsites/Monitoringlocationmapandtable?%3Aembed=y&%3AisGuestRedirectFromVizportal=y

[4] The Minnesota Pollution Control Agency. The air we breathe. The state of Minnesota's air quality. Retrieved from: https://www.pca.state.mn.us/sites/default/files/lraq-1sy25.pdf.

Additionally, for the air toxics included in the proposed rules' screening analysis, MPCA's ambient air monitors are only capable of monitoring approximately 74 air toxics out of approximately 338 air toxics that have inhalation health benchmarks or are part of a compound group that has an inhalation health benchmark. It is therefore not possible to use monitoring to characterize the amount of all air toxics in the ambient air.

Additionally, ambient air monitors are difficult to use to pinpoint emissions coming from a specific facility, especially in areas where there may be multiple facilities emitting air toxics. It can also be costly to facilities and the state, as it requires state agency oversight of monitor siting, audits, and data review. The proposed rules are needed to help address the limitations in the monitoring network and to implement requirements that characterize the impacts from specific facilities that monitoring cannot characterize.

Lastly, ambient air monitoring alone will not provide a reduction in air toxic emissions and sufficient protection of human health and the environment; actionable levels and a process to address monitoring results are needed. The proposed rules are needed to meet the Session Law and determine facility specific impacts from facilities' air toxics emissions. The proposed rules are needed to go beyond modeling and provide legally enforceable mechanisms for reducing air toxics if analyses indicate levels are unacceptable and human health may be negatively impacted.

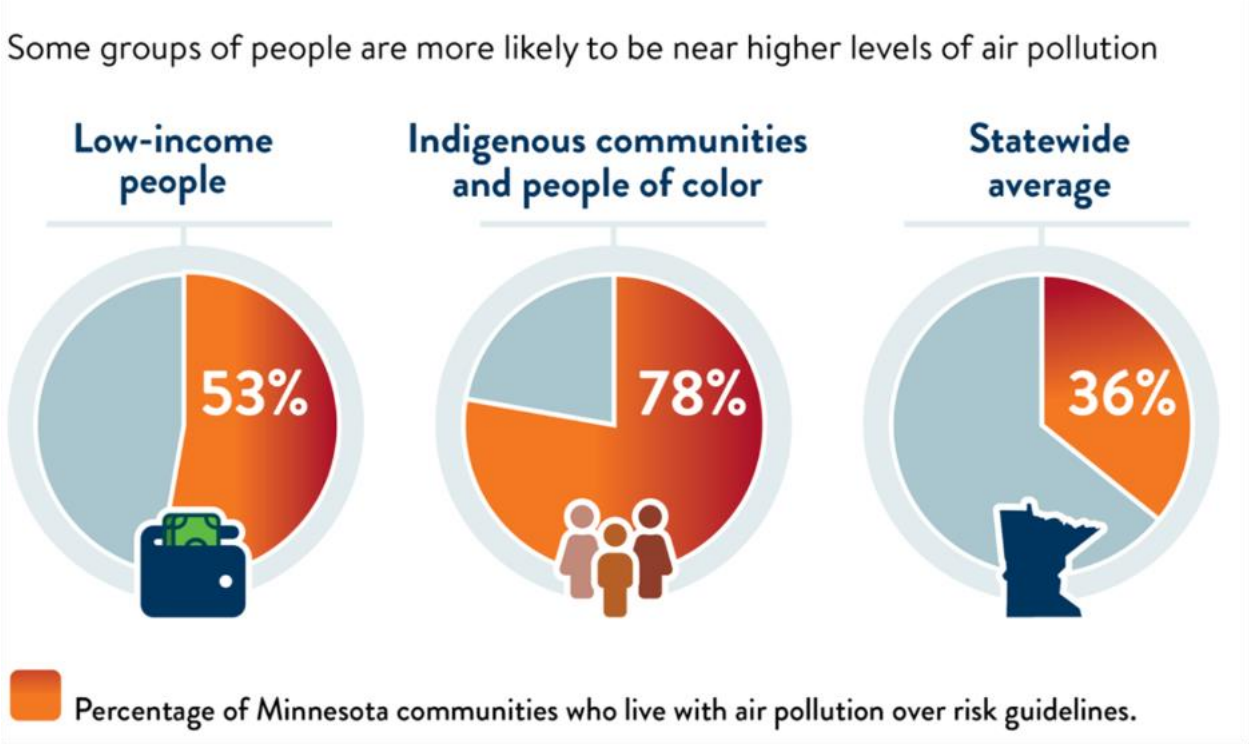
Environmental justice

Under Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4 (b)(3) the proposed rules' requirements must reflect any exposure of residents of an environmental justice area to the facility's air toxics emissions. Some groups of people are historically and statistically exposed to more pollution or multiple kinds of pollution and may be more vulnerable to the health impacts of exposure due to historic and systemic disenfranchisement. As such, these groups of people are more likely to be impacted by air pollution (Figure 2). The term "environmental justice area" is often used to describe these groups of people in these areas. The proposed rules are needed to address impacts from air toxics to residents of environmental justice areas and protect human health and the environment everywhere in the seven metropolitan counties.

Figure 2 below shows the different percentages of Minnesota communities who live with air pollution over risk guidelines and demonstrates that lower income communities and communities of color are disproportionately exposed to health risks from air pollution.[5] An environmental justice area, as defined in the Session Law, is one or more census tracts in Minnesota in which, based on the most recent data published by the United States Census Bureau: 40 percent or more of the population is nonwhite, or 35 percent or more of the households have an income at or below 200 percent of the federal poverty level, or 40 percent or more of the population over the age of five has limited English proficiency, or is located within Indian country, as defined in United States Code, title 18, section 1151.

[5] *The air we breathe report. Retrieved from: https://www.pca.state.mn.us/sites/default/files/lraq-1sy25.pdf*

Figure 3. Percentage of Minnesota communities who live with air pollution over risk guidelines



Under Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 1 (5), the legislature defined an environmental justice area; therefore, the MPCA must incorporate this definition into the rule language. The MPCA must follow the definition of an environmental justice area given in the Session Law.

Although the Session Law requires the MPCA to develop requirements that reflect any exposure of environmental justice area residents, this rulemaking is not limited to environmental justice areas. Under Minn. Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 2, it states that facilities subject to this rule are facilities located in the seven metropolitan counties. It does not state that these facilities must also be in an environmental justice area. However, Minn. Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(b)(3) states that in developing this air toxics regulations rule, the agency must ensure that the rules reflect any exposure of residents of an environmental justice area to the facility's air toxics emissions. The MPCA did not limit the scope of the proposed rules to just facilities within environmental justice areas, as residents of environmental justice areas are also impacted by air toxics emissions from facilities outside environmental justice areas. Residents of these areas frequently travel beyond the Session Law-defined environmental justice boundaries, and emissions from an air toxics facility can travel beyond the boundaries of environmental justice areas, as well. Consequently, residents' potential exposure to facilities' air toxics emissions continues even when the residents or the facilities are physically outside environmental justice areas. Additionally, MPCA's goal is to protect human health and the environment everywhere in the seven metropolitan counties. Therefore, the proposed rule's requirements need to apply everywhere and not be confined to environmental justice areas.

The proposed rules are needed to help ensure facilities are not posing a potential risk to residents of environmental justice areas wherever residents are exposed to air toxics from facilities in the seven metropolitan counties. And where facilities are posing a risk, the proposed rules are needed to provide clear, actionable, and health-based levels for facilities to meet. The proposed rules are needed to assess and address exposures from air toxics to residents of environmental justice areas and to protect human health and the environment everywhere in the seven metropolitan counties.

Scope of proposed amendments

The following chapters of *Minnesota Rules* (*Minn. R.*) are affected by the proposed changes:

- Amendments to Minn. R. ch. 7007.0100, Definitions to add language around applicable requirements.
- Amendments to Minn. R. ch. 7007.1100, General Permits to add language around the agency notification for a new permit application.
- Amendments to Minn. R. ch. 7007.1125, Registration Permit Option C to add language around eligibility, application content, and compliance requirements, including compliance requirements for low-emitting sources.
- Amendments to Minn. R. ch. 7007.1130, Registration Permit Option D to add language around eligibility, application content, compliance requirements, compliance requirements for low-emitting sources, and complying with registration permit general conditions.
- Amendments to Minn. R. ch. 7007.1140, Capped Permit Eligibility Requirements to add language around eligible sources and ineligible sources.
- Amendments to Minn. R. ch. 7007.1145, Capped Permit Application to add language around information required.
- Amendments to Minn. R. ch. 7007.1146, Capped Permit Eligibility Requirements to add language around compliance requirements and prechange analysis.

The following new *Minnesota Rules* chapter 7012 is proposed:

- New rule language for Minn. R. ch. 7012.0050, Applicability to add language around the applicability and scope of the new chapter 7012.
- New rule language for Minn. R. ch. 7012.0055, Definitions to add language about terms used throughout chapter 7012.
- New rule language for Minn. R. ch. 7012.0060, Exemptions by Permit Type to add language around permit types that are exempt from chapter 7012 and certification related to one of the Items listed in this part.
- New rule language for Minn. R. ch. 7012.0070, Other Exemptions to add language around other exemptions from a screening threshold analysis that do not pertain to permit type.
- New rule language for Minn. R. ch. 7012.0140, Certifying Submissions to add language around certifying all submissions throughout the new chapter.
- New rule language for Minn. R. ch. 7012.0150, Air Toxics Screening Thresholds to add language around the screening threshold requirement, screening threshold exceedance for existing air toxics facility, and screening threshold exceedance for new permit applications.
- New rule language for Minn. R. ch. 7012.0160, Repeated Air Toxics Screening Threshold Analysis to add language around applicable air toxics facilities, timeline for certification submittal, exemptions, and certification submittal requirements related to repeated air toxics screening threshold analysis.
- New rule language for Minn. R. ch. 7012.0170, Additional Screening Threshold Analysis to add language around conditions for conducting an additional screening threshold analysis, the notification of an additional screening threshold analysis, and the termination of eligibility for an exemption.
- New rule language for Minn. R. ch. 7012.0200, Air Toxics Screening Threshold Analysis; Submission Deadlines and Certification to add language around the screening threshold analysis certification deadline for all air toxic facilities and the content required in the certification.

- New rule language for Minn. R. ch. 7012.0300, Air Toxics Screening Threshold Values; Incorporation by Reference to add language about the hourly and annual screening threshold values incorporated by reference, and the petition process to add, delete, or modify a screening threshold.
- New rule language for Minn. R. ch. 7012.0400, Air Toxics Screening Threshold Analysis; Method of Calculation to add language around the information needed to complete the screening threshold analysis, how to calculate emissions, and exempt emission sources.
- New rule language for Minn. R. ch. 7012.0450, Compliance Determination Protocol to add language on when a compliance determination protocol is required, the content of the protocol, deadline for submittal, and reporting of deviation reports.
- New rule language for Minn. R. ch. 7012.0500, Revising Compliance Determination Protocols to add language around when either an air toxics facility or an agency initiates the compliance determination protocol revision.
- New rule language for Minn. R. ch. 7012.0530, Modeling Required to add language when modeling is required to show compliance with screening threshold values.
- New rule language for Minn. R. ch. 7012.0550, Air Emissions Risk Analysis Protocol to add language around when an Air Emissions Risk Analysis protocol is required, the content of the protocol, protocol approval or disapproval, and resubmitting a protocol.
- New rule language for Minn. R. ch. 7012.0555, Air Emissions Risk Analysis Protocol; Submission Deadlines to add language around AERA protocol deadlines for existing air toxics facilities and application for new air toxics facilities.
- New rule language for Minn. R. ch. 7012.0558, Incorporation by Reference; Air Emissions Risk Analysis to add references used throughout the AERA process.
- New rule language for Minn. R. ch. 7012.0560, Air Emissions Risk Analysis Report to add language around the report content, acceptable risk levels, use of a previously completed analysis, permit amendment required, approval or disapproval of a report, and resubmitting a report.
- New rule language for Minn. R. ch. 7012.0565, Air Emissions Risk Analysis Report; Submission Deadlines to add language around AERA report deadlines for existing air toxics facilities and new air toxics facilities.
- New rule language for Minn. R. ch. 7012.0568, Notification to Potentially Impacted Residents language to add requirements for providing notice to potentially impacted residents when an ATRP is developed because acceptable risk levels are exceeded, the content and timelines for notices, and records required for notices.
- New rule language for Minn. R. ch. 7012.0570, Air Toxics Reduction Plan; Requirements to add language around when an air toxics reduction plan is required, submittal and content of plan, approval of plan, notification of ATRP resubmittal, ambient air monitoring, permit amendment requirement, reporting, and alternative to ATRP.
- New rule language for Minn. R. ch. 7012.0600, Record Keeping to add language around requirements to keep records, additional records for conditionally insignificant activities, calculating conditionally insignificant activities air toxics emissions, environmental justice area status, inventory of emission points, and facility inspections.
- New language for Minn. R. ch. 7012.0650, Ambient air monitoring requirements to add the applicability of completing ambient air monitoring, contents of an air monitoring plan, air monitoring plan approval, and submitting information on air monitoring eligibility.

Statutory authority

The MPCA has a general statutory authority to adopt these rules under Minn. Stat. § 116.07, subd. 4 as follows:

Subd. 4. Rules and standards. (a) Pursuant and subject to the provisions of chapter 14, and the provisions hereof, the Pollution Control Agency may adopt, amend, and rescind rules and standards having the force of law relating to any purpose within the provisions of Laws 1967, chapter 882, for the prevention, abatement, or control of air pollution. Any such rule or standard may be of general application throughout the state, or may be limited as to times, places, circumstances, or conditions in order to make due allowance for variations therein. Without limitation, rules or standards may relate to sources or emissions of air contamination or air pollution, to the quality or composition of such emissions, or to the quality of or composition of the ambient air or outdoor atmosphere or to any other matter relevant to the prevention, abatement, or control of air pollution.

In addition, the MPCA has specific statutory authority to adopt these rules under Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5 as follows:

Subd. 3. The commissioner shall adopt rules under Minnesota Statutes, chapter 14, to implement and govern regulation of facilities that emit air toxics. Notwithstanding Minnesota Statutes, section 14.125, the agency must publish notice of intent to adopt rules within 36 months of the effective date of this act, or the authority for the rules expires.

Under these state statutory provisions, the MPCA has the necessary statutory authority to adopt the proposed amendments into Minnesota Rules.

Background

Air toxics and Inhalation Health Benchmarks (IHBs)

The term “air toxics” refers to a category of pollutants that are known or suspected to cause cancer or other serious health effects or adverse environmental and ecological effects. For the purposes of this proposed rule, air toxics are defined in *Minnesota Rules* part 7005.0100, subpart 2c. To be considered in this rule an air toxic must also have an IHB for the individual air toxic or be grouped in a compound group that has an IHB. An air toxic that does not have an IHB and cannot be grouped in a compound group that has an IHB, is not assessed in the proposed rule. This includes air toxics that meet the definition, are reported, and have an IHB, such as ammonia. SONAR exhibit S-3 lists the inhalation health benchmarks, and their sources used for these proposed rules. The definition in Minnesota Rules part 7005.0100, subpart 2c was added during the 2025 amendments to chapter 7019, also known as the air toxics reporting rules. The Minnesota Session Law states that “air toxics” have the same definition as in Minnesota Statute section 116.062 -- chemical compounds or compound classes that are emitted into the air by a permitted facility and that are:

1. Hazardous air pollutants listed under the federal Clean Air Act, United States Code, title 42, section 7412, as amended;
2. Chemicals reported as released into the atmosphere by a facility located in the state for the Toxic Release Inventory under the federal Emergency Planning and Community Right-to-Know Act, United States Code, title 42, section 11023, as amended;
3. Chemicals for which the Department of Health has developed health-based values or risk assessment advice;
4. Chemicals for which the risk to human health has been assessed by either the federal Environmental Protection Agency's Integrated Risk Information System; or
5. Chemicals reported by facilities in the agency's most recent triennial emissions inventory.

Air toxics include pollutants such as hazardous air pollutants (HAPs), per-and polyfluoroalkyl substances (PFAS), and persistent, bioaccumlative and toxic substances (PBTs). HAPs are toxic air pollutants that are known or suspected to cause cancer or other serious health effects.[6] More specifically, HAPs are defined as "any air pollutant listed in or pursuant to section 112(b) of the [Clean Air] Act."[7] There are currently 188 chemicals and chemical groups that are HAPs. PFAS are defined in Minn. Stat. § 116.943 as "a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom." PFAS are persistent, meaning they do not break down easily, and are known to bioaccumulate in the environment and living organisms. Exposure to some PFAS in the environment may be linked to harmful health effects in humans.[8] PBTs are classified as chemicals (organic or inorganic) that are persistent in the environment, bioaccumulate in food chains, and are toxic.[9] While the majority of air toxics fall into one of these categories, there are some air toxics that do not.

To estimate the risk for a given air toxic, the air toxic must have an inhalation health benchmark (IHB). An inhalation health benchmark (IHB) is a concentration in ambient air at or below which, when inhaled, an air toxic is unlikely to cause an adverse health effect in a population over a certain duration of time (*e.g.* 1 hour, 24 hours, lifetime, etc.). IHBs are developed to be protective of susceptible portions of the population, also called sensitive receptors, including but not limited to children, pregnant individuals and their fetuses, people compromised by pre-existing diseases, athletes, immuno-compromised people, and the elderly. Currently, IHBs are used in an air emissions risk analysis (AERA) when calculating risk levels to compare to acceptable risk levels. IHBs are necessary for estimating the risk from a given air toxic emitted to the air. Air toxics without IHBs are currently not assessed in an AERA and are not assessed throughout the proposed rule because without an IHB to compare against, MPCA cannot say whether an air toxic poses a risk to human health based on a certain concentration in the air.

Current air toxics regulations

Currently, air toxics are regulated through federal technology and risk-based standards, but there are no state-level regulatory tools for reducing air toxics emissions (except for mercury emissions). Recent amendments to chapter 7019 require air toxics reporting in the seven metropolitan counties, but these amendments do not control nor reduce air toxic emissions.

Current federal regulations addressing air toxics include the National Ambient Air Quality Standards (NAAQS) and the National Emissions Standards for Hazardous Air Pollutants (NESHAPs). NAAQS are federal standards that are set to protect public health and the environment. There are NAAQS for the six criteria pollutants - carbon monoxide, lead, nitrogen dioxide, ozone, particulates, and sulfur dioxide.

Lead is both a criteria pollutant and a HAP, which means it is regulated by a national ambient air quality standard (NAAQS) under 40 CFR Part 50 and NESHAPs under Part 63. The lead NAAQS established in 2008 and that

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[6] What are Hazardous Air Pollutants? Retrieved from: https://www.epa.gov/haps/what-are-hazardous-air-pollutants
[7] 40 CFR 63.2 "Hazardous air pollutant". Retrieved from: https://www.ecfr.gov/current/title-40/part-63/section-63.2#p-63.2(Hazardous%20air%20pollutant)
[8] PFAS and Health. Retrieved from https://www.health.state.mn.us/communities/environment/hazardous/topics/pfashealth.html
Journal article: Health Impacts of Per- and Polyfluoroalkyl Substances (PFASs): A Comprehensive Review;
EPA website: Our Current Understanding of the Human Health and Environmental Risks of PFAS | US EPA;
MN's PFAS Blueprint: https://www.pca.state.mn.us/sites/default/files/p-gen1-22.pdf.
[9] Terminology Services. Retrieved from: https://sor.epa.gov/sor_internet/registry/termreg/searchandretrieve/glossariesandkeywordlists/search.do;jsessionid=8Jsi7KlgmmyV4MRQvYpji9D6i_71Gt_qOWkdbQ3tKoYc5mwyUOvh!-721061836?details=&vocabName=ExpoBox%20Terminology&filterTerm=pbt&checkedAcronym=false&checkedTerm=false&hasDefinitions=false&filterTerm=pbt&filterMatchCriteria=Contains

persists as of 2025, is 0.15 µg/m^3 calculated as a three-month rolling average. Air permits issued by the MPCA must ensure that the operation of a facility does not contribute to an exceedance of this standard in the surrounding ambient air.

The Clean Air Act (CAA) requires EPA to develop NESHAPs to control specific HAPs from various industrial and commercial sources, but NESHAPs do not directly address air toxics that are not HAPs. HAPs are defined in the CAA amendments (United States Code, title 42, section 7412) and comprise a list of 188 chemicals and chemical groups that are known to cause or may cause cancer or other adverse health, environmental and ecological effects. This list of HAPs has rarely changed since its creation following the Clean Air Act Amendments in 1990, with only a handful of chemicals being added or removed from the list. Since 1990 scientific understanding of impacts on human health and the environment from air toxics has advanced significantly. Since the list is rarely updated, the list of 188 HAPs leaves the emissions of many harmful chemicals without specific oversight.

Currently, federally regulated air toxics are limited to HAPs regulated under 40 CFR Parts 61 and 63, also known as NESHAPs. Under NESHAPs, EPA regulates the 188 HAPs via technology and risk-based standards known as Maximum Achievable Control Technology (MACT) standards. A technology-based standard is an emissions standard that takes into account existing control technology and cost when setting numerical emission limits. When creating the Part 63 MACT standards, EPA looks at sources from across an industry (called a source category) and creates emission standards based on the best performing sources. When creating the standards, EPA also considers cost, energy consumption, and other non-air quality considerations of meeting the standard. Creating technology-based standards, as EPA has done in Part 63, requires significant time and effort to gather and analyze data on available control technology and its performance and cost. EPA later looks at residual risks in a source category through a process called a risk and technology review (RTR), which is required to occur within eight years of promulgating a MACT standard. Through this RTR process, EPA conducts risk assessments to determine if standards need to be revised to reduce residual risk within a source category. EPA generally considers acceptable risk to be 1 in 10,000 (54 FR 38045).

A facility may be subject to a MACT standard if it is part of a specific industry source category (*e.g*. refineries) and has potential emissions of HAPs exceeding 25 tons of total HAPs per year or 10 tons of a single HAP per year. Facilities with HAP emissions below these thresholds may be subject to a similar but less stringent area source standard known as a Generally Available Control Technology, or GACT standard, also under 40 CFR Part 63. These regulations (MACT and GACT) do not regulate air toxics with health risks beyond the list of 188 HAPs.

In addition to the Part 63 MACT and GACT standards, a small number of HAPs (asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride) are regulated under Part 61 NESHAP standards, which were established before the 1990 Clean Air Act Amendments. In contrast to Part 63 standards, which broadly apply to an industry type, Part 61 NESHAP standards are more pollutant specific and apply to specific activities that may occur at a facility. For example, 40 CFR part 61, subpart E – National Emission Standard for Mercury regulates both chlorine gas production via mercury chlor-alkali cells, and incineration of wastewater treatment plant sludge, two activities that are not likely to occur at the same facility.

On the state level, Minnesota does not have regulations for most air toxics, with the exception of mercury. Minnesota regulates mercury through its Mercury Emissions Reductions Plans rule under part 7007.0502. The purpose of the mercury rule is to lower the concentration of mercury in Minnesota's water bodies, and the rule was not developed to address any inhalation risks from mercury, which these proposed air toxics rules would do. The mercury rule required that facilities that had actual emissions of greater than three pounds per year of mercury in a calendar year prior to 2014 submit to the commissioner a mercury reduction plan in an effort to reduce statewide mercury emissions below 789 pounds per year (part 7007.0502, subpart 1). The rule is industry specific with different mercury emission limits applying to different industries. However, the mercury rule is not based on inhalation risks and does not directly address this type of risk to human health and the environment.

Other states' regulations

To develop the proposed rules for Minnesota, the MPCA researched air toxics regulation rules in 25 states and local agencies: California, California - Santa Barbara County, California - San Joaquin Valley, California – South Coast Air Quality Management District, Connecticut, Georgia, Iowa, Illinois, Indiana, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Rhode Island, South Carolina, Texas, Washington, and Wisconsin.

The MPCA reviewed and analyzed the following aspects of each state's regulations: whether the state was a neighboring state, had air toxics reporting in rule, had risk thresholds in rule, had rule-based state-specific risk benchmarks, had rule-based air toxic analysis, had mandatory communication with fenceline communities, had multipathway assessment, had Toxic Best Available Control Technology (tBACT) requirements, had a combined permitting program, had support for small businesses, had a tiered approach, and had any follow-up or corrective action written in rule. The most common aspects that these states and local agencies have in their rules are air toxics reporting (72%), risk thresholds (88%), rule-based state specific risk benchmarks (76%), and rule-based air toxics analysis (76%). SONAR exhibit 1 includes more information about other states' regulations.

The MPCA included all EPA Region 5 states (Wisconsin, Michigan, Ohio, Indiana, and Illinois) in the MPCA's review of other states. Illinois has an air toxics reporting rule for HAPs but does not have an air toxics regulation rule. Indiana incorporates mostly federal standards (40 CFR Parts 61 and 63) in their regulation rule language where the requirements are focused on given industry types and, at times, specific facilities. The remaining three Region 5 states, Wisconsin, Michigan, and Ohio, were investigated more thoroughly as they had state-specific air toxics regulations. All three states have risk thresholds in rule and have rule-based state specific risk benchmarks. Wisconsin and Michigan have air toxics reporting rules, multipathway assessment, and best available control technology for air toxics (tBACT) requirements. Both Michigan and Ohio have rule-based air toxics analysis and support for small businesses. Both Wisconsin and Ohio have a tiered approach in their rule.

The MPCA contacted Wisconsin, Michigan, and Ohio to understand if there was any opposition to those states' rules, what's working well, and any changes they would make to their rules, if they could.

By evaluating other states' air toxics rules, especially the Region 5 states, the MPCA was able to prioritize items to consider for these proposed Minnesota rules. Additionally, MPCA held meetings with states outside of EPA Region 5 to discuss processes they used, their experience, and lessons learned. Some states' rules included air toxics reporting. Due to MPCA's separate rulemaking for air toxics emissions reporting (amendments to Minnesota Rules chapter 7019), that component from other states was not needed.

As a part of the proposed rule requirements, the MPCA included the process that air toxics facilities would complete if subject to this rule. Requiring every facility in the seven metropolitan counties to complete the same analysis would be burdensome on the air toxics facilities as well as the MPCA, and possibly without appreciably reducing the health impacts to Minnesotans. To this end, MPCA looked for a means to narrow down and determine which facilities pose greater risk and therefore could reasonably be required to take additional action. For this, the MPCA used New Jersey's health risk screening worksheet as a model.[10] The screening analysis determines whether each air toxic pollutant is below screening values, or if the pollutant is above screening values, then further evaluation or a refined health risk assessment is needed. New Jersey developed a spreadsheet so that an air toxics facility could input information such as emission rates (in tons/yr and lb/hr), stack height, and distance to property line. The screening threshold values developed by New Jersey were the

[10] *New Jersey Department of Environmental Protection Division of Air Quality Risk Screening Worksheet. Retrieved from https://dep.nj.gov/boss/risk-screening-tools/.*

basis for the development of the screening threshold values used in this rulemaking. More information about the screening threshold values is in Specific Reasonableness under Minnesota Rules part 7012.0300. SONAR Exhibit 2 outlines how the MPCA developed the screening threshold values.

Analysis

There are a number of ways that the MPCA tries to understand air toxics and the risks they pose to human health and the environment in Minnesota. These methods include emissions inventory, air dispersion modeling, and risk assessment.

Emissions inventory

The emissions inventory is the annual collection of air pollution emissions data from facilities and other sources around Minnesota. Chapter 7019 requires owners or operators of air permitted facilities to submit an annual air emissions inventory for criteria air pollutants, including: particulate matter, ammonia (not a criteria pollutant, but a precursor that contributes to the formation of $PM_{2.5}$), volatile organic compounds (VOCs) (not criteria pollutants but precursors to ground-level ozone), lead, nitrogen dioxide, carbon monoxide, and sulfur dioxide. Facilities that emit more than three pounds of mercury per year must report those emissions annually. Some facilities are also required to report greenhouse gas (GHG) emissions annually. The MPCA historically has only collected voluntary air toxics emissions data from facilities every three years for hazardous air pollutants (HAPs), per-and polyfluoroalkyl substances (PFAS), and additional air toxics of concern in Minnesota. The criteria pollutant and air toxics emissions data collected are used by the MPCA and EPA to assess community health risks.

To help understand air toxics emissions in Minnesota, the MPCA collects an inventory of emissions from facilities statewide. Until recently, this reporting has been requested from facilities on a voluntary basis every three years. Voluntary reporting every three years meant that data was irregular and sometimes of questionable quality because facilities were not held to account for the accuracy of their reporting. Recently, MPCA amended chapter 7019, also known as the air toxics reporting rule, to require air permitted facilities located in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, or Washington counties (except those with option B registration permits) to annually report air toxics emissions, as directed by Minnesota Statute section 116.062. The rule amendments were adopted on October 6, 2025. The first required air toxics reporting year for affected facilities will be 2026, with air toxics emissions inventory reports due on or before April 1, 2027. This reporting rule will improve MPCA's understanding of air toxics emissions in Minnesota. Required reporting will help ensure emissions data is more accurate and will make data available more frequently for analyses, such as health risks posed from facilities.

Air Emissions Risk Analysis (AERA)

The primary analysis method for understanding health risks from air toxics emitted from a facility is an air emissions risk analysis (AERA). An AERA is an analysis of a facility that compares the risks associated with its air toxics emission rates to acceptable risk levels. An AERA may be required under any of the following five circumstances: a facility is required to complete an environmental assessment worksheet (EAW), a facility is required to complete an environmental impact statement (EIS), an air permit includes a permit condition requiring an AERA, a facility applying for a permit is located in the cumulative levels and effects area under Minnesota Statute section 116.07, subdivision 4a, or an AERA is requested by the MPCA. The majority of AERAs are completed due to the facility completing an EAW or EIS.

An AERA provides a better understanding of the facility's potential risks. During the AERA process, the facility uses air dispersion modeling, which is a computer simulation, to combine air toxics emission rates, terrain data and the physical locations of buildings and emissions sources, and meteorological data. This modeling calculates dispersion values that are then used to determine the facility's risk levels. Risk levels are calculated using

potential emissions, which means an AERA assesses the potential maximum risk at a facility based on the maximum emissions allowed by a facility's permit, including physical operational limitations at the facility. These modeled risk levels determine whether the facility is emitting air toxics below acceptable risk levels. If a facility is above acceptable risk levels, further refinement may be necessary. One refinement that a facility could make is to take site-specific limits on its operation. However, not all facilities have a permit type that is conducive to taking site-specific limits. Currently, many AERAs are conducted by larger facilities with individual federal or state permit types where limits can be set in the facility's permits.

However, since there is no current state rule limiting air toxics emissions based on health risks or prohibiting a facility from exceeding acceptable risk levels, if an AERA finds a facility is emitting air toxics above acceptable risk levels, MPCA can only advise the facility to reduce its air toxic emissions' impacts; the agency cannot require the facility to reduce emissions or make other changes to reduce modeled risk.

MNRISKS

Another analytical tool MPCA uses to understand risks associated with air toxics emissions is MNRISKS. MNRISKS is a tool that displays the cumulative impact of air pollution across Minnesota. Part of the information that is used in MNRISKS is the emissions inventory information that facilities provide to the MPCA. MNRISKS is able to estimate the risk that a facility is posing based on this emissions inventory information. MPCA uses MNRISKS to evaluate the cumulative risk across the state but also to understand the estimated risks at each facility that reports emissions inventory information. MNRISKS can estimate the chronic noncancer and cancer risk from each facility, using reported emissions and IHBs, that then can be compared to acceptable risk levels.

The EPA has a risk screening tool called Air Toxics Screening Assessment (AirToxScreen)[11] for the public as well as state, local, and Tribal air agencies to use. This tool is similar to MNRISKS, but different in key ways. AirToxScreen helps to identify pollutants, emission sources, and locations that an agency may wish to study further to better understand any possible risk to public health from air toxics emissions. Historically, EPA updates AirToxScreen annually. However, EPA suggests using AirToxScreen results cautiously. The uncertainty — and thus the accuracy — of the results varies by place and by pollutant. Often, more localized studies are needed to better characterize local-level risk. These studies often include air monitoring and more detailed modeling.[12]

In 2002,[13] the MPCA created a Minnesota-specific air toxics risk screening tool (MNRISKS)[14] to conduct risk-based prioritizations such as evaluating and comparing impacts from source types, identifying areas where specific air toxics are a concern, and comparing differences in impacts in any area of Minnesota. This tool was developed to show the cumulative risk of all sources of air pollution. Unlike AirToxScreen, MNIRISKS displays the risks from reported emissions from permitted facilities and also other sources of air pollution such as nonpoint sources, on-road mobile sources, and non-road mobile sources. MNRISKS is used to conduct risk-based prioritizations such as evaluating and comparing impacts from source types, identifying areas where specific chemicals are a concern, or comparing differences in impacts in any area of Minnesota.

Additionally, MNRISKS displays areas of concern for environmental justice based on demographics. Other tools that display risk, such as AirToxScreen, do not display areas of environmental justice. Having environmental

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[11] AirToxScreen: AirToxScreen Mapping Tool. (2020). Retrieved from https://experience.arcgis.com/experience/a0deb771dbcd40d0a46fbe83adc51747/@ra

[12] AirToxScreen Limitations by US EPA. Retrieved from https://www.epa.gov/AirToxScreen/airtoxscreen-limitations

[13] Pratt, G., Dymond, M., Ellickson, K., The Jesse. (June 2011). Validation of a novel air toxic risk model with air monitoring. https://pubmed.ncbi.nlm.nih.gov/21651597/

[14] Ellickson, K., Kvale, D., Vadali, M., Freeburg, E.W., Sienko, A. (March 2023). MNRISKS: Minnesota statewide screening of health risks from air pollution. Retrieved from: https://www.pca.state.mn.us/sites/default/files/aq9-29.pdf

justice areas included in MNRISKS allows for a better understanding of how the risks to people of color, low-income populations, communities with limited English language proficiency, and residents of Federally defined Indian Country areas are impacted by different source types compared to areas that are not environmental justice areas.

The tool is currently updated approximately every three years with the voluntarily reported air toxics emissions data and only covers the state of Minnesota. In this proposed rule, MNRISKS would be used as a risk-based determination tool to determine which air toxics facilities may need further investigation based on the estimated risks. MPCA amended chapter 7019 to require air permitted facilities located in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, or Washington counties (except those with option B registration permits) to annually report air toxics emissions, as directed by Minn. Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5. The air toxics reporting rule requires air toxics facilities in the seven metropolitan counties to submit their emissions annually, which could allow the MPCA to update MNRISKS yearly with more complete and accurate data.

Furthermore, the MNRISKS tool is specific to the state of Minnesota and uses the MPCA's preferred order of Inhalation Health Benchmarks (IHBs) sources for determining risk. This can result in variations in the IHB values used between MNRISKS and AirToxScreen. This can result in slightly different risk estimates between the two tools. So, the risk calculated in MNRISKS is more consistent with how risk is calculated in an MPCA risk assessment, an AERA. Also, the MPCA is more readily able to adjust emissions and have updated results if errors are found than if AirToxScreen needs updating. Due to the ability of the MPCA to update and adjust the inputs for MNRISKS more quickly, this provides a better risk estimate to the MPCA compared to using EPA's AirToxScreen.

MNRISKS and AERAs are both valuable tools for assessing risks from air toxics emitted from facilities. These tools are used for slightly different purposes and provide different types of analytical results. MNRISKS provides a good estimate of the risks that the facility poses by using actual emissions. Along with emissions information, other information that is needed to calculate risks includes stack information, such as stack height and stack location. The MPCA has some information on stacks, but often the stack information is estimated based on the source classification codes (SCCs) for the facilities, resulting in modeled risk that may not as accurately represent a facility. An AERA is the best option to assess the inhalation, multipathway, and health endpoint risk because most AERAs require the facility to model its impacts using more detailed, facility specific information. This means that the AERA will have more accurate stack information than information that is used in MNRISKS. Stack location and other stack information are important to model the dispersion characteristics for a given stack. These dispersion characteristics impact the modeled concentrations of air pollutants. Another difference is MNRISKS only assesses the chronic noncancer and cancer risk, while an AERA looks at a variety of risks including acute, subchronic, and chronic inhalation risk, cancer risk, multipathway risk, and health endpoint risk. Additionally, an AERA uses potential emissions, which means it assesses the potential maximum risk at a facility allowed by its permit and operational capacity. MNRISKS uses actual reported emissions that can vary from year to year.

Voluntary actions

Since Minnesota does not have state-level air toxics regulations, the MPCA has sought to find ways to reduce air toxics emissions through voluntary actions. A project called "Facility Focus" is a voluntary program created by the MPCA. This program uses data from MNRISKS to assess whether a facility could be posing a risk to human health and the environment.[15] Currently, MNRISKS uses point, nonpoint, and mobile source data from the most recent

[15] *Ellickson, K., Kvale, D., Vadali, M., Freeburg, E.W., Sienko, A. (March 2023). MNRISKS: Minnesota statewide screening of health risks from air pollution. Retrieved from: https://www.pca.state.mn.us/sites/default/files/aq9-29.pdf.*

triennial emissions inventory to calculate a risk score for each facility that reports emissions information to the MPCA. This score can be used to determine which facilities potentially pose a higher risk of adverse human health effects. Higher risk facilities are contacted to confirm that their air toxics emissions voluntarily reported to the triennial emissions inventory are correct. Throughout this process, MPCA works with the facility to confirm its emissions, directs the facility to helpful resources such as Minnesota Technical Assistance program (MnTAP) or Small Business Environmental Assistance Program (SBEAP), and may ask the facility for an air toxic(s) resolution plan. The air toxics resolution plan includes ways the facility intends to reduce its air toxics. This plan is voluntary, like all portions of the Facility Focus process, and provides the MPCA with a general idea of how the facility will work to reduce its air toxic(s) emissions. The plan is not enforceable at this time, so it is up to the Agency to check in with the facility on the progress of the plan. Many facilities choose not to participate in the Facility Focus process because it is a voluntary program. However, with the proposed rules, facilities would have to assess their air toxics emissions and make changes to stay at or below screening threshold values or acceptable risk levels. Key components of the proposed rule, such as the compliance determination protocol (CDP) and air toxics reduction plan (ATRP) would be enforceable by the MPCA, requiring facilities to comply with either screening threshold values or acceptable risk levels.

Public participation and stakeholder involvement

The MPCA conducted several outreach and public participation activities while developing this rule—both to comply with the requirements of Minnesota's rulemaking process, and also to notify, engage, and inform stakeholders about this rulemaking. The MPCA additionally engaged in public outreach with lower-income Minnesotans, people of color, and Tribal communities by accessible, community-oriented methods. Through all of this community outreach, the MPCA asked for the public's input on the proposed rule concepts for developing and amending the rules. This section describes the MPCA's public outreach efforts and the steps it took to develop and solicit input on the proposed new rule and rule amendments.

During the rule development of the proposed air toxics regulations, the MPCA heard from more than 1,000 Minnesotans. To increase accessibility and opportunity for feedback, the Agency created a webpage that displayed relevant information on this rulemaking process and provided the opportunity to make comments. The Agency tabled various locations, hosted one-on-one conversations, and heard from Minnesota residents at public events. The MPCA also hosted and recorded informational webinars, collected written comments on the Court of Administrative Hearings' (CAH's) eComments site, and distributed surveys for conceptual areas of the rule.

Consistent with the Administrative Procedures Act (APA), the Agency published a Request for Comments (RFC) in the *State Register* on July 24, 2023. To increase accessibility and opportunity for feedback, the Agency created a webpage that displayed relevant information on this rulemaking process and provided the opportunity to make comments. The webpage is still active as of the date of this SONAR and will remain so until the end of the rulemaking project.

Webpages

The MPCA maintains the following webpages that are publicly accessible and relevant to this rulemaking:

- MPCA Rulemaking at https://www.pca.state.mn.us/get-engaged/proposed-rules. The MPCA's rulemaking webpage provides the public with centralized information about current rule projects and the rulemaking process. It also explains how the public can receive notifications about rule changes. The MPCA's "Public Rulemaking Docket," updated monthly, is located on this webpage, and includes information about current rulemaking projects such as the rule webpage, contact person, and timeline.

- Dedicated Air Toxics Regulations webpage at https://www.pca.state.mn.us/get-engaged/air-toxics-regulations. The MPCA created this rule-specific webpage to provide the public with background and other information relevant to this rulemaking, including rulemaking documents and a target schedule for rule adoption, as well as a "Frequently Asked Questions" document (aq-rule4-12j) for the public to reference. The MPCA routinely updates the webpage to inform the public of meetings and developments related to this rulemaking. The MPCA will continue to update the rule webpage to include information about the proposed rule amendments and rulemaking documents, including the proposed rule language, a final version of this SONAR, and other supporting documents. This webpage includes comments received during the formal Request for Comments (RFC), recordings of past informational meetings, informal comments from the stakeholders and other relevant information about this rule.

GovDelivery and other email announcements

The MPCA uses a self-subscription service called GovDelivery to provide updates and public notices electronically (via email) to interested and affected parties on a wide range of topics, including administrative rulemakings. Any person may visit the GovDelivery subscription page at: http://public.govdelivery.com/accounts/MNPCA/subscriber/new, to subscribe and choose the notifications they want to receive. The MPCA uses GovDelivery to send new rule project alerts to anyone who has signed up to receive notice for all rulemakings, and bulletins about specific rulemaking projects to those who have signed up to receive only notifications about those specific topics. Notification by US Mail is also available.

GovDelivery notices and emails sent for Air Toxics Regulations rulemaking

- On June 30, 2023, a GovDelivery notice to 3,566 subscribers of all active rulemaking lists to notify of new rulemaking and a notice that the RFC would be expected in July 2023.
- On July 5, 2023, a GovDelivery notice to 3,737 subscribers of the air toxics regulations rulemaking and new rulemaking announcement lists to notify of the new air toxics regulation rulemaking. The notice included links to the Session Law language and a brief description of what the proposed rule would cover.
- On July 24, 2023, a GovDelivery notice to 116 subscribers of the air toxics regulations rulemaking list for the notice of RFC for the proposed air toxics regulation rule and possible amendments to chapters 7002, 7005, 7007, 7017, and 7019, and the RFC closing date: September 22, 2023.
- On July 24, 2023, the MPCA sent a second GovDelivery notice to 116 subscribers of the air toxics regulations rulemaking list for a notice of RFC for the proposed air toxics regulation rule and possible amendments to chapters 7002, 7005, 7007, 7017, and 7019, and the RFC closing on September 22, 2023.
- On December 8, 2023, a GovDelivery notice to 3,869 subscribers of the Small Business VOC Reduction Assistance list to notify that there will be an air toxics regulations rulemaking informational meeting on December 13, 2023. The notice included a link to the meeting and a link to the SmartComment to provide feedback.
- On January 29, 2024, a GovDelivery notice to 3,183 subscribers of the Small Business Environmental Assistance Program list to notify about an air toxics regulation rulemaking webinar held on February 13, 2024. The notice included a link to the air toxics regulation rulemaking website and a link to join the meeting.
- On February 01, 2024, a GovDelivery notice to 13,774 total subscribers of the following five GovDelivery lists: air toxics regulations rulemaking, air toxics emissions reporting rulemaking, environmental justice issues, cumulative impacts rulemaking, and air quality regulatory and technical news to notify about an air toxics regulation rulemaking webinar held on February 13, 2024. The notice included a link to the air toxics regulation rulemaking website and a link to the meeting.

- On September 05, 2024, a GovDelivery notice to 4,024 total subscribers of the air toxics regulations rulemaking and the air quality regulatory and technical news lists to notify about a virtual meeting held on September 17, 2024. The notice included a link that provided more details about the virtual meeting.
- On September 20, 2024, a GovDelivery notice to 15,438 total subscribers of four GovDelivery lists: air toxics regulations rulemaking, environmental justice issues, air quality regulatory and technical news, and Small Business Environmental Assistance Program to inform about the recording from the virtual meeting held on September 17, 2024. The notice also included a link to the recording and a link to the SmartComment website, where the public could provide feedback. The MPCA uses SmartComment software to seek informal comments from the public to inform rulemaking and other policies.
- On February 04, 2025, a GovDelivery notice to 9,095 total subscribers of five GovDelivery lists: air toxics regulations rulemaking, air toxics emissions reporting rulemaking, air quality regulatory and technical news, Minnesota Green Corps member, and cumulative impacts to notify about the Minneapolis Community Connections Conference on February 8, 2025. MPCA staff presented on air toxics during a workshop and the MPCA had a table at this conference to discuss the new air rules, including the air toxics regulations rule.
- On March 7, 2025, a GovDelivery notice to 1,564 subscribers of the air toxics regulation rulemaking list to notify of the air toxics regulation webinar set for March 20, 2025. The notice included a link to previous recorded meetings and a link to the webinar.
- On March 18, 2025, a GovDelivery notice to 1,581 subscribers of the air toxics regulation rulemaking list as a reminder for the air toxics regulation webinar being held on March 20, 2025. The notice included a link to previous recorded meetings and a link to join the webinar.
- On April 16, 2025, a GovDelivery notice to 1,654 subscribers of the air toxics regulation rulemaking list to notify of a feedback opportunity. The notice included a link to the SmartComment website, open until April 30, 2025, and a link to the recording of the air toxics regulation webinar held on March 20, 2025.
- On June 05, 2025, a GovDelivery notice to 15,939 total subscribers of three GovDelivery lists: air toxics regulations rulemaking, cumulative impacts rulemaking, and environment justice issues lists to notify about an upcoming air toxics regulation webinar on June 26, 2025. The email notice included a link to more information about the webinar and included information about the air toxics regulation rulemaking.
- On June 9, 2025, the MPCA sent an email to a list of air permit contacts for small businesses within our target permit groups (533 recipients) with a questionnaire opportunity for small businesses. The email included a link to the questionnaire and a general overview of the air toxics regulations rule.
- On June 18, 2025, a GovDelivery notice to 2,418 subscribers of air toxics regulations rulemaking and cumulative impacts rulemaking lists notify about an upcoming air toxics regulation webinar on June 26, 2025. The email notice included a link to more information about the webinar and included general information about the air toxics regulation rulemaking.
- On June 18, 2025, a GovDelivery notice to 3,852 subscribers of the Small Business Environmental Assistance Program list with a linked questionnaire in order for the MPCA to receive feedback from smaller facilities. The email included a link to the questionnaire and a general information of the air toxics regulations rule.
- On June 25, 2025, the MPCA sent a follow up email reminder to small businesses (488 recipients) to complete the questionnaire by July 3, 2025. The email also included a link to the questionnaire and a general overview of the air toxics regulations rule.

- On August 6, 2025, a GovDelivery notice to 16,151 total subscribers of the air toxics regulations rulemaking and environmental justice issues lists, to complete a survey in SmartComment on air toxics regulations rulemaking. The GovDelivery notice also included a general overview of the air toxics regulation rule, links to an informational flyer available on the MPCA website and a link to the June 2025 community meeting recording available on YouTube.

The MPCA will continue to send GovDelivery bulletins regarding public notices and other relevant information for this rulemaking as discussed in the Notice Plan section.

Newsletters

The MPCA uses GovDelivery to send interested parties email newsletters about general topics of interest that sometimes include updates on rulemaking for those areas. Any person may visit the GovDelivery subscription page and sign up for any MPCA newsletters that they would like to receive. *Air Mail* is a quarterly newsletter on air quality issues that is sent out to over 4,349 subscribers as of August 15, 2025. Subscribers to this newsletter include a wide range of stakeholders, including private citizens, regulated parties, consultants, small business owners, government entities of all levels, nonprofits, and media organizations.

The MPCA published articles about the air toxics regulations rulemaking in the *Air Mail* newsletter, as well as included links to the dedicated air toxics regulations webpage, links to the RFC page, notices and links for upcoming informational webinars on the rulemaking, links to the MPCA YouTube page where recorded webinars on the rulemaking are available to view, and links to the SmartComments webpage where informal comments for this rulemaking could be received.

The MPCA published articles about the air toxics regulations rulemaking in the following *Air Mail* newsletters:

- August 11, 2023
- November 7, 2023
- February 13, 2024
- May 16, 2024
- November 22, 2024
- May 15, 2025
- August 15, 2025

The MPCA will continue to publish updates for this rulemaking in the *Air Mail* newsletter, as discussed in the Notice Plan section.

Meetings held

Meetings were a way for the MPCA to present information about the rule and updates regarding the rulemaking progress to the public and interested parties. A list of public webinars and virtual informational meetings the MPCA held are below.

On December 13, 2023, the MPCA held a virtual informational meeting for the public to discuss the start of the rulemaking and an overview of what the process would entail. The MPCA sent invitations to several lists that contained 1,867 email addresses. The recording of the meeting was made available to the public after the meeting and was uploaded to the MPCA rule webpage.

On February 13, 2024, the MPCA held another virtual informational meeting for the public to discuss the rulemaking process, the Session Law summary, and how to stay informed. During this time an informal comment period was open until March 8, 2024 for people to provide feedback using SmartComments. The recording of the

meeting and the comments provided were made available to the public after the meeting and were uploaded to the MPCA rule webpage.

On September 17, 2024, the MPCA held a virtual information meeting for the public to discuss a conceptual draft framework and concepts for the rule. Another informal comment period was open until October 18, 2024 for people to provide feedback using SmartComments. The recording of the meeting and the comments received were made available to the public after the meeting and were uploaded to the MPCA rule webpage.

On March 20, 2025, the MPCA held a virtual meeting that was focused primarily on the technical aspects of the rule. This meeting was open to anyone, but the content was geared towards regulated parties. During this meeting, the MPCA discussed the conceptual draft framework and how the draft screening threshold values were created. An informal comment period was open until April 20, 2025 for people to provide feedback using SmartComments. The recording of the meeting and the comments received were made available to the public after the meeting and were uploaded to the MPCA rule webpage.

On June 26, 2025, the MPCA held a virtual meeting that focused primarily on community engagement. While this meeting was open to any members of the public this meeting was geared towards the communities impacted by the rule. An informal comment period was open until July 20, 2025 for people to provide feedback using SmartComments. The recording of the meeting and the comments received were made available to the public after the meeting and were uploaded to the MPCA rule webpage.

Meetings attended

On February 22, 2024, the MPCA presented an overview of the rulemaking process to the Minnesota Tribal Environmental Committee (MNTEC). MNTEC is comprised of environmental staff from Minnesota's Tribal Nations and Treaty Authorities. The presentation provided an overview of the Session Law language for this rulemaking, the rulemaking timeline, how to stay informed throughout the process, and how to provide informal comments using SmartComments.

On October 3, 2024, the MPCA presented the draft rulemaking process to members of the National Associations of Clean Air Agencies (NACAA). NACAA is a national, non-partisan, non-profit association of air pollution control agencies across the United States of America. This presentation was not only informative but allowed the MPCA to receive comments from other states that have established air toxics regulation rules.

On April 16, 2025, the MPCA presented the draft rulemaking process, and the development of the screening threshold values at the National Air Toxics Conference (NATC). The NATC is hosted every two years and is a conference for agencies to gather, share, and gain knowledge of how other agencies regulate, monitor, and report air toxics. This presentation allowed other agencies to comment on the process and provide feedback on how to change or update the process.

On October 10, 2025, the MPCA met with the American Petroleum Institute (API) regarding the rulemaking in general and to answer questions. The MPCA prepared a general presentation about the air toxics rulemaking, but this material was postponed as the initial questions were directed towards other MPCA rulemaking efforts. MPCA provided API contact information to reschedule a meeting about the Air Toxics Rulemaking, if desired, as well as information about where to find previously recorded webinars.

On December 19, 2025, the MPCA met with representatives from the Minnesota Chamber of Commerce and discussed the air toxics regulations rulemaking amongst other permitting and rulemaking related topics. The Chamber provided a follow-up email on March 9, 2025 with feedback based on that conversation and previous webinars.

Public events attended

The MPCA conducted several outreach and public participation activities while developing these rule amendments—in part to comply with the requirements of Minnesota's rule making process, but also to notify, engage, and inform potentially interested parties about this rulemaking and solicit the public's input on the MPCA's proposed concepts for amending the rules. The Agency also worked to engage lower-income Minnesotans, people of color, and Tribal communities by accessible, community-oriented methods. The outreach helped the Agency develop considerations for environmental justice community residents and follow Session Law directives listed in Section 4(b). This section describes the MPCA's public outreach efforts and the steps it took to develop and solicit input on the rule amendments.

These meetings and opportunities to discuss the air toxics regulations rule with community members were made more accessible by offering translated materials and translation services upon request. The MPCA also hosted the meetings and conducted its outreach at a variety of locations and times. When possible, the MPCA also posted recordings of the meetings on YouTube and linked them to the air toxics regulations rule webpage so the public can access the materials at any time.

The public and stakeholders will have additional opportunities for input during the Notice of Hearing on the proposed rule amendments comment period, rule hearings, and post-hearing comment period. See the Notice Plan section of this SONAR for details of the MPCA's notice plan.

Table 1. Public events attended by the MPCA

Date	Event name or description	Location of event
12/10/2024	Metro Blue Line Extension Community Visioning Event	710 West Broadway Ave. Minneapolis, MN 55411
1/15/2025	Northside/Southside Green Zone Meeting	2323 11th Ave S, Minneapolis, MN 55404
1/16/2025	39th Annual MLK Statewide Conference (State of MN)	700 7th St E, Saint Paul, MN 55106
1/17/2025	MLK Youth Empowerment Summit	120 W. Kellogg Blvd., Saint Paul, MN 55102
2/8/2025	Community Connections Conference (City of Minneapolis)	1301 Second Ave S, Minneapolis, MN 55403
2/19/2025	Southside Green Zone Council	2307 17th Ave S, Minneapolis, Mn 55404
2/22/2025	USDA Urban Agriculture Conference	235 Marshall Ave, Saint Paul, MN 55102
3/13/2025	West Side Summit	179 Robie St. E. St. Paul, MN 55107
3/18/2025	Swain Climate Lecture: A Just Transition for All with Mijin Cha	301 19th Ave S, Minneapolis, MN 55455
3/29/2025	Eastside Spring Holiday Event	1200 Payne Ave, Saint Paul, MN 55130
4/4/2025	UMN Environmental Justice Fair	301 19th Ave S, Minneapolis, MN 55455
4/11/2025	Global Arts School Presentation	810 Palace Ave, Saint Paul, MN 55102
4/19/2025	Wakan Tipi Earth Day Clean Up	10 Mounds St NE, Saint Paul, MN 55112
4/21/2025	Macalester College Environmental Justice Career Event	201 Snelling Ave N, Saint Paul, MN 55104

Date	Event name or description	Location of event
4/22/2025	Hopkins Earth Day Event w/ Change Narrative	11000 Excelsior Boulevard, Hopkins, MN 55343
4/26/2025	Seed Library Open House- Dayton's Bluff	645 7th St E, Saint Paul, MN 55106
5/20/2025	St. Paul and Ramsey County Gardener's Social hour	287 Maria Ave, St Paul, MN 55106
5/23/2025	FRONDO Final Community Celebration	422 University Ave W, Saint Paul, MN 55103
6/19/2025	Soul of Southside Juneteenth Festival	3032 Minnehaha Ave, Minneapolis, MN 55406
6/22/2025	CMEJ Air Monitoring Presentation	2007 Emerson Ave N, Minneapolis, MN 55411
6/24/2025	Emerald Ash Borer Workshop and Resource Fair	2400 Park Ave Minneapolis, MN 55404
6/29/2025	AEDA Little MeKong Market & Hmong Festival	422 University Ave. W. St. Paul, MN 55103
8/3/2025	AEDS Little Africa Festival	1564 Lafond Ave. St. Paul, MN 55104

One-on-one community conversations

The MPCA hosted one-on-one conversations with environmental justice community members. The MPCA invited people to meet while tabling and conducting other forms of outreach to informal conversations throughout the engagement process. These conversations involved approximately one to three people per conversation and often lasted for 45-90 minutes. The conversations had an expansive topic focus where people could discuss their living conditions, learn about the rule, and share their opinion on the rule's development. The MPCA had more than 32 community conversations related to air toxics in the seven metropolitan counties.

The table below displays the documented community conversations instances:

Table 2. One-on-one community conversations conducted by the MPCA

Date	Individual description or affiliation	Location of conversation (zip code)
12/12/2024	Comunidades Organizando el Poder y la Accion Latina/ Communities Organizing Latine Power and Action (COPAL)	55155
1/5/2025	Land Stewardship Project	55057
1/6/2025	Science Museum of Minnesota	55102
1/12/2025	Project Sweetie Pie	55411
1/13/2025	COPAL	55406
1/17/2025	North Minneapolis resident focused on public health and employment	55411
1/24/2025	Northside Environmental Justice advocate	55411
1/31/2025	Land Song	55412
1/31/2025	Institute on the Environment	55108
2/3/2025	Environmental Justice Coordinating Council	55413
2/10/2025	North Minneapolis resident focused on the effects of pollution	55404
2/12/2025	Environmental Justice Advocate	55106
2/21/2025	St. Paul Public Schools Sustainability Department	Virtual (Teams)

Date	Individual description or affiliation	Location of conversation (zip code)
2/21/2025	Environmental Justice Advocate	55411
2/21/2025	Children and Nature Network	55406
2/23/2025	Sustainability Corps at UMN TC	55108
2/28/2025	Macalester Environmental Faculty	55105
3/7/2025	Neighborhood House & West Side Community Organization	55107
3/7/2025	African Economic Development Solutions	55104
3/11/2025	St. Paul Public Library – Dayton's Bluff	55106
4/16/2025	UMN Sustainability Communications	55108
4/25/2025	Unidos MN	55407
4/25/2025	Asian Economic Development Association	55103
5/7/2025	Little Earth Residents Association	55404
5/12/2025	Hennepin County employee	55421
5/16/2025	Reconnect Rondo	Virtual (Teams)
5/29/2025	Central Area Neighborhood Development Organization	55409
6/11/2025	Community Members for Environmental Justice (CMEJ)	55411
6/27/2025	Office of Indian Affairs-Health	Virtual (Teams)
6/30/2025	Migizi	55407
7/10/2025	Brooklyn Center Public Works	55411
7/18/2025	Native Sun	55155
8/3/2025	NACC	Virtual (Teams)

Tabling instances

Tabling refers to the act of setting up a table with resources related to a specific topic in public spaces, events, or other venues to encourage discussion between MPCA staff and the public. A staff member is present at the table to learn from and share information with people who walk by or up to the table.

The MPCA set up information tables at community events, public spaces, and apartment complexes to speak to residents of environmental justice areas about their daily experiences with air pollution and what they want to see included or removed from air emission regulations. The MPCA also asked residents about their familiarity with the air toxics regulations rule. People contacted at the tabling events also had the opportunity to read materials related to the rule and sign up for our GovDelivery list. The MPCA used tabling events to establish relationships and discuss general components of the rule.

Table 3, below, lists the details of tabling events:

Table 3. Tabling instances and locations

Date	Location or occurrence	Address
1/16/2025	39th Annual MLK Statewide Conference (State of MN)	700 7th St E, St. Paul, MN 55106
2/5/2025	St. Paul Public Library - Rondo	461 N. Dale St. Saint Paul, MN 55103
2/8/2025	Community Connections Conference (City of Minneapolis)	1301 2nd Ave S, Minneapolis, MN 55403

Date	Location or occurrence	Address
2/19/2025	Hennepin County Hosmer Library	347 E 36th St, Minneapolis, MN 55408
2/20/2025	Hennepin County East Lake Library	2727 East Lake Street, Minneapolis, MN 55406
2/22/2025	Urban Agriculture Conference	235 Marshall Ave, Saint Paul, MN 55102
3/6/2025	St. Paul Public Library - Rice Street	1200 Payne Ave, Saint Paul, MN 55130
3/12/2025	Hennepin County Hosmer Library	347 E 36th St, Minneapolis, MN 55408
3/14/2025	Midtown Global Market Community Resource Event	920 East Lake Street, Minneapolis, MN 55407
3/29/2025	Eastside Spring Holiday Event	1200 Payne Ave, Saint Paul, MN 55130
3/29/2025	St. Paul Public Library - Arlington Hills	1200 Payne Ave, Saint Paul, MN 55130
4/4/2025	UMN Environmental Justice Fair	301 19th Ave S, Minneapolis, MN 55455
4/11/2025	Midtown Global Market Community Resource Event	920 East Lake Street, Minneapolis, MN 55407
4/18/2025	St. Paul Public Library - Riverview	1 E George St., Saint Paul, MN 55107
4/22/2025	Hennepin County Hosmer Library	347 E 36th St, Minneapolis, MN 55408
4/26/2025	St. Paul Public Library - Dayton's Bluff	645 7th St E, Saint Paul, MN 55106
6/4/2025	Hennepin County Hosmer Library	347 E 36th St, Minneapolis, MN 55408
6/24/2025	Emerald Ash Borer Workshop and Resource Fair	2400 Park Ave Minneapolis, MN 55404
6/25/2025	Hennepin County Sumner Library	611 Van White Memorial Blvd, Minneapolis, MN 55411
6/27/2025	Midtown Global Market Community Resource Event	2107 Cedar Ave. Minneapolis, MN 55404
6/27/2025	Red Lake Nation Embassy Open House	2107 Cedar Ave. Minneapolis, MN 55404
7/2/2025	St. Paul Public Library - Merriam Park	1831 Marshall Ave. St. Paul, MN 55104
7/8/2025	Anoka County Mississippi Library	410 Mississippi St NE Fridley, MN 55432
7/10/2025	Dakota County Galaxie Library	14955 Galaxie Ave. St. Paul, MN 55124
7/16/2025	Shakopee Community Center	1255 Fuller St. South, Shakopee, MN 55379
7/24/2025	Eagan Wescott Library	1340 Wescott Rd, Eagan, MN 55123
7/30/2025	Brookdale Library	6125 Shingle Creek Pkwy Suite 800, Brooklyn Center, MN 55430
8/5/2025	Woodbury R H Stafford Library	8595 Central Park Pl, Woodbury, MN 55125
8/17/2025	Open Streets CedarFest	1501 S. 4th Street, Minneapolis, MN 55454
8/21/2025	Pillsbury United Communities Community Health Fair	420 15th Ave S. Minneapolis, MN 55454
8/23/2025	EcoExperience at the State Fair	1265 Snelling Ave. N., St. Paul, MN 55108

General feedback from outreach and engagement

During the outreach and engagement events listed above, the public informed MPCA of their thoughts regarding pollution and the MPCA's operations. Generally, community members described a strong desire to reduce pollution from facilities in their neighborhoods. Community members also discussed the disproportionate burden of pollutants that residents of environmental justice areas face. The public voiced their concern about

pollution from facilities and the prevalence of facilities in environmental justice areas. Their input reflected information shared in the Air We Breathe Report published by the MPCA in 2025.[16]

Community members discussed living next to large facilities that exceeded permitted air emissions, had permit violations related to their operations, or mechanical failures—leading to unsafe living conditions. Due to the public's experience with the facilities and the MPCA, they requested more transparency from the MPCA and facilities.

The transparency the public requested took form in multiple ways. For example, the people that the MPCA interacted with often wanted community-selected third parties to conduct random facility checks, more notifications and notices of permit violations provided to the public, and communication in plain language. Community members also requested more participatory pathways for civic engagement that could lead to inspections, permit evaluations, and enforcement actions for violations. Community members felt general barriers to accessing the information and leaving actionable feedback with the agency.

The MPCA also heard from facilities that will be subject to the rules, their consultants and industry organizations. These commentors shared concerns about the regulatory burden, delays in permit issuance, uncertainty about how to comply, and that overly stringent regulations may lead facilities to leave Minnesota. The Chamber of Commerce recommended the MPCA form an advisory committee of key stakeholders.

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The MPCA took the public's comments and any other comments into consideration when developing the rules.

Reasonableness of the amendments

The Minnesota Administrative Procedures Act requires the MPCA to explain the facts establishing the need for and reasonableness of the rules as proposed. In general terms, this means that the MPCA must not be arbitrary or capricious in proposing rules. However, to the extent that need and reasonableness are separate, "need" has come to mean that a problem exists that requires administrative attention, and "reasonableness" means that there is a rational basis for the MPCA's proposed action.

General reasonableness

This section describes the reasonableness of the proposed rules as a whole and key elements of the proposed rules. As described in the statement of need as a whole, the intent of the new rule is to meet the Minnesota Legislature's directive. The proposed rules are reasonable for several reasons, including that they are similar to other states' rules that have existed for decades, it closes the gap in Minnesota's rules that allowed facilities to emit air toxics that pose increased risk to human health and the environment, and it fulfills the legislative directive laid out in Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5.

The Minnesota state legislature directed MPCA to adopt rules that implement and govern regulation of facilities that emit air toxics. It is reasonable to adopt rules addressing, at a minimum, the following at the direction of the state legislature:

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[16] *The air we breathe report. Retrieved from: https://www.pca.state.mn.us/sites/default/files/lraq-1sy25.pdf.*

- Specific air toxics,
- Types of facilities to be regulated,
- Performance tests,
- Required monitoring,
- Reporting,
- Recordkeeping, and
- Frequency of facility inspections.

And it is reasonable to establish the testing, monitoring, reporting, record-keeping, and inspections requirements that reflect the following at the direction of the state legislature:

- Different risks to human health and the environment,
- The facility's record of compliance, and
- Any exposure of residents of environmental justice areas.

The proposed rules as a whole are reasonable because air toxics harm human health and the environment and the proposed rules provide a process to address air toxics. To meet the legislative directive, the MPCA developed a regulatory framework to determine what levels of these pollutants in the environment potentially pose a risk to human health and the environment. It is reasonable to develop rules that evaluate which facilities cause higher risks due to air toxics emitted and require facilities to reduce air toxics emissions' impacts to acceptable risk levels in order to protect human health and the environment. These proposed rules help to close the gap in Minnesota's rules that allowed facilities to emit air toxics that pose increased risk to human health and the environment, and they fulfill the legislative directive laid out in Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5.

All facilities will be required to conduct a screening threshold analysis to compare emissions to screening threshold values. The screening analysis is relatively simple for all facilities to conduct. Screening threshold values are developed using environmentally conservative air dispersion modeling values and IHBs. Therefore, if results show a facility's emissions are below screening threshold values, the MPCA can be reasonably assured that the facility is not emitting air toxics above acceptable risk levels. This is true as long as the facility does not add new or increase actual air toxics emissions. This screening threshold analysis step is reasonable to provide a basic check on all facilities that is not overly burdensome. Using a screening step is reasonable because it allows facilities and the MPCA to focus additional analysis and resources on facilities that pose a higher risk to human health and the environment.

Those facilities with a possible higher risk will have to do a more refined analysis to show they are not potentially posing a risk to human health and the environment. The proposed rules' approach is reasonable as the first step requires facilities to complete a screening threshold analysis. This will determine if the facility needs to conduct a more refined analysis to estimate the potential risks at the facility. This approach focuses efforts on facilities that are potentially posing a higher risk to human health. Additionally, a more refined analysis done by a facility may prove that the facility is posing little to no risks to human health instead of just assuming the facility is posing a risk.

The proposed rules are reasonable because they limit which facilities must complete additional analyses and potential operational changes based on risk; they use existing tools that both the MPCA and facilities are familiar with; they provide an opportunity for existing facilities to keep their current permit type; and they provide different compliance options for facilities that pose greater risk to provide choices to the facilities based on individual operations. These attributes of the rules are reasonable as they provide flexibility and familiarity, to help make compliance easier, reduce time needed for analyses and submittals, and help reduce costs for facilities, while efficiently using MPCA resources to enforce compliance.

There is currently a limited regulatory structure at the state and national level to manage risks associated with air toxics. The federal regulations for air toxics concern Hazardous Air Pollutants (HAPs), which are regulated through National Emissions Standards for Hazardous Air Pollutants (NESHAPs). Additionally, some pollutants, known as criteria pollutants, carbon dioxide, nitrogen dioxide, lead, and sulfur dioxide, are regulated through other federal programs, such as the national ambient air quality standards (NAAQS). Federal regulations are limited in both the number of air toxics they regulate, as well as the mechanism for regulating air toxics. NESHAPs only regulate HAPs, which is a fraction of the air toxics that exist. NAAQS only regulate the criteria pollutants (carbon monoxide, sulfur dioxide, nitrogen dioxide, lead, ozone, and particulates). Relying on federal regulations to manage risks from air toxics would greatly underestimate the risks associated with all air toxics, as they only address the limited number of air toxics (*i.e.* HAPs) and not all the air toxics that could be assessed and addressed for risks for human health and the environment. The only state regulation that broadly covers air toxics is the recently adopted amendments to chapter 7019, also known as the air toxics reporting rule. The legislature directed the MPCA to complete this rulemaking to expand state air toxics regulation beyond NESHAPs and address more types of facilities and more air toxics than existing state or federal regulations.

Currently, the risks from air toxics at a facility are assessed mainly through an Air Emissions Risk Analysis (AERA). However, not every facility has to complete an AERA, so the risks to human health and the environment posed by air toxics emitted by a facility are generally unknown. Minnesota has developed a risk analysis tool, Minnesota statewide screening of health risks from air pollution (MNRISKS), that takes reported air toxics emissions and calculates a risk value based on statewide model outputs. MNRISKS shows the potential cumulative health impacts from all sources of air pollution (e.g. permitted facilities, transportation, wood burning). Since part of the cumulative risk estimate includes permitted facilities, MPCA is able to estimate the risk posed by permitted facilities based on emissions reported to the emissions inventory. The risk information from MNRISKS is a helpful tool for estimating risk of reported emissions by facilities and understanding which facilities could be potentially posing an increased risk. However, MNRISKS does not look at the potential risks posed by a facility and the information used in MNRISKS is not as accurate as the information (*e.g.* stack height, stack placement) used in AERAs to estimate risks. This rule is reasonable as it requires a facility to assess the risk at a facility level but only when it may pose a potential risk to human health and the environment. The MPCA does not want to overburden facilities in the seven metropolitan counties that may not pose a potential risk, so screening threshold values were developed to focus on facilities that pose a greater risk. If a facility is above a screening threshold value, the facility has the option to complete an AERA, which will estimate the potential risk levels at the facility.

In the seven metropolitan counties, MNRISKS shows that 77.7% of block groups (a subset of census tracts) are above health benchmarks, and an estimated 25% (of the 77.7%) are in areas of concern for environmental justice (see Figure 1). The MPCA prioritizes reducing the disproportionate impacts from air pollution as one of its long-term goals. The MPCA's 2024-2028 Strategic Plan[17] contains specific goals and strategies to identify and address where residents are disproportionately impacted by exposures to known pollutants. In addition to aligning with the MPCA's Strategic Plan, these proposed rules are reasonable as they help ensure that air emissions from facilities do not pose a risk to residents and help to set acceptable risk levels that facilities must be at or below.

In the proposed rule, the MPCA aims to protect human health and the environment, while developing a regulatory framework that does not over-burden air toxics facilities and the MPCA in implementation. Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(b)(1) states that the MPCA must develop rules that reflect the different risks to human health and the environment posed by specific air toxics

[17] *Strategic plan 2024-2028: goals and strategies. (2024). Retrieved from https://www.pca.state.mn.us/sites/default/files/p-gen1-28.pdf.*

emitted from facilities. The proposed rules provide a clear process with content needed for each portion of the rule, clear deadlines, and a clear process for resubmittals that minimizes approvals. Including this information in the rule allows the facility to understand what information is needed and the specific deadlines to limit confusion. The intention is a regulatory program that is not overly complex or ambiguous; a streamlined process for facilities that reduces the need for "back-and-forth" communication.

Other states have adopted similar air toxics regulation rules that have existed for decades. The MPCA has reviewed air toxics regulation requirements in neighboring states and those in EPA's Region 5, a geographical region spanning Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. About half of these states have air toxics regulations that limit the emissions from a facility. Illinois and Iowa are states that do not have air toxics regulations but do have air toxics reporting rules, and Indiana's air toxics regulations are very similar to the federal NESHAP rules. Other states such as Michigan and Wisconsin promulgated their air toxics regulations rules in the late 1980s to 1990s, with Ohio's rules promulgated in 2006. The MPCA took existing rules into consideration when developing this proposed rule. Some aspects of other state's rules are included in this proposed rule including threshold values, risk assessment, and air toxics to be regulated. More detailed information on air toxics regulations in each state and a comparison between those rules and the MPCA's proposed rule can be found in the Differences from Federal and Other State Standards section. It is reasonable to look to what existed and worked in others states to include in the MPCA's proposed rules.

It is reasonable to adopt rules that establish the content needed in various analyses and enforceable documents and the processes for submitting those analyses and enforceable documents, so that the methodology to implement and govern decisions regarding whether to deem compliance or take further action is done in a consistent manner. Having processes described, the information needed, and the decision points codified in rules provides a common understanding of how the rules will be implemented and decisions will be made by the MCPA. Additionally, affected regulated parties will have a common understanding of their obligations and responsibilities and will be regulated consistently and fairly to one another. Furthermore, establishing the screening analysis, AERA, CDP, and ATRP processes in rule will provide certainty to affected regulated parties regarding how to comply with the applicable requirements. Establishing these processes in rule is also reasonable because it provides transparency to Minnesotans that wish to understand how the MPCA will review and evaluate the impacts from facilities in their communities.

The MPCA is also proposing to make additional changes to its air quality rules in chapter 7007. In particular, these rule amendments make changes to clarify where the chapter 7012 rules intersect with existing air permitting rules. Amendments to these rule chapters will provide consistency and clarity, and make the rules easier for interested parties to understand.

MNRISKS

MNRISKS is a tool to display the cumulative risk from a variety of sources of air pollution in Minnesota. MNRISKS displays the potential human risks posed to residents from cumulative exposure from different source types such as point sources (*e.g.* permitted facilities), non-point sources (*e.g.* backyard fires, residential heating), on-road mobile sources (*e.g.* cars, trucks), and non-road mobile sources (*e.g.* ATVs, boats, construction equipment).

MNRISKS is an essential tool for understanding air pollution in Minnesota. It is used in a number of ways across MPCA programs:

1. Providing a picture of cumulative background air concentrations and risks
2. Focusing and refining the air emissions inventory
3. Prioritizing pollutants and sources according to air concentrations and health risks for grants, air programs, and resource allocation

4. Comparing modeled concentrations with monitoring data to evaluate monitor siting
5. Providing a list of facilities that require additional emissions work and focus.

MNRISKS uses air toxics emissions data reported to the MPCA. Prior to adoption of the air toxics reporting rule amendments to Minnesota Rules chapter 7019 in October 2025, air toxics emissions information was voluntarily reported to the MPCA every three years. The recent amendments to chapter 7019 require air toxics reporting facilities in the seven metropolitan counties to report air toxics emissions annually starting with the 2026 emissions inventory year, with air toxics emissions inventory reports due April 1, 2027. Facilities outside the seven metropolitan counties can continue to voluntarily report air toxics emissions. Since air toxics emissions are currently voluntarily reported, these emissions may not encompass all the air toxics emissions emitted at a facility. Additionally, due to the previous voluntary nature of these emissions reported, the accuracy of the current emissions data is generally unknown, the certainty of the risks estimated from this information could be improved. Implementation of amendments to chapter 7019 will help improve certainty of the estimated risk within the seven metropolitan counties.

One example of how MNRISKS is used by the MPCA is through a program called Facility Focus. The risk estimations from MNRISKS allow the MPCA to create list of facilities that may be potentially posing an increased risk. The Facility Focus program is a voluntary process where the MPCA reaches out to facilities that are above health benchmarks and potentially pose a risk to human health. This program is voluntary because there are no state rules to regulate this process or ensure that the facility's risks are below health benchmarks. While the proposed rule focuses on facilities in the seven metropolitan counties, Facility Focus evaluates facilities anywhere in Minnesota. These facilities are first contacted to confirm that the emissions reported for a given air toxic are correct. Usually, a facility only has one or two air toxics above health benchmarks, so the MPCA asks the facility to confirm its emissions for those specific air toxic(s). If the emissions are not correct, MPCA asks the facility to work with the MPCA to update the facility's emissions. When emissions are correct, MPCA asks the facility to complete an air toxics resolution plan. This plan will detail how the facility intends to change operations to limit the air toxic that is above health benchmarks. Since the beginning of the program in 2022, 10 facilities have gone through the Facility Focus process. Four facilities reduced their emissions due to revised emissions calculations, and three facilities reduced their emissions due to operational changes. The process is voluntary, and 30.1% of the facilities contacted opted out of the process and did not verify their emissions nor complete air toxics resolution plans.

The proposed rule is similar to the Facility Focus process; air toxics facilities will have to evaluate if the facility exceeds screening threshold values. If the facility exceeds screening threshold values, then it either must develop a CDP or complete an AERA. If the AERA shows the facility is above acceptable risk levels, the facility will have to either develop a CDP to meet screening threshold values, or an ATRP to meet acceptable risk levels. Acceptable risk levels are explained more in detail under the Specific Reasonableness section under part 7012.0560. The CDP and the ATRP are like a Risk Reduction Plan from the Facility Focus process, but the CDP and the ATRP are enforceable compliance documents required by rule language for air toxics facilities. This ensures that if the air toxics facility exceeds acceptable risk levels, then the facility is required to make changes to be at or below acceptable risk levels. The proposed rule is reasonable as it helps to better evaluate these facilities that could potentially pose an increased risk to human health and the environment and provides a clear, enforceable process to protect human health.

MNRISKS is a tool currently used by the MPCA to estimate the risk of actual emissions reported to the MPCA. While this tool is informative to which facilities may be posing a greater risk, it does not provide the full picture of all the potential risks that a facility could pose. The proposed rule is reasonable because it requires a facility to assess the current and then, possibly, the potential risks at the facility. The first step in the proposed rule is to conduct a screening threshold analysis. The facility will have more detailed information about which emissions are emitted through which stack and will have more accurate stack parameters than the information reported

through emissions inventory. Some facilities do not have to report emissions by stack in emissions inventory nor report stack height, so stack height is sometimes estimated based on Source Classification Code (SCC). Additionally, if a facility is above screening threshold values, the facility has the option to complete an AERA which estimates the risk at the facility using potential emissions. The proposed rule is reasonable because it helps the agency to better understand the current and potential risks at a facility. Also, Minn. Session Law - 2023, H.F. No. 2310 Chapter 60, article 8, section 5, subd. 4(b)(1) states that the rule requirements must reflect the different risks to human health and the environment posed by specific air toxics and amounts emitted by a facility. While MNRISKS is a great tool for understanding the current risks at facilities, based on information reported to the MPCA, it may not encompass all the information needed to fully understand the current and potential risks to human health and the environment at a facility.

Inhalation health benchmarks

An Inhalation Health Benchmark (IHB) is a concentration in ambient air at or below which an air toxic is unlikely to cause an adverse health effect in a population over a certain duration of time (*e.g.* 1 hour, 24 hours, lifetime, etc.). The duration varies based on pollutant and some pollutants have multiple durations associated with different health effects. Using IHBs in the proposed rule is reasonable because IHBs are developed undergoing a comprehensive chemical review and evaluation of toxicological and epidemiological studies that evaluate the relationship between a dose of a chemical and the animal or human's response. IHBs are based on the most sensitive adverse health effect. IHBs represent concentrations that are likely to be without health impacts and exceeding an IHB does not necessarily indicate that an adverse health effect would occur. IHBs can be used along with air dispersion modeling output to calculate risk levels. These risk levels can determine if the air toxics emitted from a facility are likely to pose a risk to human health and the environment. It is reasonable to use IHBs in this rule to determine whether air toxics emissions from a facility are likely to pose a risk to human health or the environment.

IHBs have two categories: cancer values based on inhalation unit risks (IURs) and noncancer reference concentrations (RfCs). An IUR is an estimate of the increased cancer risk from a population's continuous inhalation exposure to 1 $\mu g/m^3$ of a chemical for a lifetime. Most cancer risk values are also adjusted for early-life sensitivity to derive an air guidance value associated with a negligible cancer risk over a lifetime. RfCs are an estimate of an air concentration likely to be without health risk for the continuous inhalation exposure to the human population, including sensitive subgroups, over a specified time period (*e.g.* 1 hour, 24 hours, lifetime, etc.). Not all air toxic chemicals have an IHB. IHBs are used to calculate threshold values for the screening threshold analysis portion of the proposed rule. Additionally, IHBs are used in conjunction with modeled dispersion values to estimate risk levels at an air toxics facility that are then compared to acceptable risk levels in the air emissions risk analysis (AERA) portion of the rule. IHBs are essential for understanding the potential risk posed from an air toxics facility to human health and the environment. It is reasonable to use IHBs because IHBs are a necessary component in estimating the inhalation risks of the air toxics emitted from a facility. Without being able to estimate the risks from a facility, it is hard to determine if the emissions from a facility are potentially posing a risk to human health. In an AERA, IHBs and modeled output data allow a facility to estimate the risk levels at a facility and compare them to acceptable risk levels.

IHBs come from a variety of resources; the list of resources and reasonableness is in part 7012.0560, subpart 1, item G. An air toxic may have IHBs developed by different reputable entities, so MPCA developed a hierarchy of the sources of IHBs available to us to determine which IHBs to use. The MPCA does not have staff toxicologists to develop MPCA-specific IHBs nor review the documentation for each air toxic to determine which value should be used. Thus, the MPCA relies on other sources, such as the Minnesota Department of Health who has toxicologists, as a source of its IHBs. A hierarchy for sources of the IHBs was created for consistency with the use of IHBs without having to review every individual value from a variety of sources. When multiple sources have IHBs for the same pollutant, the hierarchy lists MPCA's preferred order of sources that IHBs must be selected

from. Reasonableness for this hierarchy is in the specific reasonableness section under part 7012.0560, subpart 1, item G.

The MPCA used the acute and either chronic or cancer IHBs to develop the screening threshold values. Acute IHBs are RfCs for exposure durations within a short period of 1-hr or 24-hr. Chronic IHBs are RfCs for consistent exposure over an extended period of time of an individual's lifetime. Cancer IHBs are IURs that estimate the increased cancer risk from a population's continuous exposure to 1 µg/m^3 of an air toxic for a lifetime. Each air toxic used for the screening threshold value development may have one, two, or all three of the following IHBs associated with it: acute, chronic, and/or cancer. For each air toxic, there is a possibility to have one or two IHBs used to calculate the screening threshold values. If an air toxic had both a chronic and cancer IHB, the lower value between the two was used to calculate the screening threshold value as that is the most protective.

Age dependent adjustment factors (ADAFs) are applied to some cancer IHBs when calculating screening threshold values. ADAFs are applied to linear carcinogens, unless toxicity study data sufficiently accounts for early-life susceptibility, or other chemical-specific information is available to determine that a different numerical adjustment, or no further adjustment, should be made. MPCA uses a default value of 1.6 as the ADAF. This is found by taking the equation:

$$IUR_{adj} = IUR * [(2yrs * 10) + (14yrs * 3) + (54\ yrs * 1)]/70\ years.$$ [18]

Where the IUR is the inhalation unit risk for a given air toxic. The equation is then simplified to: $IUR_{adj} = IUR * 1.6$

It is reasonable to clarify that some cancer IHBs have an ADAF applied to them to account for exposures over a lifetime. This means that some screening threshold values are using a cancer IHB with an ADAF applied to the IHB value. This approach is reasonable as it ensures that the IHB is protective of human health.

SONAR exhibit 3 contains a list of the IHBs for each air toxic. It is reasonable to use these IHBs throughout the rule in developing the screening threshold values and in the AERA process because IHBs are an indicator of whether there is potential risk from an air toxic. These IHBs are essential for determining if there is an increased risk of adverse health effects on a population over a prescribed amount of time.

Air toxics definition

For the purposes of this proposed rule, air toxics are defined in part 7005.0100, subpart 2c, and must have an IHB. The definition in part 7005.0100, subpart 2c was added during the air toxics reporting rulemaking. The Minnesota Session Law states that "air toxics" have the same definition as in Minnesota Statute section 116.062 -- chemical compounds or compound classes that are emitted into the air by a permitted facility and that are:

1. Hazardous air pollutants listed under the federal Clean Air Act, United States Code, title 42, section 7412, as amended;
2. Chemicals reported as released into the atmosphere by a facility located in the state for the Toxic Release Inventory under the federal Emergency Planning and Community Right-to-Know Act, United States Code, title 42, section 11023, as amended;
3. Chemicals for which the Department of Health has developed health-based values or risk assessment advice;

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[18] *MDH Health Risk Assessment Methods: Incorporating Early-Life Sensitivity into Cancer Risk Assessments for Linear Carcinogens. Retrieved from https://www.health.state.mn.us/communities/environment/risk/docs/guidance/adafrecmd.pdf.*

4. Chemicals for which the risk to human health has been assessed by either the federal Environmental Protection Agency's Integrated Risk Information System; or

5. Chemicals reported by facilities in the agency's most recent triennial emissions inventory.

Any air toxic that is required to be reported, including those from the recent update under Minn. Rule Chapter 7019, could be subject to this rule if it has an inhalation health benchmark. Throughout this rule, the term “air toxics” is used and follows the same definition stated in Minn. Stat. § 116.062, from which the definition under part 7005.0100, subpart 2c was added in conjunction with the recent update to chapter 7019. Using the same definition provides consistency across the MPCA when it comes to air toxics reporting and regulations. The definition of air toxics resulted in a list of approximately 900 air toxics.

For these proposed rules, “air toxics” must meet the definition under part 7005.0100, subpart 2c. Not all air toxics have an IHB that can be used to assess risk. However, some air toxics are part of a larger compound group or class, such as antimony compounds or polyaromatic hydrocarbons (PAHs), for which an IHB has been established. In these cases, the larger group IHB is used as a surrogate value.

For metals and cyanide compounds, a conversion factor can be applied to estimate the metal (or cyanide) portion of the compound so it can be compared to the IHB associated with the larger metal group. For example, antimony trichloride (CAS # 10025-91-9) does not have an individual IHB, but it is part of the larger antimony compound group. The conversion factor is calculated by determining the molecular mass of the metal and dividing that by the mass of the specific air toxics. Antimony has a molecular mass of 121.76 g/mol and antimony trichloride has a molecular mass of 228.12 g/mol. Given this information (121.76 g/mol /228.12 g/mol) = 0.534. The factor is applied to antimony trichloride emissions to estimate the antimony portion, which is then compared to the IHB for antimony compound group.

For grouped compounds that are not metals or cyanide, such as PAHs, a conversion factor of 1 is used. This assumption is reasonable because air toxics that belong to a larger group of compound or class, share physical properties, reaction chemistry or reactivity, chemical structure, or compound constituents. This is reasonable because exposure to air toxics with shared properties can result in similar health impacts. All conversion factors are included in the Screening Threshold for Regulated Air Toxics Analysis (STRATA).

It is reasonable to apply conversion factors to air toxics that are part of larger groups of compounds or classes so all emissions can be evaluated in the screening threshold analysis. This approach is consistent with MNRISKS, where emissions reported by the facility to the MPCA for air toxics that do not have specific IHBs, are grouped to assess risk.

If an air toxic cannot be grouped into a compound group and does not have an IHB associated with it, then it is not included in the rules. One example of this is chloramben (CAS# 133-90-4); it is an air toxic as defined in Minn. Stat. § 116.062; however, it is not included in any larger compound group or class and does not have an IHB. This means that chloramben would not be evaluated in the STRATA as part of the proposed rules. PFAS that have IHBs are included in the proposed rules. It is reasonable to include PFAS in the proposed rules because the language under Minn. Session Law - 2023, H.F. No. 2310 Chapter 60, article 8, section 5, subd. 1(2) defines “air toxics” by the meaning in Minn. Stat. § 116.062. Given this meaning, PFAS would be included as an air toxic. Six PFAS compounds currently have IHBs. Since the criteria the MPCA uses to include air toxics in the regulations rule is any pollutant that is reported and meets the definition of an air toxic under part 7005.0100, subpart 2c and that has IHBs, it is reasonable to include the six PFAS compounds with established IHBs. Given that some PFAS have an IHB, then the risks from these PFAS can be assessed through this proposed rule. Thus, it is reasonable to include PFAS to assess the risk from these air toxics.

Additionally, ammonia which is considered an air toxic under statute language, and was previously required in chapter 7019 reporting, is included in the proposed rules. Ammonia is also considered a precursor to particulate

matter and therefore MPCA already required facilities to report ammonia emissions prior to the air toxics reporting rules. Ammonia has an inhalation health benchmark and historically included as an air toxic when doing initial analyses. Some facilities in the seven metropolitan counties were found to be above screening threshold values for ammonia. Because ammonia is an air toxic with an inhalation health benchmark and facilities are already required to report emissions of ammonia, it is reasonable to include it in the proposed rules.

Specific reasonableness

This section addresses each section of the proposed rule and explains each provision and why it is reasonable.

CHAPTER – 7007 PERMITS AND OFFSETS

Chapter 7007 provides the conditions regarding the issuance of permits to construct, modify, reconstruct, or operate emissions units, emissions facilities, or stationary sources that emit any air pollutant, and the revocation, reissuance, or amendment of those permits.

Part 7007.0100 – DEFINITIONS

Subpart 6c. **Air toxics facility.** Subpart 6c was added to define an air toxics facility as the meaning given in part 7012.0055, subpart 8. The term air toxics facility is used throughout chapter 7007 in eligibility and compliance requirements for different permit types. It is reasonable to provide clarity to owners and operators on where they can find the definition in Minnesota Rules.

Subpart 7. **Applicable Requirement.** Subpart 7 lists all the applicable requirements, federal or state, that may apply to emission units in a stationary source. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(2) requires the MPCA to address, at a minimum, facilities that have been issued an air quality permit by the commissioner, other than an option B registration permit. To address this requirement, a new item Y is added under subpart 7 to include any standard or other requirements regulating air toxics under new chapter 7012 as an applicable requirement that may apply to emissions units at a stationary source. It is reasonable to add item Y to ensure that requirements for permit holders under chapter 7012 are clearly identified in rule as an applicable requirement for the purpose of air permitting.

Part 7007.1100 – GENERAL PERMITS

A general permit is a type of permit that covers multiple entities with similar operations and types of emissions.

Subpart 10a. **Ineligibility for general permit**. A new subpart 10a and items A to F are added to provide a process and timelines for submitting a new permit application if the commissioner determines that a facility no longer qualifies for its general permit. The same language is found in existing capped permit and registration permit rules, and it is reasonable to apply regulations consistently. The MPCA is including new subpart 10a in this rulemaking because the general permit rules do not currently have provisions outlining action the agency may take if it discovers a source with a general permit is no longer eligible for such a permit. Under the Commissioner's general authority, the MPCA has enforcement discretion to require a source with a general permit to apply for a different permit. It is reasonable to formalize the conditions and timelines in rule because it creates regulatory certainty and clarity for owners and operators. It is reasonable to include these provisions as part of the air toxics regulations rules amendments because a facility with a general permit may trigger one of the six conditions listed in items A to F as a result of being subject to this rule. The new subpart 10a states the owner or operator must submit an application for a part 70, state, capped, or registration permit option, within 120 days of a commissioner's written request for the application if the commissioner determines that a source no longer qualifies for a general permit under the six conditions listed in A to F.

This new subpart 10a and items A to F are reasonable because it protects the commissioner's authority to require a source to apply for the appropriate permit.

Item A is added to clarify that the owners and operators must submit an application for another permit type if the commissioner determines that the source has a history of noncompliance with applicable requirements or with its general permit. It is reasonable to state that a facility must apply for another permit type if there is a history of noncompliance because if a facility has a history of noncompliance with the requirements of the general permit, then the facility should be regulated under a different permit type; most likely an individual state or part 70 permit, but possibly a capped or registration permit. A different permit type would potentially allow a facility to be subject to less stringent total facility PTE thresholds albeit generally at a regulatory cost of more stringent monitoring and recordkeeping requirements. A facility may be more likely to comply with this alternate regulatory approach with a different permit type.

Item B is added to clarify that owners and operators must submit an application for another permit type if the commissioner determines that the stationary source no longer qualifies for a general permit. It is reasonable to require a facility to submit an application for another permit type if it no longer qualifies for a general permit because if a facility holds a general permit when it does not qualify, the commissioner must have means to compel an air toxics facility to obtain a permit in the appropriate category, if the air toxics facility will not apply voluntarily. It is reasonable to include this requirement for clarity for owners and operators and because it is consistent with requirements for other permit types.

Item C is added to clarify that owners and operators must submit an application for another permit type if the commissioner determines that applicable requirements that apply to the stationary source are about to or have changed substantially and there is not a plan to include the revised requirements in the general permit. This is reasonable to include because changes to applicable requirements may require some facilities to be regulated under a different permit type in order to ensure compliance with the applicable requirement through different or more detailed permit conditions than exist in the general permit. A general permit may not be amended to accommodate a facility’s individual needs.

Item D is added to clarify that owners and operators must submit an application for another permit type if the commissioner determines that the permit application on which the general permit was based contains mistakes or inaccurate statements related to establishing eligibility for the emission standards, limitations, or other terms or conditions of the permit and correction of such mistakes or statements would result in ineligibility for the general permit. It is reasonable to require owners and operators to apply for a permit type that the facility qualifies for because if the permit was issued based on inaccurate information and requirements in the general permit do not actually apply to the facility, the facility may be required to be regulated under a different permit in order to ensure compliance with the applicable requirements through different or more detailed permit conditions.

Item E is added to clarify that owners and operators must submit an application for another permit type if the commissioner determines that alterations or modifications to the permitted facility will result in or have the potential to result in alteration in the nature or quantity of regulated air pollutants to be emitted by the permittee such that the permittee is no longer eligible for the general permit. It is reasonable to require owners and operators to apply for a different permit type if alterations or modifications will change the quantity of regulated air pollutants because if a modification at a facility exceeds the emissions types or threshold values to qualify for the general permit, the commissioner must have means to compel the source to obtain an appropriate permit. It is reasonable to provide clarity for owners and operators on what to do if the facility’s emissions exceed the threshold values of the general permit.

Finally, item F is added to clarify that owners and operators must submit an application for a different permit type if the commissioner determines that the source no longer qualifies for the general permit, based on receipt

of previously unavailable information showing that the terms and conditions of the permit do not accurately represent the actual circumstances of the permitted facility. It is reasonable to require owners and operators to apply for a different permit type if the existing permit does not accurately represent the circumstances of the facility.

Part 7007.1125 – REGISTRATION PERMIT OPTION C.

Registration permits are types of permits for facilities with low actual emissions compared to potential emissions. In general, the facility's actual emissions must be less than 50% of the federal thresholds. Registration permits are single-page permits with requirements outlined in state rules that allow modifications as long as the facility continues to qualify for the permit.

Subpart 1. **Eligibility.** Subpart 1 lists eligibility requirements a facility must meet in order to obtain an option C registration permit. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(2) requires the MPCA to address, at a minimum, facilities that have been issued an air quality permit by the commissioner, other than an option B registration permit. A new item I is added under this subpart to require that stationary sources that are air toxics facilities applying for a new option C permit that emit air toxics from VOC-containing materials after the effective date of chapter 7012 do not exceed the air toxics screening threshold values in part 7012.0300, subpart 1. It is reasonable to require that emissions from sources obtaining new option C permits remain at or below screening threshold values because registration permits are intended for small facilities with relatively low emissions, and contain minimal compliance requirements and have quicker application processing times compared to individual permits. Facilities that exceed the screening threshold values in part 7012.0300 may be required to calculate potential-to-emit for air toxics and accept federally enforceable site-specific conditions. Site-specific conditions can only be set in an individual state or part 70 permit. It is reasonable to provide clarity for owners and operators of sources applying for an air permit that such conditions are not available in a registration permit.

It is reasonable to allow existing option C permit holders (those that applied for and received the permit prior to the effective date of the rule) to remain eligible for an option C permit if they exceed screening threshold values because chapter 7012 as proposed allows existing facilities to reduce their actual emissions of air toxics and avoid the need to take site specific conditions or calculate potential emissions of air toxics.

Subpart 2. **Application content.** Subpart 2 lists the items that must be included in the application for an option C registration permit. A new item F is added under this subpart to require a stationary source that is defined as an air toxics facility to submit an air toxics screening threshold certification required under part 7012.0200, subpart 1 with applications received after the effective date of chapter 7012. It is reasonable to require that the certification be included in the application because one of the purposes of an application is to establish eligibility for a specific permit type, and part of the eligibility is to not exceed the air toxics screening threshold values. It is reasonable to provide clarity for owners and operators of newly permitted sources the requirements for permit application content.

Subpart 3. **Compliance requirements.** Subpart 3 lists actions a permittee must take to comply with the requirements of a registration option C permit. Subpart 3 is amended to state that the stationary source issued a registration permit under this must comply with requirements in items A *to L*. Previously, it only listed requirements from A to K.

Item I is amended to specifically list chapter 7012, relating to air toxics regulations, as an applicable requirement. Chapter 7012 is added as a listed applicable requirement under part 7007.0100. It is reasonable to clarify that option C permit holders must comply with the applicable requirements in chapter 7012.

A new item L is added to clarify that the owner or operator of an air toxics facility must complete the repeated air toxics screening threshold analysis under part 7012.0160 as a compliance requirement for option C permit

holders that emit air toxics from VOC-containing materials. The repeated air toxics screening analysis is used to ensure that a facility that previously certified that its actual emissions are at or below screening threshold values will remain at or below screening threshold values in the future. Remaining at or below screening threshold values is an eligibility requirement in order to qualify for a registration option C permit for those applying after the effective date of chapter 7012. For option C permit holders that existed prior to the effective date of chapter 7012 and emit air toxics from VOC-containing materials, the repeated screening threshold analysis will be applicable unless the facility has completed an AERA. It is reasonable to include the repeated screening threshold analysis as a compliance requirement because it demonstrates continued eligibility for an option C permit for those sources receiving option C permits after the effective date of chapter 7012, and it is a compliance demonstration for those sources who received option C permits prior to the effective date of chapter 7012.

Subpart 3a. **Compliance requirements for low-emitting sources.** Subpart 3a lists compliance requirements for a subset of registration option C permit holders classified as low-emitting sources. Item E under this subpart was modified to include reference to compliance requirements at subpart 3, item L, which were updated as described above. It is reasonable to update a reference to an existing part of rule that has been updated.

Part 7007.1130 – REGISTRATION OPTION D.

Registration permits are types of permits for facilities with low actual emissions compared to potential emissions. In general, the facility's actual emissions must be less than 50% of the federal thresholds. Registration permits are single-page permits with requirements outlined in state rules that allow modifications as long as the facility continues to qualify for the permit.

Subpart 1. **Eligibility.** Subpart 1 lists eligibility requirements a facility must meet in order to obtain an option D registration permit. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(2) requires the MPCA to address, at a minimum, facilities that have been issued an air quality permit by the commissioner, other than an option B registration permit. A new item D is added under this subpart to require that a stationary source defined as an air toxics facility, applying for an option D permit after the effective date for chapter 7012 must not exceed the air toxics screening threshold values in part 7012.0300, subpart 1. It is reasonable to require that emissions from sources obtaining new option D permits remain at or below screening threshold values because registration permits contain minimal compliance requirements and quicker application processing time compared to individual permits. Facilities that exceed the screening threshold values in part 7012.0300 may be required to calculate potential-to-emit for air toxics and accept federally enforceable site-specific conditions. Site-specific conditions can only be set in an individual state or part 70 permits. It is reasonable to provide clarity for owners and operators of sources applying for an air permit that such conditions are not available in a registration permit.

It is reasonable to allow existing option D permit holders (those that applied for and received the permit prior to the effective date of the rule) to remain eligible for an option D permit if they exceed screening threshold values because chapter 7012 as proposed allows existing facilities to reduce their actual emissions of air toxics and avoid the need to take site specific conditions or calculate potential emissions of air toxics.

Subpart 2. **Application content.** Subpart 2 lists the items that must be included in the application for an option D registration permit. A new item H, under this subpart, is added to require that for a stationary source defined as an air toxics facility, the air toxics screening threshold certification required under part 7012.0200, subpart 1 be included in applications received after the effective date of chapter 7012. It is reasonable to require that the certification be included in the application because one of the purposes of an application is to establish eligibility for a specific permit type, and part of the eligibility requirements for an option D registration permit is to not

exceed the air toxics screening threshold values. It is reasonable to provide clarity for owners and operators of newly permitted sources the requirements for permit Application content.

Subpart 3. **Compliance requirements.** Subpart 3 lists actions owners and operators must take to comply with the requirements of a registration option D permit. Subpart 3 was amended to include that an owner or operator of a stationary source issued a permit under this part must comply with items A *to K* and subparts 6 to 9. A new item K is added under this subpart to clarify that the owner or operator of an air toxics facility must complete the repeated air toxic screening threshold analysis under part 7012.0160 as a compliance requirement for option D permit holders. The repeated air toxics screening analysis is used to ensure that a facility that previously certified that its actual emissions are at or below screening threshold values remains at or below the screening threshold values in the future. Remaining at or below screening threshold values is an eligibility requirement in order to qualify for a registration option D permit for those applying after the effective date of chapter 7012. For option D permit holders that existed prior to the rule effective date, the repeated screening will be applicable unless a facility has completed an AERA. It is reasonable to include the repeated screening threshold analysis as a compliance requirement (as applicable) because it demonstrates continued eligibility for the option D permit for those sources receiving option D permits after the effective date of chapter 7012, and it is a compliance demonstration for an applicable requirement for those sources who received option D permits prior to the effective date of chapter 7012.

Subpart 3a. **Compliance requirements for low-emitting sources.** Subpart 3a lists compliance requirements for a subset of registration option D permit holders classified as low-emitting sources. Subpart 3a was amended to clarify that the owner or operator must comply with items A *to I* and subparts 6 to 9. A new Item I is added under this subpart to clarify that the owner or operator of an air toxics facility must complete the repeated air toxic screening threshold analysis under part 7012.0160 as a compliance requirement for low-emitting option D permit holders. It is reasonable to include the repeated screening analysis for low-emitting option D permit holders for the same reasons as listed above in subpart 3, item K.

Subpart 9. **Complying with registration permit general conditions.** Subpart 9 lists additional requirements that option D permit holders must comply with. Item B under this subpart is amended to specifically list part 7012.0150, subpart 1, which relates to air toxics screening threshold values, as an applicable requirement. Chapter 7012 is added as a listed applicable requirement in part 7007.0100. It is reasonable to clarify to option D permit holders that chapter 7012 contains applicable requirements that they must comply with because historically air toxics have not been regulated in registration permits and making permittees aware of its applicability in intersecting rules helps increase the likelihood of compliance. These amendments will provide consistency and clarity, and make the rules easier for interested parties to understand.

Part 7007.1140 – CAPPED PERMIT ELIGIBILITY REQUIREMENTS

Capped emission permits are a type of air permit for non-complex facilities that do not qualify for a registration permit and do not require site-specific permit conditions. The facility's actual emissions must be less than 75% to 90% of the federal thresholds. Like registration permits, capped permits are single page permits with requirements outlined in state rules that allow modifications as long as the facility continues to qualify for the permit.

Subpart 1. **Eligible sources.** Subpart 1 lists criteria that must be met for a facility to apply for a capped permit. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(2) requires the MPCA to address, at a minimum, facilities that have been issued an air quality permit by the commissioner, other than an option B registration permit. A new Item E is added under this subpart to require that an owner or operator of an air toxics facility applying for a capped permit after the effective date of chapter 7012 must not exceed the air toxics screening threshold values in part 7012.0300, subpart 1. It is reasonable to require that emissions from

sources obtaining new capped permits remain at or below screening threshold values because capped permits contain reduced compliance requirements and have quicker application processing times compared to individual permits. Facilities applying for an air permit that exceed the screening threshold values in part 7012.0300 may be required to calculate potential-to-emit for air toxics and accept federally enforceable site-specific conditions. Site-specific conditions can only be set in an individual state or part 70 permit. It is reasonable to provide clarity for owners and operators of sources applying for an air permit that such conditions are not available in a capped permit.

It is reasonable to allow existing capped permit holders (those that applied for and received the permit prior to the effective date of chapter 7012) to remain eligible for a capped permit if they exceed screening threshold values because chapter 7012 as proposed allows for an existing facility to reduce its actual emissions of air toxics and avoid the need to take site specific conditions or calculate potential emissions of air toxics.

Subpart 2. **Ineligible sources.** Subpart 2, item B lists reasons for taking site specific limits that would disqualify a facility from obtaining a capped permit. Subitem (4) is added under item B to prohibit obtaining a capped permit if site specific limits were assumed in demonstrating compliance with any screening threshold values in part 7012.0300, subpart 1 or acceptable risk levels in part 7012.0560, subpart 3, as it relates to air toxics. It is reasonable to prohibit a source requiring site specific limits for the purpose of demonstrating compliance with screening threshold values or acceptable risk levels in chapter 7012 from obtaining a capped permit because doing so would require site specific permit conditions included in a permit. Site specific conditions can only be set in an individual state or part 70 permit. It is reasonable to provide clarity for owners and operators of sources applying for an air permit that such conditions are not available in a capped permit.

Part 7007.1145 – CAPPED PERMIT APPLICATION

Subpart 2. **Information required**. Subpart 2 describes the information that is required to be included in a capped permit application. A new item H is added under this subpart to require that a stationary source that is an air toxics facility, include the air toxics screening threshold certification required under 7012.0200, subpart 1 in applications received after the effective date of chapter 7012. It is reasonable to require that the certification be included in the application because one of the purposes of an application is to establish eligibility for a specific permit type, and part of the eligibility is to not exceed the air toxics screening threshold values. It is reasonable to provide clarity for owners and operators of sources applying for an air permit the requirements for permit Application content.

Part 7007.1146 – CAPPED PERMIT ELIGIBILITY REQUIREMENTS

Subpart 1. **Compliance requirements.** Subpart 1 lists various rules and thresholds that a capped permit holder must comply with. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(2) requires the MPCA to address, at a minimum, facilities that have been issued an air quality permit by the commissioner, other than an option B registration permit. Item B under this subpart is amended to include the owner or operator of the stationary source must comply with applicable requirements including chapter 7012, relating to air toxics. Chapter 7012 is added as a listed applicable requirement in part 7007.0100. It is reasonable to clarify to capped permit holders that chapter 7012 is an applicable requirement that they must comply with because historically air toxics have not been regulated in capped permits and awareness of the rule is necessary for compliance.

A new item C is added under subpart 1, subsequently changing items C, D, and E to items D, E, and F. A new item C is added to clarify that the owner or operator of an air toxics facility must complete the repeated air toxic screening threshold analysis certification under part 7012.0160 as a compliance requirement for capped permit holders. The repeated air toxics screening analysis is used to ensure that a facility that previously certified that its

actual emissions are at or below screening threshold values remain at or below screening threshold values in the future. Remaining at or below screening threshold values is an eligibility requirement in order to qualify for a capped permit for those applying after the effective date of chapter 7012. For capped permit holders that existed prior to the effective date of chapter 7012, the repeated screening analysis will be applicable unless a facility has completed an AERA. It is reasonable to include the repeated screening analysis as a compliance requirement (as applicable) because it demonstrates continued eligibility for the capped permit for those sources receiving capped permits after the effective date of chapter 7012, and it is a compliance demonstration for an applicable requirement for those sources receiving capped permits prior to the effective date of chapter 7012.

Subpart 3. **Prechange analysis.** Subpart 3 describes analyses a capped permit holder must do prior to making a change that increases emissions. Language in subpart 3 is updated with plain language revision suggested by the Revisor to state that *before* making a physical or operational change that increases emissions at a stationary source the facility must comply with items A *to D*. A new item C is added under this subpart that requires a new air toxics facility defined under part 7012.0055, subpart 30, demonstrate that the estimated actual emissions of air toxics will remain at or below screening threshold values in part 7012.0300, subpart 1 before making a physical or operational change to the stationary source. It is reasonable for a stationary source with a capped permit issued after the effective date of chapter 7012 to estimate actual emissions prior to making a change because remaining at or below screening threshold values is an eligibility requirement for those stationary sources to retain a capped permit. It is reasonable for a stationary source to demonstrate that changes to the source will not make them ineligible for their current permit type.

Item D under subpart 3 is changed from item C to item D and to include new item C as a type of prechange analysis record that must be kept on site. It is reasonable to require that a new air toxics facility keep records on site that demonstrate that the estimated actual emissions of air toxics will remain at or below screening threshold values, because the records demonstrate that the new air toxics facility has remained eligible for its capped permit after making a change. It is reasonable to have records accessible to MPCA staff to verify compliance and review during an inspection.

CHAPTER – 7012 AIR TOXICS REGULATIONS

Chapter 7012 is a new chapter that establishes requirements relating to air toxics that apply to owners and operators of air toxics facilities located in the seven metropolitan counties of Minnesota (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington). The new chapter establishes requirements that relate to air toxics to be regulated, types of facilities to be regulated, performance tests, required monitoring of air emissions, requirements for reporting information, record keeping related to air toxic emissions, and frequency of facility inspections and inspection activities.

Part 7012.0050 – APPLICABILITY; OTHER LAW

Applicability for the new chapter is defined in this part. The scope of this chapter applies to the owner or operator of an air toxics facility located in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, or Washington County, unless exempted under part 7012.0060 or 7012.0070. Unless specified otherwise in this chapter, this chapter and chapters 7002, 7005, 7007, 7008, 7017, and 7019 shall be construed to complement each other. It is reasonable to define the scope for this new chapter. Additionally, it is reasonable to specify which facilities this chapter applies to and what other chapters are referenced in this chapter. The Session Law specifies under Minn. Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 2, that the rules apply to facilities within the counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington counties, so it is reasonable to state that language in the rule applicability.

Part 7012.0055 – DEFINITIONS.

Subparts 1 to 39 are added and contain the list of definitions of terms used throughout chapter 7012. It is reasonable to add definitions to this new chapter. The definitions help the reader to understand terms and abbreviations used throughout the chapter.

Subpart 1. **Scope.**

Subpart 1 is added to define the scope for this part. For the purposes of this chapter the terms defined in this part or in parts 7005.0100, 7007.0100, 7007.1002, and 7017.2005 if the terms are not defined in this part. It is reasonable to define the scope of this part of the rule and state that definitions found in other parts are not defined but used throughout this rule for clarity.

Subpart 2. **Acceptable risk level.**

Subpart 2 is added to define the term "acceptable risk level". Acceptable risk level defines the level that is likely to pose little or no risk to human health, including sensitive populations, otherwise known as "sensitive receptors". It is reasonable to define this term to clarify what is an acceptable risk level and how this level relates to the risk posed to human health.

Subpart 3. **Actual emissions.**

Subpart 3 is added to define the term "actual emissions". Actual emissions define emissions calculated as described under part 7012.0400, subpart 2, item B and part 7012.0400, subpart 3. It is reasonable to define the term actual emissions as used in this chapter to provide clarity, since the term actual emissions is used throughout other chapters in Minnesota Rules; in other contexts, this term has variations in its meaning. In chapter 7012, actual emissions are used as a measure of compliance against screening threshold values, so it is reasonable to define this term to provide clarity about its use throughout this new chapter.

Subpart 4. **Acute health endpoint.**

Subpart 4 is added to define the term "acute health endpoint". Acute health endpoint defines the target organ or system, such as neurological, respiratory, reproductive, for acute inhalation risk. Acute health endpoint includes acute noncancer health endpoint. It is reasonable to define this term to distinguish between the different exposure health endpoints. This definition helps ensure that the acute health endpoints are investigated over an acute exposure, which is a short period of time usually over an hour or 24 hours.

Subpart 5. **Acute inhalation risk.**

Subpart 5 and items A and B are added to define the term "acute inhalation risk". Acute inhalation risk defines the risk from one or more exposures to an air toxic within a short period that is evaluated using items listed in items A and B. Items A and B are added to define that the acute inhalation risk is evaluated using the maximum ambient air concentration of an air toxic occurring over one hour, up to and at the stationary source's fence line or the modeled maximum air concentration of an air toxic that occurs over 24 hours, up to and at the stationary source's fence line. The acute inhalation risk is the sum of both risks estimated in items A (1 hr) and B (24hr). This definition is used when evaluating the acceptable risk levels. It is reasonable to define this term to distinguish between the different exposure inhalation risks and it is a common term used in risk assessment.

Subpart 6. **Air emissions risk analysis.**

Subpart 6 is added to define the term "air emissions risk analysis". Air emissions risk analysis defines a process that uses spreadsheets, computer models, and health benchmarks to estimate the potential human health risks from air toxics emitted by a stationary source. It is reasonable to define the term to clarify what an air emissions risk analysis is and what information it contains. This definition is needed so that facilities have a consistent understanding of what an air emissions risk analysis is if they must complete an air emissions risk analysis.

Subpart 7. **Air toxics.**

Subpart 7 is added to define the term “air toxics”. Air toxics are defined as the meaning given in part 7005.0100, subpart 2c. This definition is broader than the Minnesota Statutes, section 116.062 statutory definition of air toxics but it is the existing definition of air toxics in Minnesota rules. It is reasonable to define air toxics as air toxics can mean a long list of chemicals. It is reasonable to propose a definition of air toxics that is meant to encompass a greater number of chemicals and chemical compounds that are known or suspected to cause cancer or other serious health effects, or adverse environmental and ecological effects when emitted into the air by facilities or other sources. This definition follows the meaning given in existing state rules and is similar to definitions that have been adopted in other state rules and by the EPA. It is reasonable to maintain consistency across rules and regulations and to provide clarity on the meaning; having a separate definition for these proposed rules when there is an existing definition in 7005 would create confusion. Any air toxic that meets the definition in 7005.0100, subpart 2c and that has an IHB so that it may be included in the STRATA, is an air toxic for the purposes of chapter 7012. This includes ammonia, and any other pollutant that may meet the definition of 7005.0100, subpart 2c but is not specifically called out by chemical name.

Subpart 8. **Air toxics facility or facility.**

Subpart 8 is added to define the term “air toxics facility” or “facility”. Air toxics facility or facility defines a stationary source in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, or Washington County for which the owner or operator of the facility must obtain an air emission permit under chapter 7007. It is reasonable to define what facilities are air toxics facilities and therefore are subject to this rule. The definition is similar to the air toxics reporting facility definition. It is reasonable to be consistent with existing rules.

Subpart 9. **Air Toxics Reduction Plan.**

Subpart 9 is added to define the term “Air Toxics Reduction Plan”. Air Toxics Reduction Plan (ATRP) defines an enforceable document prepared according to part 7012.0570 that establishes procedures to reduce potential air toxics emissions to at or below acceptable risk levels. It is reasonable to define this term as it is a new enforceable document established in this rule. The term is used throughout chapter 7012, and the definition will help air toxics facilities understand what may be required in an ATRP.

Subpart 10. **AMS/EPA Regulatory Model.**

Subpart 10 is added to define the term “AMS/EPA Regulatory Model”. AMS/EPA Regulatory Model defines the steady-state dispersion model that models the dispersion of air pollution from a stationary source, adopted in the *Guideline on Air Quality Models* – “Appendix W” to 40 CFR Part 51, and incorporated by reference under part 7012.0558, subpart 2. AMS / EPA stands for American Meteorological Society / Environmental Protection Agency. It is reasonable to define the atmospheric dispersion modeling used to develop the screening threshold values and to model dispersion values used to calculate risk levels. This definition ensures that there is consistency in the dispersion modeling used for all stationary sources completing an AERA.

Subpart 11. **Cancer risk.**

Subpart 11 is added to define the term “cancer risk”. Cancer risk defines the risk of developing cancer from exposure to air pollution emissions from a given stationary source. The risk is calculated from the probability that a hypothetical human receptor will develop cancer based on a set of exposures, model, and toxicity assumptions. It is reasonable to define this term as this term is consistent with how risks from cancer are assessed through a risk assessment and it is a common term used in risk assessments.

Subpart 12. **Chronic health endpoint.**

Subpart 12 is added to define the term “chronic health endpoint”. Chronic health endpoint defines the target organ or system, such as neurological, respiratory, reproductive for chronic inhalation risk. Chronic health

endpoint includes chronic noncancer health endpoint. It is reasonable to define this term to distinguish between the different exposure health endpoints. This definition helps ensure that the health endpoints are investigated over a chronic exposure.

Subpart 13. **Chronic inhalation risk.**

Subpart 13 is added to define the term “chronic inhalation risk”. Chronic inhalation risk defines the risk from consistent exposure or multiple exposures occurring over an extended period of an individual’s lifetime, such as greater than one year to a lifetime, that is evaluated using the highest annual ambient air concentration over a five-year period, up to and at the stationary source’s fence line. This definition is used when evaluating the acceptable risk levels. It is reasonable to define this term to distinguish between the different exposure inhalation risks and it is a common term used in risk assessments.

Subpart 14. **Complete.**

Subpart 14 and items A and B are added to define the term “complete”. Complete is defined when both items A and B are true. Item A is added to define complete as a submission containing all information required by chapter 7012 in a format specified by the commissioner. Item B is added to define complete as any requests for additional information needed for the commissioner to evaluate and process the submission are fulfilled by the owner or operator, including requests under part 7012.0100. Under 7012.0100 if, during processing of a submission that has been deemed complete and the commissioner determines that additional information is necessary to evaluate or take final action on that submission, the commissioner may request such information in writing, and, after consultation with the owner or operator, set a deadline for a response. In the request for additional information, the commissioner shall briefly explain why the additional information is needed. If an owner or operator fails to respond to requests for additional information within the time period requested, the submission shall be deemed incomplete. It is reasonable to define the term complete, as it is used in many contexts and needs a definition to eliminate ambiguity. This definition clarifies the meaning of complete and helps facilities understand the expectations for submittals to be deemed complete.

Subpart 15. **Compliance determination protocol.**

Subpart 15 is added to define the term “compliance determination protocol”. Compliance determination protocol (CDP) defines an enforceable document prepared according to part 7012.0450 that establishes procedures to reduce and maintain actual air toxic emissions to at or below screening threshold values established under part 7012.0300, subpart 1. It is reasonable to define this term as it is a new enforceable document established in this rule. The definition will help air toxics facility understand what may be required in a CDP.

Subpart 16. **Dispersion modeling output.**

Subpart 16 is added to define the term “dispersion modeling output”. Dispersion modeling output defines the numerical values that represent the proportional relationship between an emission rate from a stack, vent, or equivalent and the resulting ambient air concentration. It is reasonable to define this term to clarify that a dispersion value is a modeled output based on specific emission rates and stack parameters.

Subpart 17. **Emergency generator.**

Subpart 17 is added to define the term “emergency generator”. Emergency generator defines a stationary internal combustion engine used to generate electricity and is only operated during routine maintenance and testing or when unforeseen conditions result in disruption of electrical power to a stationary source. A generator is not considered an “emergency generator” if it is a part of a peak shaving contract, reduced use contract, or if it is used as a standby source during periods when power is available from the utility. It is reasonable to define this

term as the term “emergency” may be open to interpretation and there are other uses of the term “emergency generator” that vary. This definition provides consistency across air toxics facilities subject to chapter 7012.

Subpart 18. **Environmental justice area.**

Subpart 18 is added to define the term “environmental justice area”. Environmental justice area has the meaning given under Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 1(5). A definition of Environmental Justice area is added to the rule to clarify that it means what is defined in Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 1(5). It is reasonable to refer to the enabling Session Law for this rule to ensure consistency in definitions and direction from the Legislature.

Subpart 19. **Existing air toxics facility.**

Subpart 19 is added to define the term “existing air toxics facility”. Existing air toxics facility defines an air toxics facility that has been issued an air emission permit by the commissioner before the effective date of this chapter. When an existing air toxics facility applies for a new total facility permit after the effective date of this chapter, it is considered a new air toxics facility as defined in subpart 30. It is reasonable to clarify the meaning of an existing facility. In parts of the rule there are different conditions for an existing air toxics facility compared to a new air toxics facility. It is reasonable to define the date before which an air toxics facility must be established to be considered an existing air toxics facility.

Subpart 20. **Farmer cancer multipathway risk.**

Subpart 20 is added to define the term “farmer cancer multipathway risk”. Farmer cancer multipathway risk defines the cancer multipathway risk for a farmer scenario. A “farmer” is a hypothetical person that inhales air, incidentally ingests soil, ingests homegrown produce, drinks home-produced milk, and eats home-grown meat products (pork, beef, chicken, etc.) including eggs, that could be affected by a stationary source’s emissions. Cancer multipathway risk is the cancer risks from different exposure routes, some examples are inhalation, oral, and dermal. This definition is used when evaluating the acceptable risk levels. It is reasonable to define this term to distinguish between the different multipathway risks and it is a common term used in risk assessments.

Subpart 21. **Farmer noncancer multipathway risk.**

Subpart 21 is added to define the term “farmer noncancer multipathway risk”. Farmer noncancer multipathway risk defines the noncancer multipathway risk for a farmer scenario. A “farmer” is a hypothetical person that inhales air, incidentally ingests soil, ingests homegrown produce, drinks home-produced milk, and eats home-grown meat products (pork, beef, chicken, etc.), including eggs, that could be affected by a stationary source’s emissions. Noncancer multipathway risk is the noncancer risk from different exposure routes, some examples are inhalation, oral, and dermal. This definition is used when evaluating the acceptable risk levels. It is reasonable to define this term to distinguish between the different multipathway risks and it is a common term used in risk assessments.

Subpart 22. **Fire pump.**

Subpart 22 is added to define the term “fire pump”. Fire pump defines a water pump that is only operated during routine maintenance and testing or when unforeseen conditions require a reliable source of water for fire protection systems during emergencies. It is reasonable to define this term as it is only used in emergencies and provides consistency of the use of this term across air toxics facilities for chapter 7012.

Subpart 23. **Hazard index.**

Subpart 23 is added to define the term “hazard index”. Hazard index defines the sum of more than one hazard quotient for multiple substances with the same or similar health endpoints. It is assumed all noncarcinogens have the same or similar health endpoints during initial screening. A hazard index equal to or less than 1,

without rounding down to one significant figure, poses no appreciable likelihood of adverse health effects to individuals. It is reasonable to define this term as it is used as a value to determine if an air toxics facility has the potential to pose risk to human health. This term is consistent with how hazard indices are calculated in risk assessments.

Subpart 24. **Hazard quotient.**

Subpart 24 is added to define the term "hazard quotient". Hazard quotient defines the ratio of a single substance exposure level to an inhalation health benchmark (IHB) for that substance derived from a similar exposure period. (*e.g. Conc/IHB* where Conc is the air concentration for a particular air toxic). A hazard quotient equal to or less than 1, rounded to one significant figure, poses no appreciable likelihood of adverse health effects to the exposed general population. It is reasonable to define this term as it is used as a value to determine if an air toxics facility has the potential to pose risks to human health. This term is consistent with how hazard quotients are calculated in risk assessments.

Subpart 25. **Health endpoint**.

Subpart 25 is added to define the term "health endpoint". Health endpoint defines the observable adverse biological effect from a chemical exposure used to group chemicals for the purpose of evaluating risks from multiple chemicals. Examples of a health endpoint include increased risks for various cancers; harm to body organs such as heart, brain, liver, kidneys; harm to systems, such as respiratory, immune, nervous, endocrine, cardiovascular, reproductive; as well as developmental effects, such as lowered birth weight and birth defects. It is reasonable to define health endpoint as it is one of the acceptable risks. This term is consistent with one way risk is assessed through risk assessments and it is a common term used in risk assessments.

Subpart 26. **Human health risk assessment protocol.**

Subpart 26 is added to define the term "human health risk assessment protocol". Human health risk assessment protocol defines the procedure to estimate the nature and probability of adverse health effects in humans exposed to chemicals, consisting of four steps: hazard identification, dose-response assessment, exposure assessment, and risk characterization. It is reasonable to clarify the definition of this term as it is used in the refinement process of an AERA. The rule references a variety of different analyses and assessments, so it is important to clarify each different assessment and what content is required.

Subpart 27. **Inhalation health benchmark.**

Subpart 27 is added to define the term "inhalation health benchmark". Inhalation health benchmark defines a concentration in ambient air at or below which an air toxic is unlikely to cause an adverse health effect in a population over a prescribed duration. It is reasonable to define this term as it is used throughout the rule. Inhalation health benchmarks were used to create the screening threshold values for the screening threshold analysis and are used in calculating the risk levels in an air emission risk analysis.

Subpart 28. **Inhalation unit risk.**

Subpart 28 is added to define the term "inhalation unit risk". Inhalation unit risk defines the upper-bound excess lifetime cancer risk from inhalation exposure to a concentration of one microgram per cubic meter ($\mu g/m^3$) for a lifetime. It is reasonable to clarify the definition of this term as it is used to calculate the cancer risk at a stationary source.

Subpart 29. **MNRISKS.**

Subpart 29 is added to define the term "MNRISKS". MNRISKS stands for Minnesota statewide screening of health risks from air pollution." MNRISKS defines a risk screening tool used to understand the cumulative impacts of air pollution on Minnesotans. MNRISKS compares air pollution levels against inhalation health benchmarks to

estimate the potential health effects. It is reasonable to define MNRISKS as it is referenced in the rule and SONAR as a tool that can estimate the potential health risks. By stating a definition, it will allow the reader to better understand what MNRISKS is and how it is used by the MPCA.

Subpart 30. **New air toxics facility.**

Subpart 30 is added to define the term "new air toxics facility". New air toxics facility defines an air toxics facility applying for a new total facility air emission permit on or after the effective date of this chapter. An air toxics facility applying for a permit amendment or permit reissuance is not considered a new air toxics facility. It is reasonable to define the term new air toxics facility as some of the conditions throughout this rule are different for new air toxics facilities compared to existing air toxics facilities. It is reasonable to define terms in order to provide clarity for compliance of requirements.

Subpart 31. **Reference concentration.**

Subpart 31 is added to define the term "reference concentration". Reference concentration defines an estimate of the daily exposure to the human population, including sensitive populations, that is likely to be without appreciable risk of deleterious noncancerous effect during a lifetime, or other defined averaging time (i.e. acute, subchronic). The reference concentration is for continuous inhalation exposures over the defined averaging time and is expressed in units of micrograms per cubic meter ($\mu g/m^3$). It is reasonable to clarify the definition of this term as it is used to calculate risk levels for different exposure time periods at a stationary source.

Subpart 32. **Resident cancer multipathway risk.**

Subpart 32 is added to define the term "resident cancer multipathway risk". Resident cancer multi-pathway risk defines the cancer multipathway risk for a resident scenario. The "resident" exposure scenario assumes a hypothetical person inhales air, incidentally ingests soil, and ingests home-grown produce that could be affected by a stationary source's emissions. Cancer multipathway risk is the cancer risk from different exposure routes, some examples are inhalation, oral, and dermal. This definition is used when evaluating the acceptable risk levels. It is reasonable to define this term to distinguish between the different multipathway risks and it is a common term used in risk assessments.

Subpart 33. **Resident noncancer multipathway risk.**

Subpart 33 is added to define the term "resident noncancer multipathway risk". Resident noncancer multipathway risk defines the noncancer multipathway risk for a resident scenario. The "resident" exposure scenario assumes a hypothetical person inhales air, incidentally ingests soil, and ingests home-grown produce that could be affected by a stationary source's air emissions. Noncancer multipathway risk is the noncancer risk from different exposure routes, some examples are inhalation, oral, and dermal. This definition is used when evaluating the acceptable risk levels. It is reasonable to define this term to distinguish between the different multipathway risks and it is a common term in risk analysis.

Subpart 34. **Screening threshold value.**

Subpart 34 is added to define the term "screening threshold value". Screening threshold value defines an action level under part 7012.0300 that is used in the screening threshold analysis to determine whether the owner or operator of an air toxics facility must evaluate the facility's air toxics emissions further by developing a compliance determination protocol or completing an air emissions risk analysis. It is reasonable to define this term as it is a new type of action level created for this rule. The screening threshold values were derived to determine whether a facility needs to complete further refinements or assessments at the air toxics facility.

Subpart 35. **Sensitive receptors.**

Subpart 35 is added to define the term "sensitive receptor". Sensitive receptor defines groups of people or individuals who, due to their age or health status, are susceptible to air pollutants. Sensitive receptors may include infants, children, pregnant individuals and their fetuses, elderly, asthmatics, athletes[19], people compromised by pre-existing diseases, and immuno-compromised people. It is reasonable to define a sensitive receptor as there can be many different interpretations on what is "sensitive". The definition clarifies what a sensitive receptor means for this chapter and is needed when completing the air emissions risk analysis and it is a common term used in risk assessment.

Subpart 36. **Subchronic health endpoint.**

Subpart 36 is added to define the term "subchronic health endpoint". Subchronic health endpoint defines the target organ or system, such as neurological, respiratory, reproductive for subchronic inhalation risk. Subchronic health endpoint includes subchronic noncancer health endpoint. It is reasonable to define this term to distinguish between the different exposure health endpoints. This helps ensure that the health endpoints are investigated over a subchronic exposure, which is a time period greater than 24 hours to one year.

Subpart 37. **Subchronic inhalation risk.**

Subpart 37 is added to define the term "subchronic inhalation risk". Subchronic inhalation risk defines the risk from multiple exposures occurring over an extended period of an individual's lifetime, such as greater than 24 hours to one year, that is evaluated using the modeled highest monthly ambient air concentration over a five-year period, up to and at the stationary source's fence line. This definition is used when evaluating the acceptable risk levels. It is reasonable to define this term to distinguish between the different exposure inhalation risks, and it is a common term used in risk assessments.

Subpart 38. **Urban gardener cancer multipathway risk.**

Subpart 38 is added to define the term "urban gardener cancer multipathway risk". Urban gardener cancer multipathway risk defines the multipathway cancer risk for the urban gardener scenario. An "urban gardener" exposure scenario assumes a hypothetical person inhales air, incidentally ingests soil, ingests home-grown produce, and eats home-raised chicken eggs that could be affected by a stationary source's emissions. Cancer multipathway risk is the cancer risk from different exposure routes, some examples are inhalation, oral and dermal. This definition is used when evaluating the acceptable risk levels. It is reasonable to define this term to distinguish between the different multi-pathway risks, and it is a common term used in risk assessments.

Subpart 39. **Urban gardener noncancer multipathway risk.**

Subpart 39 is added to define the term "urban gardener noncancer multipathway risk". Urban gardener noncancer multipathway risk defines the multipathway noncancer risk for the urban gardener scenario. An "urban gardener" exposure scenario assumes a hypothetical person inhales air, incidentally ingests soil, ingests home-grown produce, and eats home-raised chicken eggs that could be affected by a stationary source's emissions. Noncancer multipathway risk is the noncancer risk from different exposure routes, some examples are inhalation, oral, and dermal. This definition is used when evaluating the acceptable risk levels. It is reasonable to define this term to distinguish between different multipathway risks, and it is a common term used in risk assessments.

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[19] Air aware labs, evidence linking air pollution to different areas. Athletes, December 8, 2025. Retrieved from https://www.airawarelabs.com/evidence/athletes

Part 7012.0060 – EXEMPTIONS BY PERMIT TYPE.

Subparts 1 and 2 are added to specify the exemptions, certification, and reporting deviations for certain permit types. Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4 (a)(2) states that the rules must include types of facilities to be regulated, other than option B registration permits under part 7007.1120. It is reasonable to state the exemptions of this rule as it will define which types of facilities will be subject to this rule and any certification needed. By listing out the exemptions clearly, air toxics facility owners and operators can easily see if this rule is applicable to their facility.

In developing this proposed rule, the MPCA sought to protect human health while considering ways of reducing burdens on regulated parties. One way of reducing regulatory burden is to focus the rules on facilities that emit air toxics at a level that is more likely to be a risk to human health. Thus, the MPCA is proposing to exempt facilities from the air toxics screening threshold step if the facility's emissions are unlikely to pose a risk to human health. The MPCA conducted an analysis of facilities potentially regulated by these rules to evaluate which facility types might be reasonable to exempt. The MPCA reviewed the air toxics emissions information voluntarily reported by facilities by permit type and compared this data to proposed screening threshold values. MPCA then used those results to evaluate whether exemptions from the rule could be made by permit type. Table 4 below provides the preliminary results of that comparison. MPCA arrived at these results using 2020 emissions data voluntarily reported to the MPCA and the developed screening threshold spreadsheet (STRATA). The results estimate how many facilities by permit type could be above screening threshold values. Not all facilities reported air toxics emissions, so the table shows how many facilities were investigated. Additionally, data on the distance to property line was not available for most facilities. For the purpose of an illustrative analysis, MPCA assumed a distance of 50 meters and a distance of 0 to 5 meters to determine if a facility may be above screening threshold values.

The MPCA used the results in Table 4 to conclude which permit types are unlikely to pose a risk to human health from air toxics emissions and thus would be reasonable to exempt from the rule. Some permit types, such as capped option 1 and nonmetallic general permits did not have any facility above screening threshold values for any distance to property line. Given this information, the MPCA decided to exempt these permit types from this new rule. Other permit types such as registration option A and C had only one facility above screening threshold values and required additional investigation. From this additional investigation, all registration option A permits are exempt from the rule, but only some option C permits are exempt from this rule. The justification and more information on the investigation are included in the following paragraphs. From the initial investigation, the MPCA estimates about 23.27% to 31.62% of facilities in the seven metropolitan counties may be above screening threshold values.

Table 4. Preliminary evaluation of voluntarily reported emissions information and screening thresholds by permit type.

Permit type	# of facilities evaluated	Total in 7 metro counties[20]	# of facilities above screening thresholds*	% of total number	# of facilities above screening thresholds **	% of total number
Registration Option A	3	5	0	0.00%	1	33.33%
Registration Option C	128	135	0	0.00%	1	0.78%
Registration Option D	297	362	77	25.93%	104	35.02%

[20] *Air permit applications in Minnesota. Retrieved from https://data.pca.state.mn.us/views/Airpermitapplicationsreceived/Permitapplications.*

Permit type	# of facilities evaluated	Total in 7 metro counties[20]	# of facilities above screening thresholds*	% of total number	# of facilities above screening thresholds **	% of total number
Capped Option 1	1	2	0	0.00%	0	0.00%
Capped Option 2	11	19	4	36.36%	8	72.73%
Manufacturing General	2	2	2	100.00%	2	100.00%
Nonmetallic General	10	22	0	0.00%	0	0.00%
Part 70 (individual)	66	65	27	40.91%	36	54.55%
State Permit (individual)	45	55	21	46.67%	26	57.78%
Total	**563**	**667**	**131**	**23.27%**	**178**	**31.62%**

*Number of facilities holding the specified permit type whose emissions are above screening thresholds if the distance from the stack to the property line is assumed to be 50 meters (assumed when specific information was not available).

**Number of facilities holding the specified permit type whose emissions are above screening thresholds if the distance from the stack to the property line is or is assumed to be 5 meters or less.

MPCA proposes exempting some permit types under this part. Descriptions of why each permit type is exempt are detailed below. Additionally, the MPCA has developed a screening threshold analysis to determine if an air toxics facility is above screening threshold values. This analysis was developed to narrow down which air toxics facilities must do additional analysis or take action to reduce emissions that may pose a higher risk to human health. These are just a couple examples of how MPCA has focused the scope of the rule to address potential risks to human health while reducing regulatory burden.

Subpart 1. **Exemptions.**

Subpart 1 and items A to D are added to clarify which permit types are exempt from this chapter. Items A to D list the different permit types. Each permit type has a different reason for its exemption from the rule. It is reasonable to list which permit types are exempt from this chapter to clarify who is subject to chapter 7012. From initial analyses done by the MPCA, not all permit types are expected to be above screening threshold values (results shown in Table 4). Thus, it is reasonable to exempt some permit types that are not expected to be above screening threshold values and focus the work on facilities that may be emitting air toxics that could potentially impact human health and the environment. This eliminates extra work for a facility with a permit type that is not expected to be above screening threshold values, and therefore not expected to increase risk.

Item A is added to clarify that the owner or operator of an air toxics facility operating in compliance with parts 7007.1110 and 7007.1115, relating to registration permit option A requirements, are exempt from complying with this chapter. A facility is required to obtain an option A permit solely because it is subject to a New Source Performance Standard under 40 CFR pt. 60; otherwise, these facilities would not require an air permit. It is reasonable to exempt option A permit holders from the requirements of chapter 7012, because facilities qualify for an option A permit by having potential emissions below the state or federal permit thresholds but otherwise require a permit because the facility is subject to a federal regulation, as listed under part 7007.0250. If the facility was not subject to a federal regulation, it would not require an air permit and would not be subject to chapter 7012 as chapter 7012 applies to permitted air toxics facilities. The potential to emit (PTE) of option A permit holders is required to remain below permit thresholds. MPCA's initial analysis shows facilities with option A permits who have voluntarily reported air toxics emissions are all below screening threshold values, with the exception of one facility. Upon more investigation into this one facility the estimated stack parameters (stack height of 50 feet and distance to property line of 0-5 meters) used in the screening threshold analysis would not be reasonable for the facility and the MPCA concluded the facility would more than likely not be above screening

threshold values. It is reasonable to conclude that other facilities with option A permits would also likely be below screening threshold values. It is reasonable to exempt facilities that are likely categorically to be at or below screening threshold values to reduce facility and agency resources to conduct screening analyses.

Item B is added to clarify that the owner or operator of an air toxics facility operating in compliance with parts 7007.1110 and 7007.1120, relating to registration permit option B requirements, are exempt from complying with this chapter. It is reasonable to exempt these option B facilities because these facilities are exempt under Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(a)(2), which specifies that all permit types are to be regulated by this rule other than option B facilities. Registration option B permits are also exempt from the recently amended chapter 7019 that addresses air toxics emissions reporting requirements.

Item C and subitems (1) and (2) are added to clarify that the owner or operator of an air toxics facility operating in compliance with parts 7007.1110 and 7007.1125, relating to registration permit option C requirements, and that only emits air toxics from fuel combustion for indirect heating units, such as boilers, or reciprocating internal combustion engines and does not have emissions from the use of VOC-containing materials under part 7007.1125, and the air toxics from the indirect heating units or reciprocating internal combustion engines are reported under part 7019.3020, is exempt from complying with this chapter. It is reasonable to exempt option C permit holders if a facility only emits air toxics from fuel combustion, because air toxics emissions from sources qualifying for an option C permit are not expected to exceed screening threshold values with only air toxics emissions from combustion. Existing air toxics emissions inventory data shows preliminary results of one facility above screening thresholds, as shown in Table 4, above. This facility had an air toxic reported from VOC-containing materials. However, other option C facilities that were investigated only had emissions reported from indirect heating units and were not above screening threshold values. From this analysis, it is reasonable to exempt facilities that only report emissions from indirect units or reciprocating internal combustion units as these facilities are likely to be at or below screening threshold values and will reduce facility resources to conduct a screening threshold analysis.

Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(a)(2)(ii) states that the rules must address types of facilities to be regulated, including, at a minimum, facilities that have been issued an air quality permit, and that purchase or use material containing volatile organic compounds. Because of this legislative directive and the results of MPCA's internal analyses, it is reasonable to not exempt option C permits if the facility has air toxics emissions from the use of VOC-containing materials. Air toxics emissions information from option C permit holders with activities using VOC-containing materials are typically not reported to the MPCA, so there was not enough information to reasonably assume that these facilities pose little to no risk. The one facility that reported this data did so because of an MPCA-initiated data request. MPCA's internal analysis of all the facilities in the seven metropolitan counties found that reported emissions from VOC-containing material would put this facility above screening threshold values. The one facility that reported VOC-containing materials reported ethylene oxide emissions. Assuming an estimated stack height based on EPA default stack parameters for standard classification codes (SCCs) and a very short distance to property line resulted in the facility being above screening threshold values.

In the past, facilities with registration option C permits have not been encouraged or were not able to report air toxics as part of the voluntary triennial air toxics emissions inventory reporting. Unlike other permit types, option C facilities are not required to track HAP emissions as part of their permit requirements. In 2023, MPCA worked with EPA Region 5 in response to inquiries concerning the use of ethylene oxide (EtO) for sterilization purposes in Minnesota hospitals. The EPA's Office of Air Quality Planning and Standards (OAQPS) indicated ongoing efforts to develop regulations addressing EtO emissions. From this effort, MPCA collected EtO emissions information from this facility. Given that the MPCA has very little specific air toxics emissions data associated with VOC-containing materials at option C facilities, the MPCA does not know what air toxics are emitted and therefore is not

confident in what risks they may pose. Because of this, exempting these facilities that emit air toxics from VOC-containing materials from the rule could not be justified.

Option C facilities are required to report VOC use, but not specific air toxics emissions associated with VOC-processes. While the MPCA has very little air toxics emissions data from option C permits, the recent amendments to chapter 7019 will require option C permits in the seven metropolitan counties to report air toxics emissions starting with the 2026 Emissions Inventory. Due to the timing of this rule, the MPCA will not know if any other facility will report VOC-containing materials, and therefore the MPCA is not confident in exempting all option C facilities from the rule as the emissions data is still unknown.

Item D is added to clarify that the owner or operator of an air toxics facility operating in compliance with a nonmetallic mineral processing general permit under part 7007.1100, relating to general permit requirements, are exempt from this chapter. The majority, if not all, of the air toxics emissions at these facilities can be attributed to fuel combustion. It is reasonable to exempt nonmetallic mineral processing general permit holders from complying with the rule if they are only emitting air toxics from activities allowed under the nonmetallic general permit. From initial screening analyses of all facilities, out of the 23 nonmetallic general permitted facilities in the seven metropolitan counties, MPCA reviewed emissions for 10 facilities that reported air toxics emissions associated with combustion and none of those facilities were above screening threshold values using conservative stack estimations. Since most, if not all, of the air toxics emissions from these facilities are attributed to fuel combustion, it is reasonable to assume the other facilities in this category will also not exceed screening threshold values. It is reasonable to exempt facilities that are likely categorically to be at or below screening threshold values to reduce facility and agency resources to conduct screening analyses. In addition, the proposed rule also exempts option C permits that only emit air toxics from fuel combustion, so also exempting nonmetallic mineral processing facilities that only emit air toxics from fuel combustion gives reasonable internal consistency across regulated parties.

Subpart 2. **Certification; option C permits.**

Subpart 2 and items A and B are added to clarify what needs to be submitted for a facility to use the exemption under part 7012.0060, subpart 1, item C, and that the certification must comply with part 7012.0140 to certify that items A and B of subpart 2 are correct. The certification must be submitted in the timeline outlined in 7012.0200. Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(a)(2), (a)(4), (a)(5), and (a)(6) require the MPCA to address respectively, at a minimum:

- The types of facilities that must be regulated under this rule, including facilities that purchase or use material containing volatile organic compounds;
- Monitoring of production inputs or other parameters;
- Requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions and compliance with emission limits in the facility's permit; and
- Record keeping related to air toxics emissions.

It is reasonable to clarify that if an air toxics facility has an option C permit and is using the exemption under part 7012.0060, subpart 1, item C, the facility must certify that it is only emitting air toxics from indirect heating units, such as boilers, or reciprocating internal combustion engines and it does not have emissions from the use of VOC-containing materials, and the emissions are reported under part 7019.3020, subpart D. This certification from the facility helps MPCA ensure that the facility is only emitting air toxics from indirect heating units or internal combustion engines by providing MPCA documentation of a facility's expected operations so the MPCA can verify this during inspections. Additionally, it is reasonable to require that the certification be submitted in the timeline outlined in 7012.0200. Even though the facility may be exempt, it would still need to certify that it is exempt and the reasons why it is exempt. Asking the facility to confirm that it has an exemption under part 7012.0060, subpart 1, item C puts the responsibility on the facility to accurately report its information and

clarifies that the facility expectations to comply with applicable rules and regulations. This certification is a form of recordkeeping and reporting of a facility's monitoring of specific parameters to determine air toxics emissions and therefore is reasonable under the Session Law.

Item A is added to clarify that facilities exempt under part 7012.0060, subpart 1, item C must certify that air toxics are only emitted from indirect heating units, such as boilers, or reciprocating internal combustion engines. It is reasonable to clarify that a facility that is exempt under part 7012.0060, subpart 1, item C, must certify that it only has emissions from indirect heating units, such as boilers, or reciprocating internal combustion engines. This clarifies and helps ensure that the facility understands the applicable air toxics rules and provides documentation that the facility only has air toxics emissions from indirect heating units, such as boilers and combustion engines. This certification from the facility provides MPCA documentation of a facility's expected operations so the MPCA can verify this during inspections.

Item B is added to clarify that facilities that are exempt under part 7012.0060, subpart 1, item C must certify that they do not have emissions from use of VOC-containing materials reported under part 7019.3020. Under the Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(a)(2)(ii), it states that facilities that purchase or use material containing volatile organic compounds should be regulated. Given the language in the Session Law, it is reasonable to have an air toxics facility that will be exempt under part 7012.0060, subpart 1, item C, verify that it does not have any emissions from using VOC-containing materials, other than conditionally insignificant activities or insignificant activities. This certification from the facility provides MPCA documentation of a facility's expected operations so the MPCA can verify this during inspections.

Part 7012.0070 – EXEMPTION; AIR EMISSIONS RISK ANALYSIS IN LIEU OF SCREENING THRESHOLD ANALYSIS

Items A to D are added to outline other conditions that may exempt a facility from compliance with this chapter. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subdivisions 4(a)(1) and 4(a)(5) require the MPCA to address respectively, at a minimum, specific air toxics to be regulated, and requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions and the facility's compliance with emission limits in the facility's permit. A facility may already have existing information related to these Session Law directives, such as a finalized AERA report, that contains specific emissions information for regulated air toxics, as well as information to assist the agency in determining the amount of air toxics the facility emits and what limitations are currently or will need to be included in the facility's air permit to ensure compliance. Including criteria that the AERA must meet in order to be acceptable ensures that the grounds for the requested exemption are the most recent and accurate reflection of the operations at the facility. It is reasonable to list other exemptions to the rule that do not pertain to the facility's permit type that may provide information the MPCA can use to determine compliance with chapter 7012.

Item A is added to clarify that the owner or operator of an air toxics facility may request, in a format specified by the commissioner, an exemption from completing a screening threshold analysis under part 7012.0150 if the owner or operator completes an air emissions risk analysis report according to item B. It is reasonable to clarify the criteria that must be met as it helps ensure that all the information needed for MPCA to make a determination on excluding a facility from conducting a screening threshold analysis is present. The criteria listed in item B and subitems (1) and (2) allows facilities that have recently completed an AERA to not have to duplicate work but also covers the situations where risks from air toxics may have changed since the last AERA submittal.

Item B and subitems (1) and (2) are added to clarify that the commissioner must grant an exemption under item A if all the criteria listed in item B are met. By listing the criteria that the AERA must contain for it to be exempt, this ensures that all AERAs submitted meet the same standards. It is reasonable to clarify the conditions in which a commissioner must grant an exemption, as it helps ensure that all facilities are evaluated consistently to reduce

uneven economic and regulatory burden. Additionally, the list of criteria needed to use an AERA is necessary for a facility to understand what criteria it must meet for the exemption. This allows the facility to know ahead of time whether another screening threshold analysis is needed or if an AERA could be used instead.

Subitem B(1) is added to clarify that the AERA report must meet all the criteria in units (a) to (d). It is important to specify the criteria needed in an AERA report to use the report in lieu of completing a screening threshold analysis. It is reasonable to list the requirements for the AERA report as it helps ensure that all facilities are evaluated consistently.

Unit (a) is added to clarify that the AERA report used as a basis for an exemption must demonstrate results at or below acceptable risk levels in part 7012.0560, subpart 3, as applicable. The main purpose of an AERA report is to estimate the risk levels at a facility and compare these estimated risk levels to acceptable risk levels. After the adoption of this chapter, if a facility is above acceptable risk levels, the facility would have to complete an air toxics reduction plan (ATRP) or could develop a compliance determination protocol (CDP). Both options are enforceable documents that may ensure compliance with acceptable risk levels or screening threshold values, depending on the document. It is reasonable to require that the previously completed AERA report must also demonstrate results at or below acceptable risk levels. This shows that the facility is currently complying with acceptable risk levels, as opposed to actively working towards compliance with the acceptable risk levels. This ensures the facility's current operations are at or below acceptable risk levels, which eliminates the need for an air toxics facility to perform a more general, less detailed screening threshold analysis.

Unit (b) is added to clarify that the AERA report used as the basis for exemption from the screening analysis requirement must have been completed within three years before the deadline established in part 7012.0200. It is reasonable to limit the number of years between a completed AERA report and completing a screening threshold analysis. Limiting the number of years since completion of the AERA being used to request exemption from the screening analysis ensures that the exemption is based on reasonably up-to-date data. Requiring a shorter deadline period of one or two years would limit the number of facilities that could use a previous AERA as AERAs are not completed often. The MPCA compared previously voluntarily reported air toxics emissions data from year to year, and it indicates that air toxics emissions may not change significantly enough over one year to change the results of an AERA report. MPCA explored a two-year deadline but determined that, like the one-year deadline, the emissions data may be too similar and may result in extra work for the facility to complete the AERA report without significant human health benefit. The MPCA investigated previously voluntarily reported air toxics emissions data, which indicates that air toxics emissions may change significantly enough over three years to impact the results of an AERA report. Therefore, the three-year deadline ensures that MPCA is getting reasonably up-to-date emissions information from the air toxic facility, and the facility is not completing an AERA report that is unlikely to provide results different from the previous AERA report.

Unit (c) is added to clarify that the AERA must be completed on or after the effective day of this chapter. It is reasonable to ensure that any AERA report used was approved after this current chapter was promulgated. Currently, there are no regulations that require facilities to be at or below acceptable risk levels in order to get an air quality permit so an AERA completed prior to the effective date of these rules will not have required the same results as an AERA completed after the effective date of chapter 7012. If the air toxics facility completes an AERA after rule promulgation, this subitem ensures that the facility will follow the criteria that are specified in this rule, and that the air toxics facility will be at or below acceptable risk levels and use the same inhalation health benchmarks (IHBs).

Unit (d) is added to clarify that the AERA must contain all emission units that emit air toxics and there have been no increases in emissions of air toxics with an IHB since the last AERA was completed. It is reasonable to require a facility to complete a screening threshold analysis if there is a new emission source that emits air toxics and/or there is an increase in air toxic emissions from an existing source since completion of the previous AERA. Adding a new emission source or increasing air toxic emissions from an existing source may result in the facility no

longer being at or below acceptable risk levels. Based on this uncertainty, it is reasonable to not exempt such a facility from completing a screening threshold analysis. This will ensure that a facility that has made changes resulting in increased air toxics emissions since the last completed AERA will not be exempt from the screening analysis.

Subitem B(2) is added to clarify that the commissioner must grant the exemption under item A if the emissions of air toxics with an inhalation health benchmark have not increased since the AERA was completed. When an AERA report is completed, the facility will use potential emissions for the facility. However, changes can be made to a facility, such as adding equipment that could increase air emissions. Since the risk levels are calculated using these potential emissions, the risk levels may have increased if air toxic emissions increased. It is reasonable to require that no air toxic emissions with IHBs have increased since the completion of the AERA.

Item C is added to clarify that the commissioner must deny requests that are not complete and requests that do not meet the requirements under item B. An owner or operator may resubmit a request after addressing factors that led to the denial. It is reasonable to specify that the commissioner can deny requests with incomplete data, or requests that do not meet the requirements under item B. To exempt an air toxics facility from completing a screening threshold analysis, all the information is needed to approve the request. It is reasonable to allow resubmittal of a previously denied exemption request, because it allows air toxics facilities to revise and correct their original submittal without having to start the process over again.

Item D is added to clarify the timeline of the submittal of the exemption request. The request must be received at least 60 calendar days before the deadline for the submittal of the screening threshold analysis certification under part 7012.0200. It is reasonable to clarify the timeline to submit a request to be exempt by an air toxic facility completing a screening threshold analysis. It is reasonable that air toxics facilities must submit a request 60 calendar days before the deadline for the screening threshold analysis as this gives the commissioner ample time to review the documentation for compliance with the criteria listed in subpart 1, item A.

Part 7012.0100 – COMPLETE SUBMISSIONS.

Part 7012.0100 is added to clarify that if, while processing a submission under this chapter that was initially deemed complete, but the commissioner determines that additional information is necessary to evaluate or take final action on the submission, the commissions must request the information in writing and after consulting the owner or operator, set a deadline for a response. Additionally, the commissioner must explain why the additional information is needed and if the owner or operator fails to respond to a request for additional information within the time requested, the submission is not complete. This new chapter contains several submissions needed from air toxics facilities. To ensure that submissions contain all the information needed, the definition of complete is defined in 7012.0055, subpart 14. This part is added to expand on that definition and clarify that a submission initially deemed complete may need additional information to finalize the submission. It is reasonable to clarify the process in which a facility would go through to finalize a submission. There may be instances where the facility's submission is deemed complete, but the commissioner determines that additional information is needed to take final action on the submission. It is reasonable to require the commissioner to state in writing what information is needed and why the additional information is needed to provide clarity to all parties. Furthermore, it also is reasonable for the owner or operator and the commissioner to establish a timeline for the resubmission of this information. This helps ensure that all the information is provided in the resubmittal and that the submission is more likely finalized as complete. There are many deadlines in the rule for different submissions so requiring an additional deadline for additional information helps ensure that the facility complies with subsequent deadlines set in rule. Lastly, it is reasonable to deem a submission incomplete if the owner or operator fails to respond to the request for additional information within the time requested. The commissioner and facility would have agreed on a timeline for the additional information, furthermore, the commissioner would have stated in writing what additional information was needed. If the facility cannot provide this

information in the agreed upon timeline, then it is reasonable to deem the submission not complete. This helps ensure that all submissions are complete based on the definition in 7012.0055, subpart 14 and if more information is needed that those requirements are understood by the air toxics facility.

Part 7012.0140 – CERTIFYING SUBMISSIONS.

Part 7012.0140 is added to clarify that all submittals under chapter 7012 must be signed and certified by the responsible official, as defined in part 7007.0100, subpart 21, and must make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision by qualified personnel. The information submitted is to the best of my knowledge and belief, true, accurate, and complete." It is reasonable to clarify that the responsible official from an air toxics facility must certify that any information submitted under chapter 7012 is accurate. The certification allows the facility to confirm that information it provides is true, accurate, and complete, and provides confidence for both regulated parties and the MPCA that the submittal was completed by personnel who have the knowledge and authority to review and certify the work submitted. Similar certifications are required for other permitting submittals under 7007.0500, subpart 3, and emissions inventory submittals under 7019.3000, subpart 1(A). It is reasonable to require consistent certifications and clarify expectations for owners and operators.

Part 7012.0150 – AIR TOXICS SCREENING THRESHOLD ANALYSIS.

Subparts 1 to 3 are added to detail the requirements for completing a screening threshold analysis and detail the process for when an air toxics facility is above screening threshold values. The Minnesota Legislature mandated the MPCA to adopt rules to implement and govern the regulation of facilities that emit air toxics. In addition, the Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(1) and 4(a)(5) require the MPCA to adopt rules to address respectively, at a minimum, specific air toxics to be regulated, requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions and the facility's compliance with emission limits in the facility's permit. In subdivision 4(b)(1), the law also requires, in developing the rules, that the MPCA establish rule requirements that reflect the different risks to human health and the environment posed by the specific air toxics and amounts emitted by a facility such that facilities posing greater risks are required to provide more frequent evidence of permit compliance. The air toxics screening threshold analysis establishes a framework for facilities to assess the risk of air toxics pollutants emitted and a framework for the MPCA to assess what regulation is required to help ensure air toxics emissions are not harmful to human health and the environment. The air toxics screening threshold analysis is used to determine facilities that may be posing a higher risk based on the facility's air toxics emissions and reduces the regulatory burden for facilities that are posing a lower risk.

The screening threshold analysis uses facility specific information such as stack height, stack distance to property line, and air toxics emissions to determine if a facility is above screening threshold values. The screening threshold values are used to determine whether further risk assessment and/or changes to operations are needed at a facility to limit the potential health risks associated with emitted air toxics. To determine if a facility is above screening threshold values, that are both lb/hr and tons/yr, the facility will need to provide information about the stack height, stack distance to property line and air toxics emissions in lb/hr and tons/yr. The stack height and stack distance to property line are used to estimate the dispersion characteristics from a stack. For instance, a shorter stack with a distance closer to the property line would have a higher air dispersion model output. Since the equation to calculate screening threshold values is an IHB divided by the air dispersion model output, a higher air dispersion model output would result in a lower screening threshold value. Conversely, a taller stack with a larger distance to property line would have a lower air dispersion model output, resulting in a higher screening threshold value. In this screening threshold analysis, the facility must address emitted air toxics at the facility by entering air toxic emissions for each stack. The emissions are compared to the screening

threshold value for a given stack height and stack distance to property line. If the facility is above any screening threshold value, the facility must determine next potential steps for regulation based on the risk posed by the air toxic(s). The facility has the option to develop a compliance determination protocol (CDP) or complete an air emissions risk analysis (AERA). More information on these options is detailed in part 7012.0450 and 7012.0550.

SONAR exhibit 2 details how the screening threshold values were derived and a discussion on why certain parameters were used in the modeling to develop the screening threshold values. Screening threshold values are calculated using air dispersion modeling outputs and IHBs. The air dispersion modeling that was used to derive the screening threshold values was done for the seven metropolitan counties and assumed environmentally conservative stack parameters for temperature, exit velocity, and emission rate. The assumed stack parameters are environmentally conservative because they result in lower dispersion and therefore more protective screening threshold values. The resulting screening threshold values are an action level for which a facility will have to regulate the facility's air toxics emissions. Air toxics screening threshold values are not as facility specific as the modeling completed in an AERA, since they rely on modeling conducted with conservative stack parameters and generalized terrain across the seven metropolitan counties. However, these screening threshold values allow the MPCA to focus its efforts on facilities that could be posing a higher risk.

The MPCA has calculated a matrix of screening threshold values based on stack height and distance to property line, which allows for more granular threshold values for a facility to compare its emissions to, instead of relying on one value for each air toxic for a stack with any stack height and distance to property line. These values are environmentally conservative, or protective, enough that higher risk facilities are not expected to be "screened out" of the process, but not too conservative that all the facilities in the seven metropolitan counties, particularly lower risk facilities, are "screened in" to the process. It is therefore reasonable to use screening threshold values as the initial step to determine if the emissions from an air toxics facility could potentially impact human health. If an air toxics facility is above the screening threshold value, it provides a basis for any further evaluations and actions needed to protect human health. Providing these requirements clarifies the screening threshold analysis process so there is consistency across air toxics facilities. It is reasonable to establish an air toxics screening threshold analysis as a framework to implement and govern the regulation of facilities that emit air toxics to help efficiently use both facility and MPCA resources.

Subpart 1. **Screening threshold requirement.**

Subpart 1 and items A and B are added to clarify the screening threshold requirement for an air toxics screening threshold analysis. Item A is added to clarify the requirements needed to submit a screening threshold analysis except for facilities exempted by parts 7012.0060 and 7012.0070. Specific requirements are added to clarify that an owner or operator of an air toxics facility must ensure hourly and annual emissions are at or below screening threshold values under part 7012.0300, subpart 1 for a given stack or fugitive emission source with specific emissions. Except as provided in item B, an analysis must be performed according to parts 7012.0300 and 7012.0400. The results of the analysis must be certified to the commissioner according to part 7012.0200. Stack emission sources release or vent emissions through a specific point, that could be referred to as a stack, vent, chimney or other functionally equivalent opening. Fugitive emission sources have pollutant discharges that could not reasonably pass through a stack, chimney, or other functionally equivalent opening.

The screening threshold analysis is completed to eliminate from further analysis or action facilities that may not be posing a potential risk to human health. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(b)(1) states that, in developing the rules, requirements must reflect "different risks to human health and the environment posed by the specific air toxics and amounts emitted by a facility". The screening thresholds values are used in the screening threshold analysis to determine if a more refined risk assessment and/or changes to operations need to be taken at an air toxics facility. The seven metropolitan counties have over 660 air toxics facilities, and it is not feasible nor reasonable to ask all the facilities to complete an AERA if a facility is not expected to pose a risk to human health and the environment. The screening threshold values help

to indicate which facilities could be posing a higher risk to human health and when further analysis is required. It is reasonable to require a screening threshold analysis to ensure that air toxics emissions are quantified and compared to screening threshold values. It is reasonable to require the screening threshold analysis to help determine which air toxics facilities could potentially pose a risk to human health and the environment.

Item B is added to clarify that an owner or operator of an air toxics facility is in compliance with this subpart if completing an air emissions risk analysis or developing a compliance determination protocol according to subpart 2. To comply with the screening threshold analysis, the facility must certify that it is at or below threshold values. If the facility is not at or below screening threshold values, the facility will have to either develop a compliance determination protocol (CDP) or complete an air emissions risk analysis (AERA) and demonstrate its impact from potential emissions (PTE) of air toxics is at or below acceptable risk levels in an AERA. It is reasonable to use this method as it indicates which facilities are not likely to pose a potential risk to human health and the environment. Screening out low-risk facilities allows facilities and MPCA to focus resources on more rigorous AERA analyses or developing CDPs to reduce emissions for facilities that do pose a potential risk to human health and the environment. It is reasonable to scale the level of analysis and resources to the level of risk to human health and the environment posed by a facility. By reducing the number of facilities that complete a more rigorous analysis, this minimizes the work completed by regulated parties, while protecting human health and the environment.

Subpart 2. **Exceeding screening threshold values; existing air toxics facilities.**

Subpart 2 and items A and B are added to clarify that if an existing air toxics facility emits any air toxics above screening threshold values under part 7012.0300 subpart 1, the owner or operator must either develop a CDP according to part 7012.0450 or complete an AERA according to parts 7012.0550 to 7012.0565. It is reasonable to clarify that if an existing air toxics facility is above screening threshold values for any air toxic, the facility has a choice of either developing a CDP or completing an AERA, because either option results in protections to human health and the environment, and the choice allows flexibility for owners and operators to decide what works best for their operations. The option to develop a CDP as allowed by item A, is restricted to only existing air toxics facilities. It is reasonable to exclude air toxic facilities applying for a permit after the effective date of the rule from the option to comply with subpart 2 item A (developing a CDP) because air toxics facilities applying for a permit after the rule is effective will have an opportunity to evaluate proposed operations against the screening threshold values prior to permit issuance. Air toxics facilities making these evaluations prior to applying for a permit can then tailor operations to emit air toxics at or below screening threshold values. A CDP is intended for existing facilities to make reductions in their actual emissions to be at or below screening threshold values without having to apply for a new permit.

The other option available to existing facilities is to complete an AERA. An AERA is intended for facilities that cannot reduce their actual emissions to at or below screening threshold values. In some cases, results from an AERA may indicate that the facility will need to take limits. Given this possibility, an AERA may not be an option for existing facilities holding a capped or registration permit as facilities with these permit types are unable to take site-specific limits, thus it is reasonable to provide the CDP as an option to comply with the rule for those permit types.

Item A is added to clarify that if an existing air toxics facility emits any air toxics above the screening threshold values under part 7012.0300, subpart 1, the owner or operator has the option to develop a CDP according to part 7012.0450. It is reasonable to provide facilities with the option to develop a CDP when the facility's actual emissions are above the screening threshold values so that they can show compliance with screening threshold values. A CDP gives facilities the flexibility to not have to complete an AERA and potentially take site-specific limits that would otherwise require them to acquire a different permit type.

During the AERA process a facility may be required to take site-specific permit limits to demonstrate compliance with the acceptable risk levels, which would make a registration, capped, or general permit holder ineligible to retain its permit. The option of developing a CDP to reduce actual emissions instead of possibly needing to accept site-specific permit limits gives existing air toxics facilities a compliance option that will allow them to continue to operate under their current permit type. For instance, if a facility holding a registration permit was above screening threshold values but did not want to complete an AERA and possibly have to convert to an individual permit type, the facility could develop a CDP to maintain actual emissions to at or below screening threshold values and continue to hold a registration permit. It is reasonable to give owners and operators flexibility in choosing a pathway for compliance that works best for their existing air toxics facility.

Furthermore, an AERA includes calculating potential to emit for air toxics, which registration permit holders are otherwise not required to do. It is further reasonable to avoid the possibility of general, registration, or capped permit holders possibly needing site-specific limits as a result of the AERA and the regulatory burden of applying for and complying with an individual permit.

Additionally, it is reasonable to propose a compliance option that reduces the possibility of the MPCA receiving a large volume of AERA submittals and permit applications, which would strain agency resources, when submittals with low risk to begin with may not necessarily result in appreciable improvements to human health or environment.

It is important to note, however, that the rule allows existing registration, capped, and general permit holders the option to complete an AERA under subpart 2, item B. The screening threshold analysis uses conservative estimates for a given stack height and distance to property line. However, if a facility completes an AERA it is able to use more site-specific stack information that would provide more accurate risk estimates for a given facility. It is possible that the result of the AERA would not require a facility to take site-specific limits. In other words, completion of an AERA does not automatically require a facility to take site-specific limits nor apply for an individual permit type.

Item B is added to clarify that if an existing air toxics facility emits any air toxics above the screening threshold values under part 7012.0300, subpart 1, the owner or operator has the option to complete an AERA according to parts 7012.0550 to 7012.0565, if they have chosen not to develop a CDP. It is reasonable to require an air toxics facility to complete an AERA if the facility exceeds screening threshold values and chooses not to develop a CDP. An AERA allows an air toxics facility to demonstrate that its facility does not exceed acceptable risk levels. An AERA is more site specific to a facility, compared to the screening threshold analysis, and incorporates a facility's potential to emit (PTE), sometimes referred to as potential emissions, versus using actual emissions in the screening threshold analysis. In the absence of a CDP, it is reasonable to require an air toxics facility to complete an AERA, to demonstrate that it does not have the potential, based on the maximum amount of emissions it may emit, to cause a potential risk to human health and the environment.

Subpart 3. **Exceeding screening threshold values; new permit applications.**

Subpart 3 is added to clarify that if an owner or operator of an air toxics facility is applying for an individual or general permit after the effective date of this chapter and will emit air toxics above the screening threshold values under part 7012.0300, subpart 1, the owner or operator must complete an AERA according to parts 7012.0550 to 7012.0565. It is reasonable to require that air toxics facilities applying for a new individual or general permit after the rule effective date complete an AERA and not have the option to complete a CDP. At the time of application, these facilities will not have had actual emissions to report that represents the higher operating capacity that required them to apply for an individual or general permit. These air toxics facilities will evaluate their estimated actual emissions against the screening threshold values; therefore, an air toxics facility will have the opportunity to tailor its estimated operations to avoid exceeding the screening threshold values. It is reasonable to provide clarity of expectations for new air toxics facilities. Consistency in the application of these

rules and analyses completed ahead of construction allows new air toxics facilities to reduce the cost of implementation, as compared to existing air toxics facilities that may have to make changes to an already operating facility.

Note that subpart 3 only applies to permit applications for general and individual permits, not registration and capped permits. This is because air toxics facilities applying for registration and capped permits after the effective date of the rule will be required to remain at or below screening threshold values; therefore, these facilities are not allowed to exceed screening threshold values and will not need to complete a CDP or AERA. Refer to the specific reasonableness section for parts 7007.1115, 7007.1125, 7007.1130, and 7007.1140 for discussion on the requirement to remain at or below screening threshold values.

Part 7012.0160 – REPEATED AIR TOXIC SCREENING THRESHOLD ANALYSIS.

Subparts 1 to 4 are added to clarify the applicable timeline for repeated screening threshold analysis certification submittals, exemptions, and repeated screening threshold analysis certification requirements for air toxics facilities. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(1), (a)(4), and (a)(5) require the MPCA to address respectively, at a minimum:

- The specific air toxics to be regulated;
- Required monitoring of air emissions;
- Monitoring of production inputs or other parameters requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions and compliance with emission limits in the facility's permit;

In subdivision 4(b)(1), the law also requires, in developing the rules, that the MPCA establish rule requirements that reflect the different risks to human health and the environment posed by the specific air toxics and amounts emitted by a facility, so that facilities posing greater risks are required to provide more frequent evidence of permit compliance.

The requirement for a repeated air toxics screening threshold analysis helps the MPCA meet these statutory requirements on a repeated basis because the facility must address air toxics emitted at the facility and confirm the facility is continuing to operate at or below screening threshold values. The repeated nature fulfills specifically Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4 (a)(5) as the facility will continue to monitor inputs and other parameters to determine the amount of air toxics emitted from a facility.

It is reasonable to require air toxics facilities to submit a screening threshold analysis with their updated air toxics emissions to ensure that the facility is still at or below screening threshold values because it is unlikely that the facility's emitted air toxics will remain static over time. It is also reasonable to specify the requirements for the repeated screening threshold analysis and resubmittal of the screening threshold analysis certification. Having clearly stated repeated screening threshold analysis requirements is necessary to provide consistent application across air toxics facilities, and to help address any increases in risk that changes at facilities may pose. Repeated screening threshold analyses address changes in operation at air toxics facilities and therefore changes in risk, and potential impact. By making the requirements clear, specifying the timeline, specifying exemptions, and determining which facilities the repeated screening threshold analysis requirements apply, it makes it clear to an air toxics facility if it is subject to repeated air toxic screening threshold analysis and recertification. Repeated screening threshold analyses help ensure that the MPCA is aware if there is an increased risk and can require additional action from air toxics facilities to address the increase in air toxic emissions and risk, resulting in continued protection of human health and the environment.

Subpart 1. **Applicability.**

Subpart 1 and items A and B are added to clarify that an owner or operator of an air toxic facility must complete a repeated screening threshold analysis under certain conditions listed in items A and B. It is reasonable to clarify the conditions when an air toxics facility will have to complete a repeated screening threshold analysis to address changes in operations and therefore potential increases in risk. Air toxics facilities' actual air toxics emissions may change year to year depending on the operations of the business and work completed. Furthermore, under some permit types, facilities are allowed to make changes to their operations without having to notify the MPCA. To address the changes that can occur annually, air toxics facilities are required to complete a repeated screening threshold analysis depending on the results of their initial screening threshold analysis. By asking air toxics facilities to confirm that their facility is still at or below all screening threshold values, it confirms to the MPCA and the public that the facility is continuing to not potentially pose a risk to human health and the environment.

Some permit types are also allowed to aggregate emissions for similar units for calculating emissions for the emissions inventory and do not report emissions by stack. In such situations, it is difficult for the MPCA to determine internally if a facility is above screening threshold values, and it is reasonable for the MPCA to require additional screening threshold analysis to ensure the facility is still at or below screening threshold values years after the initial screening threshold analysis. This way facilities that previously certified they were at or below screening threshold values, or have a CDP, that may have changed operations over time as allowed by the air toxics facility's permit, will be required to reevaluate its emissions against screening threshold values.

Facilities that complete an AERA (and possibly an ATRP) are required to use potential emissions when modeling their facility. Since potential emissions represent the worst-case operation of a facility for each pollutant, which is likely much greater than the actual emissions used in the screening threshold analysis, it is reasonable to assume that if the facility is at or below acceptable risk levels in either an AERA or takes emission limits in an ATRP to stay at or below acceptable risk levels, the facility's operations pose little to no potential risk. Additionally, some air toxics facilities completing an AERA or ATRP will likely have to take permit limits. These permit limits provide more reassurance that the facility is not posing a risk, compared to a facility that initially screens out of the process but then may add equipment, change operations, change product, etc. and may have increased risk as a result.

If the PTE has been updated to show that the facility is at or below acceptable risk levels then the facility does not have to complete a repeated screening analysis, as PTE represents the worst case permitted operation at a facility. However, if actual emissions are updated through a CDP, the MPCA requires the air toxics facility to complete a repeated screening threshold analysis because actual emissions typically vary from year to year, unlike PTE.

Through the development of this rule, MPCA has used the most recent and relevant science data. Inhalation health benchmarks (IHBs) can change as new science emerges. If the IHBs are changed, this could impact the screening threshold values. Requiring facilities that have previously developed a CDP or have no air toxics above threshold values to complete the repeated screening threshold analysis ensures that the facility is still operating at a rate that does not exceed screening threshold values. This repeated screening threshold analysis could also account for updates to IHBs. However, any updates to the screening threshold values listed in part 7012.0300, subpart 1 to account for changes in IHBs would require rulemaking to update the screening threshold values listed in rule.

Item A is added to clarify that an air toxics facility must conduct repeated screening threshold analysis if the facility is at or below screening threshold values for all air toxics from the most recent certification submittal under part 7012.0150, subpart 1. After certifying whether the facility is at or below screening threshold values the facility could change operations, add equipment, change products and not have to notify the MPCA based on

the permit type, such as registration permit types. It is reasonable to require a facility to complete the screening threshold analysis periodically to ensure that the facility remains at or below screening threshold values. Based on the air toxics facility's permit type, the facility may or may not have to notify the MPCA of changes at the facility. Approximately 380 air toxics facilities subjected to this rule have registration permits and do not have to notify the MPCA when they make any changes to their facilities, even if they increase their air pollution emissions, as long as they stay within the total amount allowed by the permit type.

Due to some facilities not having to notify the MPCA of changes, a repeated screening threshold analysis ensures that the facility is still adhering to the air toxics screening threshold values. Additionally, asking for facilities to certify that they are at or below screening threshold values just once, does not account for the longevity of the rule impacts. An air toxics facility operating years down the road may have made substantial changes to its facility, and if it only had to complete the screening threshold analysis once, the facility may begin emitting air toxics later that could pose a risk to human health and the environment. It is reasonable to account for potential future operational changes to reduce uncertainty around changes in operations at air toxics facilities, while helping ensure continual compliance with the rules.

Item B is added to clarify that an air toxics facility must conduct a repeated screening threshold analysis if the facility has submitted a compliance determination protocol (CDP) under part 7012.0450. It is reasonable to require an air toxics facility that has submitted a CDP to complete a repeated screening threshold analysis to account for future changes facilities may be allowed to make without notifying the MPCA. When a CDP is developed, the air toxics facility must include action items for air toxics that exceed screening threshold values, to get and stay at or below screening threshold values. However, the CDP only addresses the air toxics in use and that are above screening threshold values at the time of developing the CDP. For instance, a facility could comply with its CDP but at a later date could also add a new process or change its product that increased another air toxic. The increase in this air toxic may put the facility above screening threshold values for pollutants not addressed in the air toxics facility's CDP nor possibly assessed in the previous screening threshold analysis. This change may be identified internally by the MPCA, but it is harder to verify that each stack is at or below threshold values, especially for facilities with registration permit types. Registration permit and capped permit holders do not have to report emissions to the emissions inventory by stack, or the point where emissions are released. These air toxics facilities can aggregate emissions for similar emissions units under parts 7007.1130, subpart 4, 7007.1147, subpart 1, and 7019.3030, subpart 1. For example, a facility with two boilers may report the emissions for both boilers under one stack. Because of this, MPCA would not be able to accurately determine that the air toxics facility is still at or below threshold values for each stack using data from the emissions inventory. Also, the MPCA does not have stack parameter information for most registration permits and does not have distance to property line information for any permit type. These are required to complete the screening threshold analysis. It is reasonable to require facilities to complete the repeated screening analysis because MPCA does not have the information to complete the analysis internally. Having a facility certify its screening threshold analysis through repeated screening threshold analyses ensures the air toxics facility is still at or below screening threshold values.

Subpart 2. **Submission requirements.**

Subpart 2 and items A and B are added to clarify the requirements for a repeated air toxics screening threshold analysis submittal. It is reasonable to clarify what items the repeated air toxics screening threshold analysis submittal must include to reduce confusion, ensure compliance, and reduce the amount of work needed to review submittals by providing a consistent process for all facilities to follow. The repeated screening threshold analysis certification submittal must follow the certification process for an air toxics screening threshold analysis. The facility must certify and retain the certification criteria under parts 7012.0140 and 7012.0200 and must follow the method for calculations under part 7012.0400. It is reasonable to require that a repeated screening threshold analysis follows the same criteria for any previously submitted screening threshold analysis

certification to reduce confusion and to reduce the amount of work required for the repeated submittals. This provides consistency across the submittals and ensures that the MPCA is receiving the information needed to confirm that the air toxics facility continues to be at or below screening threshold values.

Item A is added to clarify that the certification for a repeated screening threshold analysis must comply with the certification requirements and deadlines under parts 7012.0140 and 7012.0200. It is reasonable to clarify that an air toxics facility submitting a repeated screening threshold analysis must include the specific content specified in parts 7012.0140 and 7012.0200 to provide clear expectations. The certification must include the name and contact information for the owner or operator, the statement that the air toxics facility does or does not have any air toxics above screening threshold values, and the list of air toxic(s) identified as above screening threshold values. This information was required for any previous screening threshold analysis, so it is reasonable to ask for the same information for the repeated screening threshold analysis. This ensures that information between each screening threshold analysis submittal is consistent and accurate. Furthermore, having the air toxics facility certify that it is still not above screening threshold values ensures that the facility continues to evaluate its compliance with chapter 7012 and whether it potentially poses a risk to human health and the environment.

Item B is added to clarify that the repeated screening threshold analysis must follow the method of calculations for the air toxic screening threshold analysis under part 7012.0400. It is reasonable to clarify that an air toxics facility must use the method of calculations under part 7012.0400 to calculate its emissions used in the repeated screening threshold analysis. This ensures that the methods of calculation between any repeated screening threshold analysis and any previous screening threshold analysis are consistent with the rules. However, this may result in differences in calculations between screening threshold analyses. For example, if a facility previously used material balance and since conducted a performance test, both methods would be accepted methods of calculations for a screening threshold analysis. However, under part 7019.3030 as required by part 7012.0400 subp. 2, the performance test data must be used once it is available. Consistency in the accepted methods of calculations reduces the workload for owners and operators to complete the emission calculations and reduces the workload for MPCA to review the calculations. The emissions calculated at a facility are essential for understanding if the air toxics facility is above screening threshold values. Thus, it is important to have consistency between repeated submittals on how emissions are calculated to ensure that facilities are accurately assessed against the screening threshold values.

Subpart 3. **Timeline for repeated screening threshold analysis certification.**

Subpart 3 and items A and B are added to clarify the timelines for the repeated screening threshold analysis and certification submittals. It is reasonable to clarify the deadlines for the repeated screening threshold analysis and certification submittals to ensure that facilities understand when the certification submittals are due, provide consistency across facilities. There are different circumstances requiring a repeated screening threshold analysis for an air toxics facility and deadlines vary based on the circumstances. It is reasonable to clarify what those deadlines are for each of the circumstances to reduce confusion and help ensure compliance. This allows the facility to understand when its next screening threshold analysis must be completed and when the certification submittal is due. Repeated screening threshold analyses apply to facilities that were at or below screening threshold values for all air toxics in the air toxic facility's most recent certification submittal or have developed a CDP.

Item A is added to clarify that an air toxics facility complying with subpart 1, item A of this part must complete and certify an air toxics screening threshold analysis every five years. It is reasonable to require that a facility that previously certified that it was at or below screening threshold values for all air toxics would have to complete another screening threshold analysis to ensure all air toxics are still at or below screening threshold values every five years. It is reasonable to require a facility to complete a screening threshold analysis on a timeline of every five years because this is consistent with the permit term of Part 70 permits under 40 CFR 70.6(a)(2), which requires permit terms of five years. The reissuance of permits every five years helps ensure that a facility

complies with all applicable requirements. Similarly, a five-year timeline for completing the repeated screening threshold analysis and submitting the certification helps ensure that a facility continues to operate at or below the screening threshold values.

Air toxics facilities that have certified that all of their air toxics emissions were at or below screening threshold values have a shorter time between completing repeated screening threshold analyses than air toxics facilities that have developed a CDP. This is because if a facility has developed a CDP, it must follow the CDP to limit its emissions to remain at or below screening threshold values for a given air toxic. An air toxics facility that does not have a CDP or has not completed an AERA and was at or below all toxics threshold values in a previous analysis, may have the ability to change operations, equipment, or processes at its facility. This could result in the facility exceeding screening threshold values. However, there is no way for the MPCA to know with complete certainty that the facility is still at or below screening threshold values without asking the facility to complete and certify the screening threshold analysis again. The MPCA does not have the ability to conduct the screening threshold analysis internally without significant information from a facility. This may take a lot of iterative communication between the MPCA and the facility. This repeated screening threshold analysis will help to put less burden on the Agency to verify that all stacks at all air toxics facilities are below threshold values and will ensure that all air toxics facilities remain at or below screening threshold values. Additionally, this repeated screening threshold analysis accounts for changes and variability in operations at a facility. While the emissions inventory submittals show some of these variabilities, the MPCA does not have the ability to accurately complete an additional screening threshold analysis for all air toxics facilities and having the air toxics facility complete the screening threshold analysis every five years helps to ensure that the air toxics facility is still at or below screening threshold values.

Item B is added to clarify that an air toxics facility complying with subpart 1, item B of this part must complete and certify a repeated air toxics screening threshold analysis every ten years. It is reasonable to have air toxics facilities that have developed a CDP repeat their air toxics screening threshold analysis every ten years to ensure that all air toxics remain at or below screening threshold values. A ten-year timeline is consistent with other rules, such as part 7001.0150 in chapter 7001, where an agency permit is issued for a term not to exceed ten years unless a different statute or rule says otherwise, and 7019.3050, subpart C, where performance test data may not be more than ten years old for emissions inventory purposes. If an air toxics facility has developed a CDP, the CDP is for the specific air toxic(s) that are above screening threshold values. However, the facility could make changes after the CDP is developed, and it may exceed threshold values for different air toxics based on changes made at the facility. To ensure that the facility is still at or below all screening threshold values, it is reasonable to require facilities to verify continual compliance by completing repeated screening thresholds analyses and certifying that the facility is still at or below screening threshold values. If an air toxics facility has a CDP, it has a longer time period before it has to complete another screening threshold analysis compared to a facility that is at or below threshold values for all air toxics. This is because the facility has developed a CDP and will be making some reductions to at least one air toxic and in theory could be reducing other air toxics in the process. Additionally, facilities with one or more air toxic above screening threshold values will be inspected and it is likely that a facility with a CDP would be inspected between repeated screening threshold analyses to ensure that it is complying with its CDP. Furthermore, the screening threshold analysis and resulting CDP uses actual emissions from a facility. To account for the variations in operations from year to year, it is reasonable to have the air toxics facility certify its screening threshold analysis every ten years. The facility's actual emissions can vary from year to year and since the CDP does not account for potential emissions, it does not consider the maximum allowable emissions a facility could emit of a certain air toxic. Having the air toxics facility complete a screening threshold analysis every ten years even after developing a CDP ensures that the air toxics facility is still at or below threshold values for all air toxics and not just air toxics covered in the CDP. It is reasonable to allow for a longer timeline because the facility has some measures in place through the CDP to ensure some air toxics stay at or below air toxics screening threshold values.

Subpart 4. **Exemptions.**

Subpart 4 is added to clarify the air toxics facilities that are exempt from this part of the rule. It is reasonable to clarify which air toxics facilities are exempt from the repeated air toxics screening threshold analysis to efficiently use resources for both air toxics facilities and MPCA. This subpart is added to clarify that if an air toxics facility has completed an AERA under parts 7012.0560 and 7012.0565 it is exempt from completing a repeated screening threshold analysis. It is reasonable to exempt an air toxics facility that has completed an AERA from having to complete repeated screening threshold analyses. For a facility to have completed an AERA it would have to prove that it is at or below acceptable risk levels. If the facility exceeds acceptable risk levels, it will have to complete an ATRP, which would ensure that the facility will remain at or below acceptable risk levels. Air toxics facilities that complete an AERA are using potential emissions, as opposed to actual emissions that are used in the screening threshold analysis. Potential emissions are the maximum emissions that a facility is permitted to emit, so if a facility is at or below acceptable risk levels based on potential emissions, it can be reasonably assumed that it would pose little or no risk to human health and the environment based on actual emissions. Thus, a repeated screening threshold analysis based on actual emissions is not needed from a facility successfully completing an AERA based on potential emissions.

Part 7012.0170 – ADDITIONAL SCREENING THRESHOLD ANALYSIS.

Subparts 1 through 3 outline the conditions for which an additional screening threshold analysis is necessary after the first screening threshold analysis is complete. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(1), (a)(4), and (a)(5) requires the MPCA to address respectively, at a minimum, specific air toxics to be regulated, required monitoring of air emissions and monitoring of production inputs or other parameters, requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions and the facility's compliance with emission limits in the facility's permit. In subdivision 4(b)(1), the law also requires, in developing the rules, that the MPCA establish rule requirements that reflect the different risks to human health and the environment posed by the specific air toxics and amounts emitted by a facility such that facilities posing greater risks are required to provide more frequent evidence of permit compliance. These subparts address monitoring of specific air toxics, and reporting requirements that reflect heightened regulation when the facility poses a greater risk because the additional screening threshold requirements establish a framework for the MPCA to regulate certain circumstances that could lead to an exceedance of a screening threshold value. It is reasonable to provide conditions in which an air toxics facility may have to complete an additional screening threshold analysis to provide clarity to regulated parties of when additional assurance of compliance may be required, and to ensure that compliance with chapter 7012 is maintained. It is reasonable to base these conditions on when the parameters of the facility's analysis may have changed from the most recent screening threshold analysis or when information may be missing or was inaccurate, as those changes could result in a different outcome. It is reasonable to require regulated parties to verify they are in compliance with the rules when changes to their screening threshold analysis may have different results.

Subpart 1. **When required.**

Subpart 1 and items A to F are added to clarify circumstances when the commissioner must require an owner or operator of an air toxics facility conduct an additional air toxics screening threshold analysis in addition to those required under parts 7012.0050 and 7012.0160 when the following, items A to F, could lead to an exceedance of a screening threshold value. Requiring an additional screening threshold analysis is reasonable as a tool for verifying the facility is at or below screening threshold values. The MPCA would be unaware if the facility is still at or below threshold values unless information is presented to the MCPA that shows the facility used information in the previous screening threshold analysis that does not accurately represent the current conditions at the facility. It is reasonable to clarify situations when an additional screening threshold analysis is

needed to ensure that a facility continues to operate at or below screening threshold values. Processes at a facility can change, potentially impacting the amount of air toxic emitted and which air toxics are emitted. It is reasonable for the commissioner to require a facility to complete an additional screening threshold analysis based on information given by the facility or using internal tools at the MPCA that could show the potential for higher risk. It is reasonable to include requirements to verify compliance and ensure that facilities are not posing a risk to human health and the environment.

Item A and subitems (1) and (2) are added to clarify that the commissioner must require an additional air toxics screening analysis if the parameters that were used in a previous screening threshold analysis or air emissions risk analysis do not accurately represent the operations of the facility which were used to arrive at the relevant conclusion being certified and could lead to an exceedance of a screening threshold value. Subitems (1) and (2) establish these relevant conclusions as an exemption under part 7012.0070, or the results of a screening analysis or AERA reported to the commissioner under 7012.0200 or 7012.0560. It is reasonable to require the facility to submit another screening threshold analysis if previous parameters that were used to show the facility was at or below screening threshold values or qualified for an exemption under part 7012.0070 no longer represent the current operations at the facility.

Subitem A(1) is added to clarify that if an exemption under part 7012.0070 may no longer be applicable to the air toxics facility because an air toxics facility's operations or parameters do not accurately represent the facility's current operations, then the commissioner must require an additional screening threshold analysis if the current operations could lead to an exceedance of a screening threshold value. Part 7012.0070 describes the other exemptions from completing an air toxics screening threshold analysis. Under part 7012.0070, subpart 1, a facility may be exempt from completing a screening threshold analysis if the facility has completed an AERA after rule promulgation. Subitems (1) to (3) under subpart 1 of part 7012.0070 detail the criteria that must be met to exempt the facility. It is reasonable that the commissioner must require an additional screening threshold analysis if information in a previous AERA is no longer accurate. If a facility completes an AERA after rule promulgation, it ensures that the facility will be at or below acceptable risk levels. However, if the information provided from the AERA to exempt the facility is no longer accurate, the MPCA no longer has a reasonable assurance of compliance, and it is reasonable to request an updated screening threshold analysis for that assurance. The criteria listed for an AERA to be applicable to the exemption ensures that the information (*i.e.* emissions, stack height, dispersion values) is not dated and that no increases in air toxic emissions have occurred at the facility.

Subitem A(2) is added to clarify that if the parameters reported to the commissioner from a previous screening threshold analysis or air emissions risk analysis used to establish the results under 7012.0200 or 7012.0560 do not accurately represent the facility operations then the commissioner must require an additional screening threshold analysis if it could lead to an exceedance of a screening threshold value. It is reasonable for the commissioner to ensure compliance by requiring an additional screening threshold analysis if the information used in the previous analysis is not accurate. It is imperative that the information in the screening threshold analysis represents the actual operations at the air toxics facility. If a facility uses an incorrect stack height, distance to property line, or emissions, this may inaccurately show the facility is at or below screening threshold values. For example, a typo in reported data, such as listing a stack distance to the property line as 50 meters instead of the actual 5 meters, could inaccurately indicate the facility is at or below air toxics screening threshold values, when in reality, the closer proximity of the stack to the property line could cause the facility to be above screening threshold values.

Item B is added to clarify that another screening threshold analysis may be required if the alterations or modifications to an air toxics facility will result in or have the potential to result in increases to the amount of any one or more air toxic emitted or the addition of any air toxic emitted by the air toxics facility and could lead to an exceedance in screening threshold values. It is reasonable to require a facility to complete an additional

screening threshold analysis if there have been modifications to the air toxics facility that may result in an increase of air toxics that may put the facility above screening threshold values. Some modifications could include changing the stack height, stack location, or increasing emissions. The screening threshold analysis relies on information such as the stack height, stack distance to property line, and emissions to determine if the facility is above or below screening threshold values. Adjustment of any of those variables, especially decreasing the stack height, decreasing the stack distance to property line, or increasing air toxics emissions, could result in a stack being above screening threshold values when it was previously at or below screening threshold values.

Item C is added to clarify that an additional screening threshold analysis must be required if the air toxics facility did not conduct a screening threshold or air emission risk analysis for an air toxic for which the screening threshold value has been newly established or updated since the last analysis if the updated value could lead to an exceedance of screening threshold values. It is reasonable to require a facility to complete an additional screening threshold analysis if additional air toxics have been added or the IHBs have been updated, this may cause a facility to now be above screening threshold values. IHBs are updated depending on the pollutant and the frequency of updated data. Air toxics such as PFAS are updated more often due to the emerging science behind understanding these chemicals. Any changes to screening threshold values requires rulemaking, and once the rule revisions are adopted, a facility could be subject to an additional screening threshold analysis. The MPCA will not be revising the rule often enough to create undue difficulties to facilities. Therefore, it is reasonable to require air toxics facilities to conduct additional analysis to protect human health and the environment.

Item D is added to clarify that additional screening threshold analyses must be required if data from additional risk-based determinations under subitems (1) to (4) demonstrate possible exceedances of acceptable risk levels established in part 7012.0560, subpart 3, or screening threshold values established in part 7012.0300, subpart 1 and it could lead to an exceedance of screening threshold values. Subitems (1) to (4) are the additional risk-based determinations which include MNRISKS, cumulative impacts analysis under Minnesota statute 116.07 subd. 4a and rule parts 4310.4300 and 4310.4400, and other applicable laws and regulations, an AERA, or an equivalent risk-based determination. In any of these risk-based determinations, air toxics facilities' actual or potential emissions may be included. Air toxics facilities may be included as the primary source for a specific study or as part of a group of sources looking at a geographic area. These risk-based determinations have the potential to highlight information about an air toxics facility that was not included in its most recent screening threshold analysis, including changes in emissions or potentially parameters that were misrepresented in a screening analysis. It may not be obvious what information results in showing a potential exceedance without requiring the facility to complete an additional screening threshold analysis. Therefore, it is reasonable to ensure compliance with the rules by requiring a facility to complete an additional screening threshold analysis if any other risk-based determinations show an exceedance of acceptable risk levels.

Subitems (1) to (4) are all risk-based tools that can determine if a facility is posing a risk to human health and the environment. MNRISKS (subitem (1)) will be updated annually for the seven metropolitan counties due to recent updates under chapter 7019. MNRISKS considers annual emissions, IHBs, and yearly meteorology. If any of these parameters are altered this could potentially show the facility posing an increased risk to human health and the environment, so it is reasonable for the commissioner to request an additional screening threshold analysis to verify the facility remains at or below the screening threshold values based on any updated facility parameters.

Subitems (2) to (4) list other risk-based determinations, however, these items are not updated as regularly as MNRISKS. While these risk-based determinations are not regularly updated, this still could show increased risk to human health and the environment posed by a facility and given that information it would be reasonable for the commissioner to require an additional screening threshold analysis be conducted.

Item E is added to clarify that if an air toxics facility moves operations from the location used in the previous screening threshold analysis and the screening threshold values could be exceeded, that the commissioner must

require an updated screening threshold analysis. It is reasonable to require an air toxics facility to conduct a screening threshold analysis if it moves because the location parameters used in the previous analysis would no longer be valid. To determine if a stack is above or below screening threshold values, the facility must provide information about the stack height, stack distance to property line, and stack emissions. If a portable facility moves operations, the stack distance to property line would most likely change, and there is a chance the stack height would change. Since the threshold analysis relies heavily on these variables (stack height, distance to property line, and emissions) to determine if a stack is above or below screening threshold values, if this information is altered, it could impact the results of the screening threshold analysis. Thus, if the commissioner has information about a change in location of an air toxics facility it would be reasonable to require the facility to complete a screening threshold analysis to determine that operations in the new location would still result in the facility being at or below screening threshold values.

Item F is added to clarify that if an air toxics facility cannot provide proof of a previously conducted screening threshold analysis, the commissioner must require an updated screening threshold analysis. It is reasonable to require a new screening threshold analysis when an air toxics facility cannot provide a previously completed one to ensure compliance with the rules. An air toxics facility must retain records of the screening threshold analysis and its results for at least five years. Any air toxics facility that is not exempt from this chapter must be able to provide the screening threshold analysis, when requested, that demonstrates actual emissions in relation to the threshold values.

Subpart 2. **Notification of required additional analysis.**

Subpart 2 and items A to C are added to clarify that notification to an air toxics facility is required if another screening threshold analysis is required. It is reasonable to clarify the criteria for the notification if an additional screening threshold analysis is required to ensure expectations are clear to air toxics facilities. Specifying the timeline and the criteria of the notification allows time for the air toxics facility to collect information and complete the process in a timely manner.

Item A is added to specify that the commissioner must notify an owner or operator of an air toxics facility when an additional screening threshold analysis is required and must identify the reason for the requirement under subpart 1. It is reasonable for the MPCA to formally request an additional screening threshold analysis and identify the reason for an additional screening threshold analysis. This notification will alert the facility to the additional screening threshold analysis and will begin the timeline for the screening threshold analysis to be submitted. Additionally, the notification will allow the air toxics facility to understand the reason for an additional screening threshold analysis.

Item B is added to clarify that except as provided in item C, the owner or operator of an air toxics facility must provide the commissioner with the additional screening threshold analysis certification within 60 calendar days of the written notice under item A and must comply with the certification requirements under parts 7012.0140 and 7012.0200, subpart 2. It is reasonable to set a deadline for a facility to complete the additional screening threshold analysis, this way the air toxics facility will understand when the additional screening threshold analysis is due. The facility should have the previous screening threshold analysis and updated parameters (stack height, stack location, and emissions data), thus updating the screening threshold analysis should not be a large undertaking. The timeline to resubmit an additional screening threshold analysis matches the timeline to resubmit an AERA that was denied. Sixty calendar days is consistent with other submittal deadlines in this rule and provides enough time for the facility to update its information to resubmit the screening threshold analysis.

Item C and Subitems (1) and (2) are added to clarify that a facility may respond to the MPCA within ten calendar days of a request for an additional screening threshold analysis with information that the MPCA has not considered in determining the need for an additional screening threshold analysis.

Subitems (1) and (2) are added to detail that the commissioner must consider the information provided (subitem (1)), and confirm that the additional screening threshold analysis is still required or rescind the requirement based on the information provided (subitem(2)). It is reasonable to require the facility to respond with information the commissioner has not considered within ten calendar days of a request for an additional screening threshold analysis because the MPCA typically requires regulated parties to respond to other agency correspondences, such as alleged violations letters and requests for information, within ten calendar days. Therefore, limiting the response time to ten calendar days provides consistency across agency processes. Additionally, subpart 1, items A to F outlines instances when a facility is required to conduct an additional screening analysis, and if the facility disputes that subpart 1, items A to F apply, the facility would have records onsite that support this claim, and ten calendar days is a sufficient amount of time for a facility to gather and submit this information. It is reasonable to clarify the decisions the commissioner can make given new information provided by the facility to reduce confusion. The facility may have information that the MPCA is not privy to, allowing the facility to provide this information may result in the air toxics facility not having to complete an additional screening threshold analysis.

Subpart 3. **Terminating exemption eligibility.**

Subpart 3 is added to clarify the termination of eligibility of a facility for exemption status under part 7012.0070, if the commissioner found the results of the additional screening threshold analysis under this part demonstrate exceedances of the screening threshold values under part 7012.0300, subpart 1. It is reasonable for the commissioner to terminate a facility's exemption if it exceeds screening threshold values. If a facility is no longer at or below screening threshold values, then the facility would have to either develop a CDP or complete an AERA. This is consistent with the process for all air toxics facilities, so it is reasonable to require that facilities that have previously been exempt but are no longer exempt complete the same process.

Part 7012.0200 – AIR TOXICS SCREENING THRESHOLD ANALYSIS; SUBMISSION DEADLINES AND CERTIFICATION.

Subparts 1 and 2 outline what is required to certify the screening threshold analysis and the deadlines by permit type. Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 5 requires the commissioner to amend air quality permits within three years of adopting the rules as necessary to conform with these proposed rules. It is reasonable to set deadlines for the initial screening threshold analysis so that the MPCA will meet this three-year requirement from the Session Law. It is also reasonable to set deadlines based on the permit types. These deadlines will allow facilities that are not expected to have as detailed air toxics emissions information more time to gather this information.

Subpart 1. **Certification deadline.**

Subpart 1 and items A to E are added to clarify the submittal deadlines by permit type for new air toxics facilities and for existing air toxics facilities. It is reasonable to set deadlines for facilities to submit their certification. This will allow MPCA to be able to predict and manage workload and will satisfy the requirement under Minn. Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 5, to amend air quality permits within three years of adopting the rules.

Item A is added to specify that air toxics screening threshold analysis certifications under parts 7012.0140 to 7012.0170 for an air toxics facility must comply with this subpart. Parts 7012.0140 to 7012.0170 detail the screening threshold analysis requirements, repeated screening threshold analysis, and any additional screening threshold analysis. This subpart details the certification deadlines for screening thresholds analyses. It is reasonable to clarify that all screening threshold analyses that are completed must comply with this subpart. This ensures that all screening threshold analyses are completed on the same deadline for every air toxics facility in the seven metropolitan counties.

Item B is added to specify that the owner or operator of an existing air toxics facility operating under any of the permit types listed in Table 5 below must submit an initial air toxics screening threshold analysis certification by the specified deadline. Table 5 below is added to item B to clarify the initial air toxics screening threshold analysis certification deadline by permit type. It is reasonable to set deadlines for the different permit types. Having staggered submittal deadlines will help the MPCA in verifying that all facilities have submitted a screening threshold analysis certification and will aid in the review of these facilities if these facilities complete an AERA or ATRP. Also, having staggered submittal deadlines will satisfy the requirement under Minn. Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 5. Owners or operators of individual permit types and capped permit types should have information about stack height, stack location, and HAP PTE readily available because this information was required in these facilities' permit applications. Therefore, collecting the required information and completing the screening threshold analysis and submitting certification would be easier for facilities with an individual or capped permit. Other permit types such as some registration permit types and general permits typically do not have to provide information about their stack heights, stack locations, and release point (stack/vent and fugitive emissions) locations in their permit applications, thus they may need more time to collect information to complete the screening threshold analysis. Staggering due dates for screening threshold analysis certification would also allow the MPCA to effectively manage its workload.

Table 5. Initial screening threshold analysis by permit type.

Permit type	Initial air toxics screening threshold analysis certification deadline
Individual state permit under part 7007.0200	1 year after effective date of this chapter
Individual federal permit under part 7007.0250	1 year after effective date of this chapter
Capped permits under part 7007.1140	2 years after effective date of this chapter
General permit under part 7007.1100	2 years after effective date of this chapter
Registration Option C permit under part 7007.1125, unless exempted under 7012.0060	3 years after effective date of this chapter
Registration Option D permit under part 7007.1130	3 years after effective date of this chapter

Item C is added to clarify that a new air toxics facility must comply with the screening threshold analysis under part 7012.0400, subpart 4 and must include the certification with the required permit application. It is reasonable to require certification from new air toxics facilities as all air toxics facilities in the seven metropolitan counties, new and existing, are subject to this proposed rule. It is also reasonable to require a new air toxics facility must include the certification when it is applying for a permit, because this informs the MPCA of whether a screening threshold analysis was completed, whether it complies with part 7012.0400, subpart 4, and in the case of a facility applying for a capped or registration permit, whether it is eligible to obtain that permit.

Item D is added to clarify that an air toxics facility that moves operation into or within the seven metropolitan counties must conduct the air toxics screening threshold analysis and submit the certification within one year of the due date for the first air emissions inventory report under chapter 7019 that includes emissions from the facility at the new location. It is reasonable to require an air toxics facility that moves operation into or within the seven metropolitan counties to complete a screening threshold analysis. The language in Minn. Session Law – 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 2 states that the section applies to all air toxics facilities located in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, or Washington (seven metropolitan counties), except option B permit holders. It is reasonable to require a facility that was previously operating outside of the seven metropolitan counties to complete a screening threshold analysis if the facility moves operations into the seven metropolitan counties because these proposed rules become applicable to the facility

due to its new location. Moving into the seven metropolitan counties makes the facility an air toxics facility by definition, and these proposed rules apply to all air toxics facilities not otherwise exempted. This helps ensure all air toxics facilities in the seven metropolitan counties are treated the same. Additionally, it is reasonable to require an air toxics facility that moved locations into or within the seven metropolitan counties to conduct a screening threshold analysis because the parameters (stack height, distance to property line, and emissions) that determine a facility's screening threshold analysis results could have changed and must be evaluated again to determine updated and accurate results. This ensures consistency in application of the rules between all air toxics facilities that any air toxic facility that moves operation into or within the seven metropolitan counties must still conduct a screening threshold analysis, as the facility is now located for the first time in one of the seven metropolitan counties or in a new location within the seven metropolitan counties.

Item E is added to clarify that an air toxics facility in compliance with part 7007.1125, relating to registration option C permit requirements, and was exempt under part 7012.0060, subpart 1, item C, subitem (2), which relates to air toxics emissions from VOC-containing material use, must conduct the initial air toxics screening analysis and submit the certification within one year of the due date for the air emissions inventory report under chapter 7019 that includes the VOC-containing materials used. It is reasonable to require facilities with a registration option C permit to conduct a screening threshold analysis if they are reporting VOC-containing materials in their emissions inventory. If an air toxics facility is reporting VOC-containing materials, it is no longer exempt under part 7012.0060, subpart 1, item C, and thus, must conduct a screening threshold analysis to verify that the VOC-containing material it is emitting is at or below screening threshold values. The deadline of one year after the air emission reporting deadline is given to allow an air toxics facility enough time to collect the data needed to complete the air toxics screening threshold analysis. This deadline is reasonable because this timeframe is consistent with other screening threshold analysis certifications deadlines in this rule. Consistency in application of regulatory requirements reduces uneven economic and regulatory burden across facilities and different industries.

To clarify the timeline for a facility with an option C permit that begins use of VOC-containing materials, the following example timeline of events is provided:

- An option C permit holder begins use of a VOC-containing material in February 2030.
- The option C permit holder would report air toxics emissions from VOC-containing materials for calendar year 2030 on or before April 1, 2031.
- The option C permit holder would be required to submit a screening certification on or before April 1, 2032 (one year after the air emissions reporting deadline when first reporting air toxics).

Subpart 2. **Certification content**.

Subpart 2 and items A to D clarify what documentation an owner or operator is required to provide in an air toxics screening threshold analysis under subpart 1 of this part. The screening threshold analysis certification must be submitted in a format specified by the commissioner. Items A to D detail the information that is needed to certify the screening threshold analysis. The certification must include the name and contact information for the owner or operator, the statement that the air toxics facility does or does not have one or more air toxics above screening threshold values, the list of air toxic(s) and Chemical Abstracts Service (CAS) registry number(s), if applicable, for any air toxic that is above screening threshold values, and the required information under part 7012.0140. It is reasonable to determine the requirements needed to certify a screening threshold analysis. By stating the requirements, this will make the process more streamlined, clear, and consistent for facilities and the MPCA.

The MPCA has set up the screening threshold analysis spreadsheet to be completed and certified by an air toxics facility. A facility will complete the analysis and determine if any emissions exceed the screening threshold values. By requiring air toxics facilities to certify their analyses, the MPCA will hold facilities accountable for the

veracity of their submittals. A facility will then have to send a certification to the MPCA certifying whether it is at or below all screening threshold values or if it is above screening threshold values, and which air toxics are above those screening threshold values.

Item A is added to clarify that the name and contact information for the owner or operator must be included in the certification of the screening threshold analysis. It is reasonable to require the contact information for the operator or owner when certifying the screening threshold analysis. This information is needed by the MPCA so if there are any questions on the certification and/or the screening threshold analysis, the MPCA knows who to contact.

Item B is added to clarify that the certification must also include the statement that the air toxics facility does or does not have one or more air toxics above screening threshold values. It is reasonable to require the air toxics facility to confirm that either it has at least one air toxic above screening threshold values or that it has no air toxics above screening threshold values. By stating that the air toxics facility has at least one air toxic above threshold values, this indicates to the MPCA that the air toxics facility will either have to develop a CDP or complete an AERA. By certifying that the air toxics facility is at or below threshold values, this indicates to the MPCA that the facility is at or below threshold values and will not repeat its screening threshold analysis for another five years, unless asked by the commissioner to submit an additional screening threshold analysis. By having the facility certify if it is above or below threshold values, this puts the responsibility on the facility to accurately report its information.

Item C is added to clarify that the certification must also include the list of air toxic(s) and CAS registry number, if applicable, for any air toxics identified as above screening threshold values, if the air toxics facility has emissions above screening threshold values identified under item B of this subpart. The CAS registry number is unique to each chemical structure and helps ensure that the air toxics emitted by the facility are correctly identified. It helps to clearly identify which pollutant is being referred to as some air toxics are referred to by two or more different names, and the CAS number will help to determine which air toxic(s) is above screening threshold values. It is reasonable to require the air toxics facility to identify which air toxic(s) and CAS registry numbers are above threshold values. This is important for the MPCA to understand which air toxic(s) are above threshold values for each facility, but also if the air toxics facility is developing a CDP it will need to identify the air toxic(s) that are above threshold values in the CDP. This also is informative to the facility to understand that the air toxic(s) that are above threshold values could be causing risk to human health and the environment. While the air toxics facility will have to develop a CDP or complete an AERA, it still allows the facility to think of ways it may limit emissions of the air toxic(s) that are above screening threshold values.

Item D is added to clarify that the certification must contain the required information under part 7012.0140. In part 7012.0140, the responsible official must certify that to the best of their knowledge all the information included in the submittal is accurate. It is reasonable to require that this certification of submissions is included in the certification for the screening threshold analysis. This helps to ensure that all screening threshold analyses are completed with the most accurate information that an air toxics facility has, and that the facility signs and certifies the facility's submission.

Part 7012.0300 – AIR TOXICS SCREENING THRESHOLD VALUES; INCORPORATION BY REFERENCE.

Subparts 1 and 2 are added to clarify the annual and hourly screening threshold values that are used in the screening threshold analysis. Minnesota Session Law — 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(b)(1) states that in developing the requirements, the rules must reflect the different risks to human health and the environment posed by the specific air toxic and amounts emitted by an air toxics facility. SONAR Exhibit 2 includes the detailed process of how MPCA developed the screening threshold values. The process which MPCA used to calculate the screening threshold values is similar to how the New Jersey Department of

Environmental Protections developed its air pollutant reporting thresholds.[21] Screening threshold values were developed using modeled output from AMS/EPA regulatory model (AERMOD) and IHBs. To get the modeled dispersion values, AERMOD was used to model a stack with very conservative parameters in each of the seven metropolitan counties. The stack was placed in the middle of each of the counties, making sure that the stack was not located on a body of water or an active air toxics facility. A polar receptor grid was used in the model with receptor distances ranging from 5 to 2,000 meters. The one parameter that changed throughout modeling was the stack height. Different stack heights from 10 to 200 feet were modeled. Dispersion results from all of the seven metropolitan counties were averaged to give an averaged dispersion value used to calculate screening threshold values. These averaged values were then converted to the appropriate units to result in either an hourly or annual screening threshold value. This approach is reasonable because while the stack parameters used were consistent for each county, the terrain and meteorological data varied based on location. Both terrain and meteorological data help to calculate modeled dispersion values. So, it is reasonable to place a stack in every county to account for these differences. A database of acute and chronic IHBs were collected using the hierarchy listed in part 7012.0560, subpart 1, item G. To calculate the screening threshold value, an IHB was divided by the modeled dispersion value for a given stack height and stack distance to property line. Given the different combinations of stack height and distance to property line, there are 481 different threshold values for a given pollutant. It is reasonable to clarify the screening threshold values that an air toxics facility must use when comparing hourly and annual actual emissions to screening threshold values. These screening threshold values were developed specifically for the seven metropolitan counties and are a better representation of the atmospheric conditions in the area that impact the dispersion of air toxics. Additionally, clarifying the screening threshold values that must be used limits confusion for an air toxics facility and ensures that all the emissions from air toxics facilities in the seven metropolitan counties are compared to the same screening threshold values.

Subpart 1. **Hourly and annual screening threshold values.**

Subpart 1 is added to clarify that the most recent version of the electronic spreadsheet, Screening Thresholds for Regulated Air Toxics Analysis (STRATA) provided by the commissioner must be used when conducting a screening threshold analysis to identify the annual and hourly screening threshold values for each air toxic by stack height and distance to property line. The STRATA electronic spreadsheet is incorporated by reference, is not subject to frequent change, and is available on the MPCA's website at https://www.pca.state.mn.us/get-engaged/incorporations-by-reference. It is reasonable to incorporate by reference the screening threshold values to rule and create a spreadsheet for facilities to use to compare their emissions to screening threshold values to help determine which facilities may pose greater risks to human health and the environment. These screening threshold values will determine if the facility's actual air toxic emissions have the potential to pose unacceptable risk. If an air toxics facility is above screening threshold values, more analysis is required. If the facility is at or below screening threshold values, it must certify that it is at or below screening threshold values and keep its STRATA spreadsheet at its facility.

By creating an electronic spreadsheet with the screening threshold values, it allows the air toxics facility to easily see if it is at or below screening threshold values or above screening threshold values. An air toxics facility will input site specific information such as stack heights, stack distances to property line, and stack emissions in lb/hr and ton/yr. Given this information, the spreadsheet will automatically determine if a given stack is at or below screening threshold values or above screening threshold values for each air toxic. The spreadsheet will help to

[21] *Technical Support Document: Updating Hazardous Air Pollutant Reporting Thresholds by New Jersey Department of Environmental Protection. Retrieved from technical-support-document-hap-reporting-thresholds.pdf.*

alleviate the burden on facilities by automating part of the screening threshold analysis, instead of providing a list of screening threshold values and having facilities compare their emissions to these screening threshold values themselves. Additionally, providing a spreadsheet ensures that air toxics facilities are comparing their emissions to the correct screening threshold values. It is reasonable to provide a tool that helps create consistency in analysis methods and reduces the workload for facilities. Having consistency in format and method for completing the screening threshold analysis also creates consistency in the eventual review of these analyses and will help efficiently use MPCA resources to review screening threshold analyses results.

The STRATA spreadsheet is not subject to frequent change, and if a change is needed, because the STRATA is incorporated by reference, the rule would need to be revised following the administrative procedures under Minnesota Statutes chapter 14. Whenever the screening threshold values in the spreadsheet are changed, the public, including regulated parties, will have notice ahead of any proposed changes and will be able to provide comments before any changes are finalized.

The air toxics within the STRATA spreadsheet must meet the definition in part 7005.0100 for air toxics and must have an IHB associated with the individual air toxic or the individual air toxic must be included in a compound group that has an IHB associated with the group. Additionally, ammonia, which is considered an air toxic under statute language and meets the definition in part 7005.0100, was previously required in chapter 7019 reporting, and is therefore included as a regulated air toxic. Ammonia is also considered a precursor to particulate matter and therefore MPCA already required facilities to report ammonia emissions prior to the air toxics reporting rulemaking. Ammonia has an inhalation health benchmark and historically was used as an air toxic when doing initial analyses for these proposed rules. Additionally, some facilities in the seven metropolitan area were found to be above screening threshold values for ammonia. Because ammonia is an air toxic with an inhalation health benchmark and facilities are already required to report emissions of ammonia it is included in the STRATA spreadsheet and required in AERAs. It is reasonable to use the air toxics as defined in part 7005.0100, including ammonia as air toxics facilities will have to provide annual emissions for these air toxics due to the amendments to chapter 7019, also known as the air toxics reporting rule. Furthermore, the hundreds of pollutants defined as air toxics are reduced to air toxics that have an IHB or can be included in a compound group that has an IHB associated with the compound group. If an air toxic or compound group does not have an IHB, then a screening threshold value cannot be calculated in the manner described in SONAR Exhibit 2. Not all air toxics and compound groups have an hourly and an annual screening threshold value, and the screening threshold value is dependent on whether the air toxic has an IHB for that duration. Another reason for using IHBs is because IHBs have the correct units to result in a screening threshold value that is in units (lb/hr or ton/yr) that can then be compared to hourly and annual emissions in the same units (lb/hr or ton/yr). Since this is the screening step for the rule, and the rule focuses mostly on the inhalation of air toxics emitted from a facility, only the inhalation health benchmarks are assessed. Some air toxics do have an oral value, but for the purposes of this rule and screening threshold analysis only the inhalation values are used.

It is reasonable to include screening threshold values with different durations, because air toxics pose different risks to human health and the environment depending on the different durations of the exposure. Some air toxics can impact human health differently at short durations versus longer durations. Looking at only annual (chronic) screening threshold values would only evaluate facilities on an annual basis (or longer exposures) and would not account for shorter (acute) exposures from air toxics. The MPCA developed hourly (acute) screening threshold values to account for these shorter exposures. The MPCA investigated whether air toxics facilities would be above hourly screening threshold values. To get a pound per hour emission rate from the tons per year emission rate, reported annual emissions are multiplied by 2000 (pounds per ton) to get a pounds per year number and then divided by the number of hours per year. If data was not given in emissions inventory, MPCA assumed 8760 hours per year. This resulted in a pounds per hour number that could be compared to hourly screening threshold values. From a preliminary analysis, the MPCA found that potentially 53 facilities (9.41%) out

of the 563 investigated may have at least one air toxics above hourly screening threshold values. Additionally, out of those 53 facilities there were 20 facilities (3.55%) that may have at least one air toxic above hourly screening threshold values, but not annual screening threshold values. From this analysis, the results proved that including the hourly (acute) screening threshold values are imperative to understanding the full impact of an air toxics facility.

MPCA does not want to make this process burdensome for facilities. The MPCA has developed the screening spreadsheet, STRATA, so facilities can easily enter emissions information. Facilities would already have annual calculated air toxics emissions to comply with chapter 7019, and facilities would know other parameters such as stack height, and stack distance to property line. Additionally, parameters like stack height and distance to property line rarely change at a facility so once those parameters are determined, the facility can use those parameters, if the facility does not change, on additional or repeated screening threshold analyses.

Subpart 2. **Petition to add, delete, or modify a screening threshold value.**

Subpart 2 is added to clarify that at any time, any person may petition the commissioner to modify, add, or remove screening threshold values listed in part 7012.0300, subpart 1. Petitions must follow the administrative procedures under Minnesota Statute 14.09. It is reasonable to acknowledge that any person may petition the commissioner to modify, add or remove screening threshold values as this is an existing right under statute that may not be clear to people while reading a separate rule chapter. The MPCA will work to update the screening threshold values as new IHBs are developed or modified, or if new meteorological data shows a significant change in atmospheric conditions, a parameter used in the development of the screening thresholds values. Since the MPCA has developed these screening threshold values and will ask air toxics facilities to compare their emissions to these screening threshold values, the burden should be on MPCA to ensure these screening threshold values are current and accurate. However, there may be a situation that a person from the public may discover that new or updated IHBs could be used, or that meteorological data has been updated and is significantly different than the previous meteorological data used to calculate the threshold values. This notes that persons outside of the Agency have an input on the screening threshold values through existing statutorily prescribed means. The petition to add, delete, or modify the screening threshold values will have to follow the established administrative procedures under Minnesota Statute 14.09, and there is no guarantee that the petition will be granted. However, this allows persons outside of the MPCA to have input into the screening threshold values and screening threshold value updates are not just subject to MPCA reevaluation. It is reasonable to clarify existing options in statute available to the public to request MPCA update the rules.

Part 7012.0400 – AIR TOXICS SCREENING THRESHOLD ANALYSIS; METHOD OF CALCULATING EMISSIONS.

Subparts 1 to 6 are added to clarify the methods of calculations that a facility must use to complete the screening threshold analysis. Minnesota Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5 subdivision 4(a)(5) and (a)(6) require the MPCA to address respectively, at a minimum:

- Requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions and compliance with emission limits in the facility's permit; and
- Record keeping related to air toxics emissions.

These subparts contain information about how to calculate actual annual emissions, hourly emissions, method of calculation for new sources, method of calculation for existing sources applying for an individual permit, and exempt emission units. It is reasonable to include in the rule the method of calculation to complete the screening threshold analysis as a form of record keeping and reporting. Including the method of calculation streamlines the process for both the facility and the MPCA. While this is a new process for all facilities, detailing how to calculate and provide emissions helps clarify requirements and reduces confusion for facilities.

Subpart 1. **Applicability.**

Subpart 1 is added to clarify that the air toxics facility must calculate its emissions for the air toxics screening threshold analysis according to this part. It is reasonable to clarify the purpose for this part of the rule. It is reasonable to detail how annual emissions are calculated so there is no confusion between the MPCA and the facility on what emissions the MPCA is requiring in the screening threshold analysis.

Subpart 2. **Annual emissions and stack parameters.**

Subpart 2 and items A to D are added to clarify the actual annual emission and stack parameters that must be used for the air toxics screening threshold analysis. It is reasonable to specify the emission and stack parameters an air toxics facility must use in the screening threshold analysis. This ensures that all air toxics facilities are using the same parameters when completing the screening threshold analysis.

Item A is added to clarify that an air toxics facility must use current stack parameters and actual annual emissions from the most recent MPCA finalized emissions inventory and current stack parameters to comply with this part. Existing air toxics facilities must use the most recent, finalized emissions inventory completed after the effective date of this chapter.

Air permitted facilities in the seven metropolitan counties, except registration option B permit holders, are required to submit an air toxics emissions inventory pursuant to part 7019.3000, subpart 1 starting with the 2026 emissions inventory year, with reports due on or before April 1, 2027. In the fall of the year the emissions data was submitted, the facilities are given a 45-day summary review period to review and submit any revisions to their reported or corrected emissions, pursuant to part 7019.3000, subpart 2. When the emissions inventory review period is over in the fall, emissions data are unlikely to change, so facilities can begin using these emissions in the STRATA at that time. If facilities need a reminder of the emissions data from the summary review period, emissions data will be available for them to access in MPCA's electronic emissions inventory reporting system (e-Services). The MPCA reviews and submits emissions inventory data to EPA and publishes data on the MPCA's external website by February of the year following the Emissions Inventory Report due date. In most cases, the emissions data from the fall review period will not change before MPCA finalizes the emissions data in February of the following year. If the emissions data change before the STRATA due date, the updated data must be used. The emissions inventory data is considered final for an emissions inventory year when it is first published on the MPCA's external website. This process is outlined in Table 6.

Table 6. Emissions inventory dates for 2026-2029

Emissions inventory year	Emissions inventory report due	Summary review	Emissions inventory data finalized by MPCA
2026	April 1, 2027	Fall 2027	Feb. 2028
2027	April 1, 2028	Fall 2028	Feb. 2029
2028	April 1, 2029	Fall 2029	Feb. 2030
2029	April 1, 2030	Fall 2030	Feb. 2031

It is reasonable to clarify which stack parameters and emissions data that the air toxics facility must use for the screening threshold analysis. It is imperative that the air toxics facility uses the most up-to-date stack and emissions data. This ensures that the screening threshold analysis is conducted for the most current conditions at the facility. It is reasonable to require the facility to use the most fully reviewed, and most recently finalized emissions in its screening analysis. Actual emissions can vary from year to year at a facility, so when completing the screening threshold analysis, it is reasonable to require the most recent data to be used to ensure compliance with the rules. The MPCA also wants to ensure that the actual emissions data reported has gone through summary review and been finalized before it is used in the screening threshold analysis, and that the

same emissions data reported to the public is used in the analysis. Furthermore, the emissions data used must be reported after the effective date of the air toxics emissions reporting rule updates. This is because the air toxics emissions reporting rule, under part 7019.3110, has been promulgated and the first full year of mandatory air toxics emissions data reported will be after January 1, 2027. The recent amendments to chapter 7019 will require air toxics reporting facilities to report air toxics emissions, with the list of air toxics stated in the rule under part 7019.3110. Prior to the recent amendments to the air emissions inventory rules, air toxics emissions reporting has been voluntary and has occurred every three years. Voluntary reporting can result in incorrect and incomplete information. To ensure that the emissions data accurately represents the operations at the air toxics facility and includes all the appropriate air toxics, only emissions data finalized after the adoption of the 2025 amendments to chapter 7019 can be used in the screening threshold analysis.

Item B is added to state that actual emissions must be calculated according to parts 7019.3020 to 7019.3100 in the screening threshold analysis. It is reasonable to require facilities to comply with the air toxics emission inventory requirements provided in chapter 7019. Referencing chapter 7019 ensures consistency between the two rules (air toxics reporting and air toxics regulations) on how actual annual emissions must be calculated. Parts 7019.3020 to 7019.3100 include information about calculating actual emissions for emission inventory, method of calculation, continuous emission monitor (CEM) data, performance test data, volatile organic compounds (VOC) and air toxics material balance, mercury material balance, SO_2 material balance, emission factors, enforceable limitations, and facility proposal. By referencing existing rule requirements, there is less burden on the air toxics facilities to complete new or additional calculations of actual emissions. This allows for consistency across all air toxics facilities and helps minimize MPCA workload to review emissions calculations.

Item C is added to clarify that calculations in the air toxics screening threshold analysis related to stack emissions must use individual stack parameters, including stack height and the shortest horizontal distance to the facility's property line. It is reasonable to require the stack height and the shortest distance to the property line in the screening threshold analysis as these parameters impact air dispersion concentrations. Stack height and distance to property line are key factors in determining the concentration of a pollutant in the air around a facility. Higher stack heights support greater dispersion of air pollution and the farther the stack is from the facility property line, the less air pollution reaches the community around the facility. The shortest distance to property line must be used to ensure that the highest potential risk for a given stack is evaluated in the screening threshold analysis. Based on the placement of a stack, the stack may have different distances to different property lines, and using a larger distance would not provide the greatest risk estimate for a facility. Requiring the shortest distance is reasonable because it results in the greatest risk estimate for the facility and thus is most protective of human health and the environment. Additionally, the rule clarifies that it must be the shortest horizontal distance to property line. This ensures that all facilities measure the distance to the property line the same way, from the base of the stack to nearest property line. Not the distance from the top of the stack down to the property line or any other variation. If the distance to property line used in the screening threshold analysis is not accurate, the results from a screening threshold analysis may be inaccurate. It is reasonable to clarify what information is required to ensure reasonably accurate results.

Item D is added to clarify that calculations for fugitive emissions must use the height of the fugitive emission source, or a height of one meter if unknown, and the shortest horizontal distance to property line in the screening threshold analysis. It is reasonable to specify the parameters for a source emitting fugitive emissions to be assessed in the screening threshold analysis. Fugitive emission sources have pollutant discharges that could not reasonably pass through a stack, chimney, or other functionally equivalent opening, such as particulate from an outdoor pile of material. However, for simplicity, fugitive emission sources in the screening threshold analysis are characterized as if they are emitted from a stack. Some fugitive emission sources may have a height associated with them, rather than assuming these fugitive emission sources are at ground level. If a fugitive source has a height, such as an outdoor pond, then that height can be used in the screening threshold analysis.

However, if the height is unknown then a height of one meter must be used. It is reasonable to clarify default parameters to ensure consistency across all fugitive sources and reduce confusion among facilities.

A height of one meter (3.28 feet) is reasonable because this is the most conservative stack height in the screening threshold spreadsheet. If the height of the fugitive emission source is unknown, then it is reasonable to use the most conservative stack height parameters to evaluate if the emissions are above or below screening threshold values.

Fugitive emission sources are included in the screening threshold analysis because fugitive emission sources are also sources of air toxics emissions at air toxics facilities. In preliminary assessments conducted by MPCA to estimate how many facilities would have at least one air toxic above threshold values, fugitive emissions were assessed to see if any emissions from a fugitive emissions source would be above screening threshold values. The emissions data used was from the 2020 reporting year. At that time, reporting of air toxics was voluntary, so data is not necessarily complete nor indicative of operations at air toxics facilities but provides a general idea for the review. Out of all the facilities in the seven metropolitan counties, 16 facilities reported air toxics emissions from fugitive emission sources. When the emissions data from the fugitive emission source and a stack height of one meter was used and compared to screening threshold values, nine air toxics facilities were above screening threshold values for their fugitive emissions. Given that at least nine facilities would potentially have fugitive emissions above screening threshold values, the MPCA determined it is reasonable to include fugitive emission sources in the screening threshold analysis.

Out of the nine facilities that were above for fugitive emissions, seven were also above threshold values for a different stack other than the fugitive source. Given this information, an air toxics facility most likely will not be above screening threshold values for only a fugitive source. The air toxics facility would likely have another stack that is above screening threshold values as well as the fugitive emission source. In the case of air toxics, most fugitive emission sources are referred to as “area sources” in modeling because these fugitive emission sources emit from across broad geographic areas, as opposed to stacks which are point sources because emissions come from a single point. Given that most fugitive sources that report air toxic emissions are “area sources,” it is reasonable to ask for the shortest distance to property line be used for simplicity. For example, assuming a fugitive source is shaped like a square with all four sides of the source having different distances to the nearest property line (say, 5, 7, 8, and 9 meters), the 5-meter distance should be used to compare the fugitive emissions to a screening threshold value. This ensures that the most conservative parameters are being used, and if the emissions are at or below screening threshold values based on the most environmentally conservative parameters, it is reasonable to assume that it would also be at or below screening threshold values based on the less conservative parameters; basing the analysis on the less conservative parameters could inaccurately show the facility to be at or below screening threshold values. Taking the more conservative approach is reasonable to estimate the highest potential air toxics risk from the facility and thus be most protective of human health and the environment.

Subpart 3. **Hourly emissions.**

Subpart 3 and items A to D are added to clarify the methodology an air toxics facility must use to calculate its hourly emissions for use in the air toxics screening threshold analysis. The screening analyses required in parts 7012.0150 to 7012.0300 includes air toxics that have acute exposure durations and corresponding hourly screening threshold values. To complete the screening threshold analyses, the owners or operators of an air toxics facility are required to calculate hourly emissions in pounds per hour in order to compare emissions against screening threshold values.

Item A is added to require that, except as provided in items C and D, hourly emissions must be calculated using actual annual emissions in accordance with subpart 2 of this part divided by the operating hours of the air toxics facility.

Air toxics facilities have not previously been required to determine emissions for non-HAP air toxics, except where facilities have previously completed an AERA or other compliance demonstration. In order to reduce the complexity, time, and therefore cost for air toxics facilities, the MPCA has provided a method for determining an hourly emission rate using operating hours and annual emissions already required to be reported under chapter 7019. This method for calculating hourly emissions is for chapter 7012 purposes only.

This method makes it easier for facilities to complete the calculations and therefore may reduce costs for completing the screening threshold analysis. This is because the facility will use annual emissions as determined in subpart 2 and required under chapter 7019. Since some emission units may not operate during all facility operating hours, the MPCA acknowledges that this method will likely underestimate hourly emissions by averaging out annual emissions over a time period that emissions units are not in operation. For instance, a facility may be open for eight hours a day, but its paint booth may only operate a portion of those hours. However, tracking hours of operation for each unit may be overly burdensome for facilities, especially those without individual permits and facilities that otherwise do not track hours of operation. To reduce the likelihood that hourly emissions are underestimated, items A, B, and D provide options for owners or operators to use, in the order of what will provide the most accurate hourly emissions.

During the rulemaking process, MPCA sent out multiple surveys to facilities to understand expectations from facilities and the information readily available from a facility. A survey to owners or operators of existing facilities with general permits, capped permits, and registration permits included a question about their ability to track operating hours with several response options. Response options included: by emission unit, by process, by facility, and unable to track any operating hours. Approximately 10% of respondents said that they are unable to regularly track any operating hours. The remaining respondents indicated that they were able to regularly track operating hours in some manner, whether by facility, process, or individual emission unit.

Given the survey results, it is reasonable to develop methods that reduce costs for facilities by using information it already tracks and reports, such as annual reported air toxics emissions, and information that MPCA expects the majority of existing facilities can reasonably determine and track.

Item B is added to clarify that for the purposes of this chapter, operating hours are the annual number of hours that an emissions unit is operating and emitting air toxics where records of hours of operation are available. Some owners or operators may keep records for their own purposes or be required to keep records of operating hours for emissions units for regulatory purposes, such as permit requirements. This information is needed to determine an hourly emission rate to complete the screening analyses. Dividing annual emissions from an emissions unit by the duration of time that the emissions unit is operating provides a reasonable average estimate of hourly emissions. This may be an underestimate of hourly emissions if an emission unit is able to operate at varying levels of capacity. However, this method is expected to take less time to complete than determining hourly PTE because it uses information that a facility already has available. Thus, this method is also expected to cost an owner or operator less than determining hourly PTE. It is reasonable to provide the calculation methodology and clarify what information may be needed for that methodology in rule to reduce confusion for owners and operators. It is reasonable to provide a method of calculation to show compliance with part 7012.0300, subpart 1 using existing information that the owners or operators of air toxics facilities have to reduce time and cost to complete the screening analyses.

Additionally, item B is added to clarify that if records of hours of operation are not kept for the individual emission unit, then operating hours are the annual number of hours that a facility is open and operating. If owners or operators have not provided hourly PTE for other regulatory purposes and they do not have records of the hours an emissions unit is operating, they may use the hours that the facility is open and operating. This information is needed to determine an hourly emission rate to complete the screening threshold analyses. Dividing annual emissions from an emissions unit by the hours a facility is open and operating will underestimate hourly emissions in cases where an emissions unit is not operating constantly while a facility is open. However,

for facilities that do not have hourly PTE data and where facilities do not have a method to track operating hours for individual emissions units, this method still provides a more accurate estimate for an hourly emission rate than using total hours in a year (8,760 hours per year). This method uses information the facility is expected to be able to reasonably determine, is less complex, and therefore is expected to be less costly for owners and operators. It is reasonable to provide the calculation methodology and clarify in rule what information may be needed to reduce the amount of time and expense expended to complete a screening threshold analysis.

Item C and subitems (1) to (3) are added to require that an air toxics facility with an individual permit under parts 7007.0200 to 7007.0250 or capped permit under part 7007.1140 must calculate the hourly emission rate of each HAP using the maximum physical capacity of equipment emitting a HAP. It is reasonable to require owners or operators of facilities with individual or capped permits to calculate hourly emissions for HAPs using the maximum physical capacity of equipment, because these air toxics facilities are required to calculate annual PTE of HAPs for use in their permit applications. Since these permit types already calculate annual PTE, the burden to convert the annual emissions value to an hourly emissions value should be minimal by simply converting years to hours and tons to pounds. Additionally, capped permit holders are already required in rule at 7007.1145, subpart 2(D)(4) to calculate hourly emissions of HAPs.

It is reasonable to require owners or operators of air toxics facilities with individual or capped permits to calculate hourly potential emissions of HAPs in order to have emissions to use in the STRATA that are adequately conservative; conservative meaning that it is more protective of human health and the environment. Calculation of hourly emissions based on maximum capacity is reasonable for screening against acute health benchmarks because it is feasible that when a facility operates equipment, it may be doing so at maximum capacity, even though it may be operated intermittently.

If an owner or operator does not operate an emissions unit at the rate assumed while determining their hourly emission rate based on maximum capacity of equipment, and that hourly emission rate causes them to exceed screening threshold values, the owner or operator has the opportunity to develop a compliance determination protocol (CDP). In developing a CDP, the owner or operator may determine what rate they could operate that emissions unit at to stay at or below screening threshold values and provide that information in the CDP. It is still reasonable for a facility to use an hourly emission rate based on maximum capacity of equipment in the screening analysis because it is not an underestimate and there is an option for an owner or operator to explain why they do not expect to exceed the screening threshold values and how they will accomplish that.

Under item C, subitems (1) to (3) are added to clarify when physical and operation limitations may be used in the calculation of the hourly emissions for HAPs. Physical limitations can include alterations to the equipment such that it cannot operate to its maximum design capacity and bottlenecks created by other equipment that constrain material throughputs. Operational limits can include choices by owners or operators to only operate equipment for a certain number of hours or to not operate equipment to its maximum capacity; operational limitations are typically included in permits as limits and require appropriate monitoring, recordkeeping, and reporting to be practicably enforceable. Physical and operational limitations may be used when they are required by an applicable requirement including parts 7011.0060 and 7011.0080 when requirements under part 7011.0065 are met; or are required by an existing permit; or are integral to the process. It is reasonable to clarify when physical and operational limitations may be used to provide clarity to owners or operators performing the calculations. The instances when physical and operational limitations may be used are consistent with part 7007.1200, subpart 3 related to calculating emission changes for modifications. A modification is a physical or operation change at a facility. It is reasonable to use methods that are consistent with other MPCA regulatory programs.

Subitem C(1) is added to clarify that when calculating the hourly emission rate, physical and operational limitations may be used if they are required by an appliable requirement, including parts 7011.0060 to 7011.0080 when requirements under part 7011.0065 are met. Applicable requirements are requirements that

are in rule. It is reasonable to allow an air toxics facility to take into account applicable requirements when calculating hourly emissions because these rates and limitations are enforceable. In the case of the parts 7011.0060 to 7011.0080, the requirements at part 7011.0065 include appropriate monitoring and recordkeeping to ensure the emissions reductions in rule are met and are practicably enforceable.

Subitem B(2) is added to clarify that when calculating the hourly emission rate, physical and operational limitations may be used if they are required by an existing permit. It is reasonable to allow an air toxics facility to take into account permit requirements when calculating hourly emissions because these rates and limitations are enforceable. The MPCA ensures that requirements included in a permit include appropriate monitoring, recordkeeping, and reporting requirements as compliance demonstrations that make permit requirements practicably enforceable.

Subitem B(3) is added to clarify that when calculating the hourly emission rate, physical and operational limitations may be used if they are integral to the process. Integral to the process means it is not possible for the equipment or process to operate without these limitations. An example of a physical limitation is the bottlenecking of downstream equipment with upstream equipment such that the downstream equipment cannot physically operate at its maximum rate due to a lack of material input. An example of an operational limitation is the operation of control equipment that is inherent to the process. A control might serve the primary objective of recovering valuable material while at the same time providing emissions control, therefore making operation without the control not economically feasible. It is reasonable to allow an air toxics facility to take into account physical and operational limitations when calculating hourly emissions because there is no other way to operate the process; therefore, compliance with these limitations is assured.

Item D and subitems (1) to (3) are added to clarify that except as required under item C, an owner or operator of an air toxics facility may calculate emissions of any air toxic using the maximum physical capacity of the equipment emitting the air toxic. An air toxics facility may choose to calculate the hourly emission rate of air toxics from an individual emissions unit, or facility-wide, if it does not want to track hours of operation of an emissions unit or the facility. Because facilities are not required to track operating hours prior to rule adoption, it is reasonable to provide an air toxics facility an option to calculate hourly emissions of air toxics without needing to track operating hours to lessen the recordkeeping burden of complying with the rule.

It is reasonable to allow owners or operators of any air toxics facility to calculate hourly emission rates using the maximum physical capacity of equipment because it is a conservative method of calculation and is unlikely to underestimate the actual emissions of air toxics. Using a conservative method of estimating emissions is appropriate for a screening approach to ensure that risks are not underestimated and do not go unaddressed.

Like item C, when calculating the hourly emission rate as allowed under item D, physical and operational limits may be used if the conditions under subitems (1) to (3) apply. Subitems (1) to (3) are added to clarify when physical and operation limitations may be used in the calculation of the hourly emission rate for air toxics. A physical limitation is something that physically limits the emissions of a pollutant, for example, control equipment. An operational limitation is a way of operating that limits the emissions of a pollutant, for example, an hourly throughput limit on an emissions unit. Physical and operational limitations may be used when limitations are required by an applicable requirement including parts 7011.0060 and 7011.0080 when requirements under part 7011.0065 are met; or are required by an existing permit; or are integral to the process. It is reasonable to clarify when physical and operational limitations may be used to provide clarity to owners or operators performing the calculations. The instances when physical and operational limitations may be used are consistent with part 7007.1200, subpart 3 related to calculating emission changes for modifications. A modification is a physical or operation change at a facility. It is reasonable to use methods that are consistent with other MPCA regulatory programs.

Subitem D(1) is added to clarify that when calculating the hourly emission rate, physical and operational limitations may be used if they are required by an appliable requirement, including parts 7011.0060 to 7011.0080 when requirements under part 7011.0065 are met. Applicable requirements are requirements that are in rule. It is reasonable to allow an air toxics facility to take into account applicable requirements when calculating hourly emissions because these rates and limitations are enforceable. In the case of the parts 7011.0060 to 7011.0080 example, the requirements at part 7011.0065 include appropriate monitoring and recordkeeping to ensure the emissions reductions in rule are met and are practicably enforceable.

Subitem D(2) is added to clarify that when calculating the hourly emission rate, physical and operational limitations may be used if they are required by an existing permit. It is reasonable to allow an air toxics facility to take into account permit requirements when calculating hourly emission rate because these rates and limitations are enforceable. The MPCA ensures that requirements included in a permit include appropriate monitoring, recordkeeping, and reporting requirements as compliance demonstrations that make permit requirements practicably enforceable.

Subitem D(3) is added to clarify that when calculating the hourly emission rate, physical and operational limitations may be used if they are integral to the process. Integral to the process means it is not possible for the equipment or process to operate without the limitations. An example of a physical limitation is the bottlenecking of downstream equipment with upstream equipment such that the downstream equipment cannot physically operate at its maximum rate due to a lack of material input. An example of an operational limitation is the operation of control equipment that is inherent to the process. A control might serve the primary objective of recovering valuable material while at the same time providing emissions control, therefore making operation without the control not economically feasible. It is reasonable to allow an air toxics facility to take into account physical and operational limitations when calculating hourly emissions because there is no other way to operate the process; therefore, compliance with these limitations is assured.

If the hourly emission rates at maximum equipment capacity cause an air toxics facility to exceed screening threshold values, an owner or operator that does not operate an emissions unit at the maximum capacity has the opportunity to develop a compliance determination protocol (CDP). In developing a CDP, the owner or operator may determine the rate at which the facility could operate that emissions unit and be at or below screening threshold values and provide that information in the CDP. It is still reasonable for a facility to use an hourly emission rate based on maximum capacity of equipment in the screening analysis because it is not an underestimate and there is an option for an owner or operator to explain why they do not expect to exceed the screening threshold values and how they will accomplish that.

Subpart 4. **New air toxics facilities.**

Subpart 4 is added to clarify that a new air toxics facility (meaning an existing facility or proposed facility applying for a new air permit after the effective date of this chapter) must estimate expected actual emissions during normal operation reflecting the proposed operation of the facility in performing the calculations. It is reasonable to require newly proposed facilities or facilities applying for a new permit type to estimate their expected actual emissions from proposed operations. Estimated actual emissions are already required in permit applications for new facilities, in parts 7007.0500, 7007.1125, 7007.1130, and 7007.1140. This method is more reasonable than requiring new facilities to use their PTE in the screening threshold analysis. Using potential emissions instead of actual emissions could incorrectly show that an air toxics facility is above screening threshold values, when it would be at or below screening threshold values once it begins operating. Additionally, for facilities that are required to apply for a new permit for reasons that may be unrelated to a physical or operational change (*e.g.* a newly applicable federal standard, change in Minnesota Rules, change in ownership, etc.), the calculation of estimated emissions from proposed operations could take into consideration a facility's actual emissions from the previous year.

The alternative to calculating estimated actual emissions would be to require a new facility to use PTE in the screening threshold analysis. However, annual potential emissions of a pollutant are often significantly higher than reported actual emissions, so requiring use of annual PTE would be inconsistent with existing facilities and possibly cause undue burden to newer facilities in the screening step. Additionally, requiring a new air toxics facility to use estimated actual emissions instead of PTE provides consistent requirements between existing and new facilities. Both new and existing air toxics facilities will be using either an estimate of their actual emissions or their reported actual emissions in the screening threshold analysis.

Subpart 5. Exempt emissions units.

Subpart 5 and items A to G are added to clarify which emission units are exempt from being included in the air toxics screening threshold analysis. It is reasonable to list the exemptions of some emissions units from being included in the screening threshold analysis if these emissions units are not significant sources of air toxics in order to simplify the screening process, reducing the workload for facilities where there is lower expected risk from sources of air toxics. These types of emissions units include emergency generators, fire pumps, emissions units emitting only air toxics without an IHB, insignificant activities under part 7007.1300, conditionally insignificant activities under part 7008.4000, emission units used solely for supplying comfort heat or cooling, and emissions units at an air toxics facility with a registration option C permit that are indirect heating units (e.g. boilers) or reciprocating internal combustion engines. The reasonableness for exempting each of these emission units is explained below under each item.

Item A is added to clarify that emergency generators are exempt from being included in the screening threshold analysis. It is reasonable to exempt emergency generators from the screening threshold analysis as the risk driving pollutant is mainly nitrogen dioxide, which is not included in the screening threshold analysis. Emergency generators mostly operate when unforeseen conditions result in a disruption of electrical power to the stationary source or for maintenance and testing. The definition of emergency generators used for the purposes of the screening threshold analysis comes from the EPA memo titled “Calculating Potential to Emit (PTE) for Emergency Generators”.[22]

Item B is added to clarify that fire pumps are exempt from being included in the screening threshold analysis. Fire pumps are used in an emergency when the fire pump is needed to pump water to an emergency at the air toxics facility. Therefore, it is reasonable to exempt them from being included in the screening threshold analysis as fire pumps are only used in an emergency situation. Additionally, it is reasonable to exempt fire pumps from being included in the screening threshold analysis as these fire pumps are not included in an AERA. If an air toxics facility is above screening threshold values, the facility would have to either complete an AERA or develop a CDP. Since fire pumps are exempt in an AERA, it is reasonable to exempt them from the screening threshold analysis.

Item C is added to clarify that emissions units emitting only air toxics without an IHB based on the hierarchy listed in part 7012.0560, subpart 1, item G are exempt from being included in the screening threshold analysis. It is reasonable to exclude emission units that emit only air toxics without an IHB as these air toxics do not have screening threshold values in order to compare a facility’s emissions to the screening threshold values. Screening threshold values are calculated using modeled dispersion values and IHBs. If an air toxic does not have an IHB, then a screening threshold value cannot be calculated. Thus, if an emission unit emits only air toxics without an IHB there would be no screening threshold values to compare to the air toxic emissions. Given that there would

[22] *Calculating Potential to Emit (PTE) for Emergency Generators. Retrieved from https://www.epa.gov/sites/default/files/2015-08/documents/emgen.pdf.*

be no screening threshold value used for comparison, it is reasonable to exclude emission units emitting only air toxics without an IHB.

Item D is added to clarify that insignificant activities under part 7007.1300 are exempt from being included in the screening threshold analysis. It is reasonable to exempt insignificant activities from the screening threshold analysis because facilities are not required to calculate and report actual emissions from insignificant activities unless required by the agency under part 7007.0500, subpart 2, item C, subitem (2). Furthermore, insignificant activities often operate sporadically and infrequently because these activities are often support-related activities and not production-related activities, which typically results in them having comparatively low actual emissions. While insignificant activities will need to be included if an air toxics facility completes an AERA, insignificant activities are not included in the screening threshold analysis because facilities do not routinely calculate and report their actual emissions from these sources.

Item E is added to clarify that conditionally insignificant activities under parts 7008.4000 to 7008.4110 are exempt from the screening threshold analysis because facilities are not required to calculate and report actual emissions from conditionally insignificant activities unless required by the agency under part 7007.0500, subpart 2, item C, subitem (2). Furthermore, conditionally insignificant activities often operate sporadically and infrequently because these activities are often support-related activities and not production-related activities, which results in them having comparatively low actual emissions. While conditionally insignificant activities will need to be included if an air toxics facility completes an AERA, conditionally insignificant activities are not included in the screening threshold analysis because facilities do not routinely calculate and report their actual emissions from these sources.

Item F is added to clarify that emission units used solely for supplying comfort heat or cooling that only combust natural gas and are not considered process equipment are exempt from being included in the screening threshold analysis. The emissions units must either have a dedicated stack or vent, or if the emissions unit exhausts through a shared stack with other emissions units, the owner or operator must be able to calculate emissions separately from other emissions units. It is reasonable to exempt emission units used solely to provide comfort heat or cooling that only combust natural gas because these units often have relatively low annual actual emissions. Additionally, natural gas is the cleanest form of fuel combusted for heating and comfort heating or cooling and is essential to the well-being of employees.

Item G is added to clarify that emissions units at an air toxics facility with a registration option C permit under part 7007.1125, that are indirect heating units, such as boilers or reciprocating internal combustion engines, are exempt from being included in the screening threshold analysis. It is reasonable to exempt emission units under option C permits that are used for indirect heating or internal combustion. Under part 7012.0060, subpart 2, item C, an option C facility is exempt if emissions are only from indirect heating units and the facility does not emit any VOC-containing materials. It is reasonable to exclude emission units with emissions from indirect heating and reciprocating internal combustion engines at facilities with option C permits because during MPCA's initial analysis of all the facilities in the seven metropolitan counties, option C facilities emitting air toxics from indirect heating and reciprocating internal combustion engines did not exceed screening threshold values. Additionally, the MPCA looked at the highest reported natural gas throughout the whole state and evaluated those emissions against the screening threshold values. From both of these investigations, it was determined that indirect heating and reciprocating internal combustion engines would most likely not exceed screening threshold values. However, the MPCA's analysis of the option C facilities with VOC-containing materials found that those emissions from VOC-containing materials exceeded screening threshold values. Therefore, it is reasonable not to exclude registration option C facilities' emissions units that use VOC-containing materials. If an option C air toxics facility has both emission units that emit VOC-containing material and a different emission unit that is only used for indirect heating or is a reciprocating internal combustion engine, the later emission unit would be exempt from the screening threshold analysis. The reasoning behind including option C permits in this

rule is to ensure that emissions from the VOC-containing materials do not exceed screening threshold values. Facilities have not previously had to report the individual air toxics from VOC-containing materials and therefore MPCA is not able to determine that these emissions do not pose a potential risk. It is reasonable to include emissions units with air toxics from VOC-containing materials to determine if these emissions pose a potential risk that require additional analysis or action taken by the facility. However, emissions units with emissions from indirect heating or internal combustion do not need to be included in the screening threshold analysis, making the screening analysis process less burdensome for some option C facilities where air toxics emissions from indirect heating units are not expected to exceed screening threshold values.

Subp. 6. **Exempt emissions.**

Subpart 6 is added to clarify that emissions of a HAP from an emission unit or units for which a standard has been promulgated under section 112(d) of the federal Clean Air Act are excluded from the screening threshold analysis required under part 7012.0400, subpart 2, but air toxics emissions that are not hazardous air pollutants must still be included in the screening threshold analysis.

It is reasonable to exempt these HAPs from the screening analysis because the EPA has conducted extensive risk evaluations in the development of National Emission Standards of Hazardous Air Pollutants (NESHAPs) under section 112(d) of the Clean Air Act. It is reasonable to consider a facility's applicable requirements because this exemption from the screening analysis helps focus resources on sources and pollutants that have not had any associated risk review, and helps reduce additional work for MPCA and regulated parties that may have potentially limited benefits at this stage where only individual pollutants from individual stacks are analyzed. Due to applicable NESHAP requirements, facilities may have already implemented control equipment or best management practices. It is reasonable to reduce the regulatory burden of complying with the screening analysis requirements of this rule for facilities that have already evaluated and potentially reduced risk of individual HAPs through compliance with a NESHAP standard. Furthermore, Wisconsin, Ohio, and Michigan of EPA region 5 also offer exemptions based on applicability of NESHAPs in their state air toxics rules. It is reasonable for the MPCA to consider and offer a similar exemption. It is reasonable for this exemption to apply only to HAPs because only HAPs are evaluated by the EPA in the EPA's risk reviews used in NESHAPs. The NESHAP program does not regulate non-HAP air toxics; therefore, it is reasonable to include non-HAP air toxics in screening analyses

Many NESHAPs require installation of control equipment. Some NESHAPs may only require actions such as implementing a training program, leaving room for potential additional actions a facility could take. Without a comprehensive review of each regulation, the MPCA could not determine which NESHAPs have the potential for additional action a facility could take. Therefore, for clarity and simplicity the rules offer a broad exemption from the screening threshold analysis but still require inclusion of these emission units in the AERA process, so that additional potential action may be evaluated.

Because the AERA takes into consideration the additivity of risks to compare to acceptable risk levels, emissions units and sources for which a NESHAP has been promulgated will still need to be included in the AERA to look at the total risk from the facility. The owner or operator of the air toxics facility is able to then look at all contributors to that risk to consider possible changes if changes are needed to reduce risk and potential impacts. The owner or operator of an air toxics facility may consider potential changes for any equipment with emissions contributing to higher risk levels, and that equipment may or may not be subject to an applicable NESHAP. It is possible that equipment with applicable NESHAPs have options to still reduce risk. It is reasonable that the owner or operator include units with applicable NESHAPs in the AERA, so the facility has clarity in the information to make an informed decision based on which pollutants are driving risk. It is reasonable for the MPCA to also have these emissions included in the AERA so that the agency knows the potential impacts and different risks from the facility to ensure it is regulated in a way that is reasonably protective of human health and the environment.

The MPCA investigated whether emissions from emissions units for which a NESHAP has been promulgated could be above screening threshold values. Looking at all the facilities with state or federal individual permits in the seven metropolitan counties, only 62 facilities had at least one emissions unit for which a NESHAP has been promulgated. Out of the 62 facilities found to be subject to NESHAPs, 20 of those facilities' emissions were found to possibly exceed screening threshold values for those stacks subject to NEHSAPs. Even though the analysis showed a possible exceedance in screening threshold values for stacks subject to NESHAPs, the MPCA decided to exempt HAPs emissions from sources with applicable NESHAPs in the screening threshold analysis. It is reasonable to exempt HAP emissions from these sources in the screening analysis because the EPA has conducted extensive risk evaluations in the development of NESHAPs and these applicable regulations should require facilities to implement control equipment or best management practices to manage or even reduce risk. If facilities pose additional risk where other emissions of non-HAP air toxics exceed screening threshold values, those will be addressed in either a compliance determination protocol (CPD) or all emissions from the facility, including those with applicable NESHAPs, will be considered in the completion of an air emissions risk analysis (AERA).

Part 7012.0450 – COMPLIANCE DETERMINATION PROTOCOL.

Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, sec. 5, subd. 4(a)(3), (a)(4), (a)(5), and (a)(6) requires the MPCA to address performance tests, monitoring, reporting, and recordkeeping for air toxics. Additionally, Minn. Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, sec. 5, subd. 4(b)(1) and (b)(2) require the MPCA to develop rules that must establish testing, monitoring, reporting, recordkeeping, and inspection requirements that reflect different risks to human health and the environment posed by specific air toxics, and the air toxics facility's record of compliance with air toxics limits and other permit conditions. To comply with this, the MPCA requires that if an air toxics facility is above screening threshold values under part 7012.0300, subpart 1, it either must develop a compliance determination protocol (CDP) or complete an air emissions risk analysis (AERA). A CDP is developed by an air toxics facility and outlines the steps the facility will take to be at or below screening threshold values. The CDP is an enforceable document that allows a facility to document the actions it will take to comply with screening threshold values, without having to amend the facility's permit. CDPs can also include performance testing or monitoring, reporting, and recordkeeping of air toxic(s) that a facility will perform to demonstrate it is at or below screening threshold values. It is reasonable to require facilities to prepare a CDP as a demonstration for how they will meet the screening threshold values. It is also reasonable because the Session Law directs the MPCA to develop rules that address performance tests, monitoring, reporting, and recordkeeping for air toxics. Additionally, this is one option given to an air toxics facility to complete if it is above screening threshold values. Instead of forcing facilities into one option if they are above screening threshold values, they are given the option to either develop a CDP or complete an AERA.

Subparts 1 to 4 are added to clarify what information is needed for the submittal of the CDP, as well as the deadline, reporting, and reevaluation. It is reasonable to clarify what information must be included in the CDP because it avoids confusion for the facility and ensures the MPCA is receiving the correct information. Since the CDP is a new document created by this rule, it is imperative that the details of this new document are described. This helps air toxics facilities to understand what information they would need to provide for a CDP and may help air toxic facilities determine if they would rather develop a CDP versus complete an AERA. In addition, it is important to specify what is required in a CDP, the content, resubmittal of a CDP, and the reporting requirements to expedite the process of a CDP submittal.

Subpart 1. **Compliance determination protocol required.**

Subpart 1 and items A and B are added to clarify that an owner or operator of an air toxics facility must submit a compliance determination protocol (CDP) if emitting any air toxics above the screening threshold values (item A) and if the owner or operator is not submitting an air emissions risk analysis (AERA) protocol under part

7012.0550 (item B). It is reasonable to specify when a CDP is required. This allows facilities to understand when a CDP is required and allows facilities to better plan their workload.

Item A is added to clarify that if an air toxics facility emits any air toxics above the screening threshold values then the facility must develop a CDP. If a facility is above screening threshold values, it has the option to either develop a CDP or complete an AERA. A CDP is an enforceable document that provides existing facilities with a potential option to keep their permit type, if they do not have a permit type that can be amended. It is reasonable to require additional action from facilities above screening threshold values because reported actual emissions show there is a potential for increased risk. The air toxics facility must take further actions to either reduce actual emissions to be at or below screening threshold values by developing a CDP or completing additional analyses with an AERA that show permitted allowable potential emission rates from the facility do not exceed acceptable risk levels and therefore do not pose potential risk of adverse health effects.

Item B is added to clarify that the air toxics facility must submit a CDP if item A is applicable, and the owner or operator is not submitting an AERA under part 7012.0550. It is reasonable to specify that if an air toxics facility chooses not to complete an AERA, it must develop a CDP. By making this specification, it gives air toxics facilities clear options for what is required if they are above screening threshold values and gives air toxics facilities more flexibility in complying with the rule.

Allowing facilities to choose whether to submit an AERA or a CDP provides flexibility in how facilities may comply with the rule. A CDP provides flexibility to existing registration, capped, and general permit holders as it would allow these permit holders to retain these types of permits, rather than having to apply for an individual permit to incorporate site specific requirements.

Subpart 2. **Required content.**

Subpart 2 and items A to H are added to clarify that the owner or operator of an air toxics facility must develop a compliance determination protocol that demonstrates that the facility can reduce actual emissions to at or below screening threshold values. Items A to H list the contents that must be included in a CDP. A list of content that is required in a CDP, but not limited to, is the air toxic(s) above screening threshold values, the emissions units emitting the air toxic(s), limits or controls that will be taken at the facility, the date that compliance will be achieved, a description of direct physical measurements, a description of indirect measurement methods, a description of records kept onsite, and justification for the compliance determination method(s) selected. It is reasonable to clarify what must be included in the CDP because it provides facilities direction in developing a CDP. It is reasonable to specify the content required in a CDP, as it provides clarity for the air toxics facility and provides consistency between CDP submittals. The MPCA will be receiving the CDPs but will not be approving them. Detailing content to ensure consistency provides a standard expectation of the CDP and clarity of what is acceptable for all regulated parties submitting. Listing the requirements for the air toxics facility helps the MPCA ensure the facility has included the required information and that the facility is following what it has detailed in the CDP. It also creates consistency in submittals and helps reduce time for the MPCA to review and therefore efficiently uses agency resources.

Item A is added to clarify that the name and the CAS registry number, if applicable, for each air toxic above screening threshold values must be included in the CDP. It is reasonable to require both the names and corresponding CAS registry number as some air toxics are referenced by different names. Including the CAS number ensures that the air toxic(s) above screening threshold values are correctly identified. The main purpose of the CDP is to adjust the operations at a facility to reduce actual emissions so that an air toxic is not above its screening threshold value. To accomplish this, it is imperative that the name and CAS number for each air toxic(s) is listed in the CDP to create certainty in which air toxics are above screening threshold values and therefore, must be reduced by the facility in carrying out the CDP. It is also reasonable to only require air toxics that are above screening threshold values to be listed in CDPs, as the number of regulated pollutants is extensive.

Facilities likely do not emit all air toxics regulated by this rule and from an environmental and human health perspective, the MPCA is most concerned with the air toxics above screening threshold values. Affected facilities will not be expected to reduce air toxics that do not exceed screening threshold values, but reducing emissions of one air toxic may inherently reduce other air toxics. Identifying each air toxic above screening threshold values is also needed when verifying a screening threshold analysis later in the process. The frequency of inspections rule part 7012.0600, subpart 6 requires facilities to submit their most recent screening threshold analysis upon request. If a facility submits this analysis and it shows that other air toxic(s) are above screening threshold values and not included in a CDP, the air toxics facility will be required to revise its CDP.

Item B is added to clarify that the CDP must identify each process and emissions unit, both stack and fugitive emission sources, that emit air toxics that exceed or contribute to exceeding the screening threshold values. It is reasonable to require that each process and emissions unit associated with an air toxic that is above screening threshold values is identified in the CDP so that it is clear to the MPCA and facility what processes and emissions units are subject to the CDP. The screening threshold analysis assesses each stack to determine if any air toxics are above screening threshold values. A facility may have multiple processes and emission units that vent through a single stack, vent, or other equivalent opening. It is important to not only understand which stack has air toxic(s) above screening threshold values, but also the emissions units and processes venting to that stack. Including this information in the CDP clarifies which processes, emissions units, or fugitive sources are contributing to an air toxic being above screening threshold values.

Item C is added to clarify that the limits, restrictions, controls, or other means that will be taken to achieve compliance, and remain at or below screening threshold values for one or more emissions units must be added to the CDP. Examples of actions a facility could take to be at or below screening threshold values could include changing materials used at the facility, installing a control, or eliminating a process. It is reasonable to require that any measures or activities taken to meet screening threshold values are identified in the CDP so that it is clear to the MPCA and a facility how a facility will comply with screening threshold values. The CDP is an enforceable document that an air toxics facility will comply with to stay at or below screening threshold values. In the previous item, the MPCA requires the air toxic facility to determine each process and emissions unit that is contributing to an air toxic being above screening threshold values. Since the air toxics facility can identify the source of the air toxic(s) emissions, it is reasonable for the air toxics facility to detail what limits, restrictions, controls, or other means it will take to reduce air toxic(s) emissions to be at or below screening threshold values. The air toxics facility will have to identify changes that must be made at the facility to reduce actual emissions to be at or below screening threshold values. Thus, it is reasonable to require the air toxics facility to detail these changes in the CDP. This allows the MPCA to know what the facility is proposing to change and also keeps the air toxics facility accountable to those changes.

Item D and subitems (1) and (2) are added to clarify that the date that compliance will be achieved with the screening threshold values under part 7012.0300, subpart 1 must be included in the CDP. It is reasonable to include deadlines for achieving compliance so it is clear to the MPCA and a facility of when a facility must be compliant with screening threshold values.

Subitem D(1) is added to clarify that if control equipment will be installed, the date that compliance must be achieved by must not be later than three years after the date of the screening threshold analysis certification submittal or the screening threshold analysis certification deadline, whichever is sooner. It is also reasonable to require facilities to comply with screening threshold values within three years of submitting a screening certification because it is consistent with Federal regulations for hazardous air pollutants (40 CFR 63), which require compliance within three years of rule promulgation. The MPCA is adapting this deadline to this rule, requiring compliance within three years of submitting a screening certification, because facilities will not know if they are above screening threshold values until they complete the air toxics screening threshold spreadsheet (STRATA) and will need time to determine a course of action, including possibly coordinating those actions with

third parties. Since part 63 standards are technology-based standards, compliance generally requires updating or modifying controls.

Subitem D(2) is added to clarify that if control equipment will not be installed, the date that compliance will be achieved must not be later than two years after the date of a screening threshold analysis certification submittal or the screening threshold analysis certification deadline, whichever is sooner. It is reasonable to only allow a two-year compliance timeline for facilities not relying on updating or installing controls because compliance measures not requiring controls are generally less capital and planning intensive. Examples of such measures might include altering process materials or production. For air toxics facilities complying by taking less capital-intensive measures, it is reasonable to require a shorter compliance timeline to reduce the risk posed by air toxics sooner.

Item E is added to clarify that a description of an approved direct physical measurement of emission rates, including performance tests or continuous emissions monitoring systems (CEMS), if feasible, for each air toxic exceeding the screening threshold value must be included in the CDP. Performance tests must be conducted and approved by the commissioner under parts 7017.2001 to 7017.2060. CEMS must be operated and approved by the commissioner under parts 7017.1002 to 7017.1180. Surrogate pollutants measured in place of any air toxics must be identified and an explanation of how they are used to measure the target air toxic must be provided. It is reasonable to require direct physical measurements of actual emissions, when available, so that actual emissions are verified to meet the screening threshold values outlined in part 7012.0300, subpart 1. Federal rules for hazardous air pollutants (40 CFR 63) regulate some hazardous air pollutant emissions via surrogate pollutants and subsequently allow for monitoring and/or measuring of surrogate pollutants in place of specific HAPs. For example, carbon monoxide is used as a surrogate for formaldehyde in some Part 63 standards that regulate emissions from fossil fuel combustion. Test methods do not exist for all of the listed air toxics and even if these test methods do exist, the costs for certain test methods may be cost prohibitive for some facilities. Testing a pollutant of similar nature can provide a reasonable, alternate form of more direct measurement for compliance purposes. Given this, it is reasonable to require air toxics facilities to directly measure emissions and to allow the use of surrogates when direct measurements are not available or cost prohibitive. By detailing the direct physical measurements of actual emissions, it allows the MPCA to determine how these measurements are conducted and will be a point for compliance within the CDP.

It is also reasonable to require direct physical measurement, including performance tests or CEMS because EPA guidance acknowledges that performance testing and CEMS are preferred and are the best method for measuring emissions.[23] It is reasonable to require that performance tests and CEMS be conducted in accordance with chapter 7017 because the requirements and processes for monitoring and testing are already described in this chapter and most industries are familiar with the requirements in rule. Performance test methodology and feasibility is also complex, and what may work at one facility may not work at other facilities. Air pollutants can mask each other, which makes it difficult to determine what air toxics are present as well as known quantities of each air toxic. It is reasonable to require facilities to identify surrogate pollutants so that it is clear to the MPCA and the facility if and how air toxics would be monitored in situations where pollutants cannot be tested directly. The test methods must be approved by EPA or other regulatory entity that develops tests methods. Other approved methods could possibly include methods developed by National Institute for Occupational Safety and Health (NIOSH) or Department of Defense (DOD). It is reasonable to allow for methods that have been

[23] *AP-42, Volume I, Fifth Edition, U.S. EPA, January 1995, Retrieved from https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors.*

developed for specific pollutants only and are approved methods so that the facility can provide more confidence in the accuracy and consistency of the performance test results.

There are multiple unknowns regarding ambient air quality, testing methods, and testing procedures related to PFAS. Because of this, the MPCA only requires monitoring for PFAS compounds for which there is a validated analytical test method, for example, EPA's Other Test Method 45 (OTM-45) and OTM-50. The MPCA has identified the PFAS compounds that can be tested for by including them in the STRATA if these compounds also have an IHB.

Generally, the MPCA requires that facilities use testing intervals appropriate to each individual facility's operational scenarios and emission source types. Test methods used must be developed by standard-setting organizations and conducted by third-party testing companies. The MPCA requires that any air toxic testing and monitoring is conducted in accordance with chapter 7017, and that the facility describe direct testing and monitoring in its CDP.

Item F is added to clarify that if direct physical measurement methods are not available, a description of the indirect measurement methods to calculate actual emissions under chapter 7019, such as material balance and operating rates, must be included in the CDP. It is reasonable to require indirect measurement of actual emissions if direct physical measurement methods are not available so that emissions are verified to be at or below screening threshold values under part 7012.0300, subpart 1. It is also reasonable to allow indirect measurement of actual emissions because the technology is not available to use performance testing and CEMS methods for all pollutants. For example, EPA has developed two performance tests for PFAS: OTM-45 and OTM-50. These performance tests only include analytical methodologies to test for certain PFAS compounds. Performance test methods do not exist for all of the air toxics subject to this chapter and even if these methods do exist, the costs for certain performance test methods may be cost prohibitive for some facilities. Performance test methodology and feasibility is also complex, and what may work at one facility may not work at another facility. Pollutants can also mask each other, which makes it difficult to determine what air toxics are present as well as known quantities of each air toxic. In these situations, allowing different approaches through indirect measurement methods is reasonable in order to determine site-specific emissions measurements. It is also reasonable to allow facilities to use different approaches to calculate emissions because the indirect measurement methods under chapter 7019 are widely used and accepted for measuring emissions by other states and the EPA.

Item G is added to clarify that a description of records kept onsite to verify continuous compliance with screening threshold values under part 7012.0300, subpart 1 must be included in the CDP. It is reasonable to require facilities to identify records to be kept onsite for verification of compliance so MPCA staff can verify that the facility's air toxics subject to a CDP are in compliance with screening threshold values under part 7012.0300, subpart 1. By clarifying that an air toxics facility must keep records onsite to verify continuous compliance, it reduces confusion for the air toxics facility. Additionally, records review is part of facility inspections in part 7012.0600 subpart 6, and by having the air toxics facility identify in its CDP the records to be kept onsite, it helps MPCA staff know what records to request while onsite. Additionally, the air toxics facility will be the most knowledgeable in what records best demonstrate compliance with its CDP and the screening threshold values.

Item H is added to clarify that an explanation of why each compliance measurement method under items E and F were selected. It is reasonable to require that the CDP includes justification for the methods chosen to develop and determine compliance with screening threshold values under part 7012.0300, subpart 1 so that facilities evaluate all options of measurement to determine if direct physical measurement methods exist for specific air toxics. If direct measurements are not possible, the facility would have to evaluate all indirect measurement methods available to determine the most accurate measurement of air toxics emissions. The air toxics facility must justify what methods it is using and how it is calculating its actual emissions to show the reduction in actual

air toxics emissions. An air toxics facility must also document the process it uses and validate its compliance method to provide confidence in the results.

Subpart 3. **Submission deadline.**

Subpart 3 is added to clarify that the owner or operator of an air toxics facility must submit a complete CDP within one year after the deadline under subpart 7012.0200, item B for certification of an air toxics screening threshold analysis that identifies the facility as emitting one or more air toxics above screening threshold values. It is reasonable to specify a timeframe for submitting a CDP so that facilities are aware of how much time they have available to develop a CDP. The one-year deadline gives facilities time to evaluate multiple options and determine their best option for how to reduce their air toxics emissions that could pose a risk to human health and the environment and comply with screening threshold values. Additionally, facilities that are completing an AERA instead of developing a CDP are also given one year to submit the AERA protocol. It is reasonable for these timeframes to be consistent for ease of tracking and to reduce confusion, and to ultimately help increase compliance. Based on a survey to smaller facilities sent out by MPCA's Small Business Assistance Program (SBEAP), most of these facilities stated that an AERA could be completed between six months and one year. The MPCA did not ask how long the facilities would need to complete a CDP, but the MPCA did ask how long it would take for facilities to come into compliance with screening threshold values. Since this is just the submittal of the CDP, and not compliance with the CDP, the timeline is closer to the timeframe specified by the survey participants for completing an AERA. Since the survey results determined that most of the facilities agreed to six months to a year, a year is a reasonable amount of time to complete an AERA. For consistency across the rule, it is reasonable for facilities to develop the CDP in a year as well.

Subpart 4. **Reporting deviations.**

Subpart 4 is added to clarify that a facility must submit a deviation report, in a format approved by the commissioner, at least semiannually. A deviation report is a document prepared by owners and operators and contains any noncompliance with an applicable requirement, including the requirements of a CDP, or permit condition that occurred during the time period covered by the report. The deviation report must state whether or not a deviation occurred during the reporting period. The midyear deviations report, covering deviations that occurred from January 1 to June 30, is due by July 30 each year and the end-of-year deviations report, covering deviations that occurred from July 1 to December 31, is due by January 30 each year. Deviations may be reported on the same form required under part 7007.0800, subpart 6, item B, subitem (2). It is reasonable to require a facility to submit deviation reports at least semiannually because it allows the facility and the MPCA to track if and when deviations from the CDP occurred and determine whether the CDP needs to be revised to ensure adequate protection of human health and the environment, and to ensure compliance with the screening threshold values. It is reasonable to clarify when reports are due because it reduces confusion for facilities, and other rules, such as chapter 7007, also require submittal of deviation reports semiannually by the same deadlines, which provides consistency across rules. It is reasonable to allow facilities to report deviations on the same form required under part 7007.0800, subpart 6 because it reduces burden to some facilities and the MPCA to use existing reporting methods. Registration option D permits with a CDP will be required to begin submitting deviations reports semiannually, regardless of whether deviations occurred. This is a change to previous requirements where option D permits were only required to submit a deviation report for the reporting period in which a deviation occurred. It is reasonable to require option D permit holders with a CDP to submit deviation reports semiannually because it ensures that these facilities are tracking compliance with their CDP.

The Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5 subd. 4(a)(5) states that the rules must address, at a minimum, requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions and the facility's compliance with emission limits in the facility's permit. Facilities are already required to report permit-related noncompliance items through deviation reports, and under the recent amendments in chapter 7019, the air toxics reporting rule, facilities

subject to this rule now have to report annual air toxic emissions. However, this information does not provide a complete understanding of a facility's compliance with screening threshold values, which are applicable requirements for air toxics facilities, or actions needed to comply with screening threshold values. By agreeing to develop a CDP, the facility is effectively agreeing to enforceable limits and monitoring needed to stay at or below applicable screening threshold values. Including information related to the CDP in facilities' deviation reports is a reporting method necessary to determine that the facility remains in compliance with these requirements. The language under Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(b)(1) states that in developing the rules, the commissioner must establish monitoring, record-keeping, reporting, and inspection requirements that reflect different risks such that facilities posing greater risk are required to provide more frequent evidence of permit compliance, including reporting. By having air toxics facilities that have a CDP submit deviation reports, the MPCA established additional recordkeeping and reporting requirements that reflect facilities posing greater risks being required to more frequently report and is therefore fulfilling the Session Law directive. Furthermore, under Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(b)(2) states that in developing the rules, the commissioner must establish monitoring, record-keeping, reporting, and inspection requirements that reflect the facility's record of compliance with air toxics emissions limits and other permit conditions. The requirements in a CDP outline limits and other restrictions the facility must take to maintain compliance with screening threshold values. Thus, reporting CDP deviations in deviations reports will reflect a facility's history of compliance with air toxics emission limits in monitoring, record-keeping, and reporting rule requirements. In the CDP, the air toxics facility will have to state how it will comply with the screening threshold values, and the deviation report requires facilities with a CDP to state whether the facility has deviated from any of the conditions listed in its CDP. By requiring facilities to state whether deviations in compliance with screening threshold values occurred, this fulfills the Session Law language.

Part 7012.0500 – REVISING COMPLIANCE DETERMINATION PROTOCOLS.

Subparts 1 and 2 are added to clarify when a facility must initiate a revision to its CDP and when the agency must require the facility to submit a revision to a facility's CDP. Once a CDP is developed there may be changes to an air toxics facility that may not be reflected in the original CDP. It is reasonable to allow facilities to initiate a revision to a CDP, when necessary, but it is also reasonable to allow the agency to require a revision. In either situation a CDP is revised due to changes at an air toxics facility and the revised CDP will reflect the changes at the facility.

Subpart 1. **Facility-initiated revision.**

Subpart 1 and items A to C are added to clarify that a facility with a CDP must revise its CDP when items A, B, or C are met, and provide the reason for why the revision was made. Items A to C are added to clarify the criteria for when a CDP must be revised. If any one of these criteria are met, a facility must revise its CDP. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subdivisions 4(a)(1) and 4(a)(5) require the MPCA to address respectively, at a minimum, specific air toxics to be regulated, and requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions and the facilities compliance with emission limits in the facility's permit. A CDP addresses specific air toxics that are regulated and requires reporting information to the agency to assist in determining the amount of air toxics emitted by the facility as well as if the facility is in compliance with regulations, including what is required by a facility's air permit. It is reasonable to require a facility to revise its CDP because a facility may make permit allowed changes, or there may be changes to air toxics emissions that require a revision to a facility's CDP to ensure the facility continues to comply with screening threshold values and provide adequate protection of human health and the environment. Furthermore, the facility must provide the reason as to why the CDP was revised. It is reasonable to require the facility to specify why it revised its CDP so that the MPCA is aware of the reason for the revision and can review the CDP accordingly.

Item A is added to clarify that a facility must revise its CDP when alterations or modifications to the air toxics facility will result in or have the potential to result in changes to either the amount of any one or more air toxics emitted, or the number of air toxics emitted by the air toxics facility. It is reasonable to require a facility to revise its CDP when changes to the facility will result or have the potential to result in significant changes to air toxics emissions because a revision to its CDP may be required to ensure continued compliance with screening threshold values and protection of human health and the environment. Facilities with option C, option D, and capped permits are allowed, by their permit, to make physical and operational changes as long as the changes do not affect the facility's eligibility for its respective permit type, so it is reasonable to require these facilities and all facilities to revise their CDP to ensure that the CDP remains current with the air toxics emitted from the facility.

Item B is added to clarify that a facility must revise its CDP when an approved direct physical measurement method of an air toxic becomes available that previously was not available. It is reasonable to require a facility to revise its CDP when a previously unavailable direct physical measurement methodology becomes available for an air toxic because the facility may want to add the methodology into its CDP, or add justification for why it cannot incorporate the methodology into its CDP. EPA guidance acknowledges that performance testing and CEMS are preferred and are the best method for estimating emissions, so it is reasonable to require revision of a CDP to address previously unavailable direct physical measurement methodology.

Item C is added to clarify that a facility must revise its CDP when the screening threshold values have been updated or removed. It is reasonable to require a facility to revise its CDP when screening threshold values change or are updated because it is important that a CDP stays current with the most recent screening threshold values to ensure compliance with screening threshold values and to ensure adequate protection of human health and the environment. Additionally, an air toxics facility would have had to complete a CDP because it was above screening threshold values. So, if screening threshold values were updated, there is a chance the facility may no longer be above screening threshold values and may not need a CDP.

Subpart 2. **Agency-initiated revision.**

Subpart 2 is added to clarify that except for when an owner or operator submits a permit application that includes requirements that would otherwise be incorporated into a compliance determination protocol, the commissioner must require an updated CDP, and items A to D are added to state the criteria that would allow the MPCA to require an updated CDP. These criteria are alterations or modifications at the facility, the CDP does not accurately represent the facility, new or updated screening threshold values exist, or data from risk-based determinations show potential exceedances of acceptable risk levels or screening threshold values. It is reasonable to include rule language that provides clarification for when the MPCA must require an updated CDP so that facilities are aware of the criteria for when a CDP must be updated.

Item A is added to clarify that alterations or modifications to the permitted facility that will result or have the potential to result in changes to either the amount of any one or more air toxics emitted, or the number of air toxics emitted, would require a CDP revision. Some permit types are allowed to make changes to the permitted facility without having to notify the MPCA, and it is reasonable to require an updated CDP when changes to a facility will result or have the potential to result in significant changes to air toxics emissions because a CDP may need to be revised to ensure compliance with screening threshold values and continued protection of human health and the environment. Alterations or modifications at a facility, such as adding emissions units or changing materials used, may result in air toxics emissions increasing, or the number of air toxics changing, which could impact the specific air toxics that were previously reported and could impact whether the air toxics facility is compliant with the screening threshold values. It is reasonable to require a revision when the volume or number of air toxics emitted has changed because if these alterations or modifications result in an exceedance of screening threshold values, the exceedances will need to be addressed by updating the CDP. It is reasonable to require a revision to the CDP to clarify for both the facility and the MPCA what is needed to ensure compliance with the rules.

Item B is added to clarify that if the commissioner of the MPCA receives previously unavailable information to the MPCA that shows that the terms and conditions of the CDP do not accurately represent the actual air toxics facility operations, an updated CDP would be required. It is reasonable to require an updated CDP when actual circumstances at the facility, such as onsite equipment, type and volume of emissions, or distance to property line, are different from what is identified in the CDP because the CDP must reflect the actual circumstances at the facility to ensure compliance with screening threshold values and ensure adequate protection of human health and the environment.

Item C is added to clarify that if there are additional air toxics for which screening threshold values have been established or updated that were not included in previous screening threshold or risk analyses, an updated CDP would be required. It is reasonable to require an updated CDP when screening threshold values change or are updated because it is important that a CDP stays current and reflects the most recent air toxics screening threshold values to ensure compliance with screening threshold values and to ensure adequate protection of human health and the environment. A CDP is required when a facility is above screening threshold values, so if the screening threshold values were updated or newly established then the facility may be above screening threshold values for more air toxics than are included in the CDP. A revision would be necessary to establish protocols to comply with updated screening threshold values or to include other air toxics in the CDP. It is reasonable to require a revision of the CDP to clarify for both the facility and the MPCA what is needed to ensure compliance with the rules.

Item D is added to clarify that if data from additional risk-based determinations show potential exceedances of acceptable risk levels or screening threshold values, an updated CDP would be required. It is reasonable to require an updated CDP if data from risk-based determinations, such as modeling, show potential exceedances of acceptable risk levels or screening threshold values because this demonstrates that the existing CDP may not be protective enough of human health and the environment. The CDP may only focus on a couple air toxics, so a risk-based determination may show an exceedance for additional air toxics or may show that the air toxics in the CDP are not being reduced to, or below screening threshold values or acceptable risk levels. It is reasonable to require revision of an air toxics facility's CDP to account for additional air toxics or to change the compliance plan to more stringently limit certain air toxic(s), when necessary. The MPCA has internal risk-based tools, such as MNRISKS, that use data from emissions inventory to estimate the risk for individual air toxics emitted by an air toxics facility. MNRISKS could show that an air toxic not listed in the CDP is posing a risk to human health. Other risk-based determinations may include an air emissions risk analysis (AERA). An AERA may be required if a facility completes an environmental assessment worksheet (EAW), a facility completes an environmental impact statement (EIS), an air permit includes a permit condition requiring an AERA, a facility applying for a permit is located in the cumulative levels and effects area under Minnesota Statute section 116.07, subdivision 4a, or an AERA is requested by the MPCA. AERA results may show that the facility is exceeding acceptable risk levels or indicate that air toxics not in the CDP are not being reduced to or below screening threshold values. This would be a reason to ask for an updated CDP to account for additional air toxics.

Part 7012.0530 – MODELING REQUIRED.

Part 7012.0530 is added to clarify that if an owner or operator of a facility does not provide sufficient evidence of remaining at or below screening threshold values by submitting a CDP, then a facility must submit an AERA protocol required under parts 7012.0550 and 7012.0555. The deadline for submitting a protocol for an air emissions risk analysis is the same as part 7012.0450, subpart 3. The owner or operator may not extend the deadline for the submittal of an air emissions risk analysis protocol by first submitting a compliance determination protocol. Some facilities have to submit an AERA when completing an environmental assessment worksheet (EAW). Across the state, MPCA receives approximately five to ten AERA protocols a year, so some facilities and consultants are familiar with the AERA process. It is reasonable to require a facility to submit an

AERA protocol if the facility cannot provide sufficient evidence that a CDP would ensure that the facility meets screening threshold values because, in that case, the risk that the facility poses is unknown and therefore needs to be determined through modeling. It is reasonable to require modeling because if the facility cannot demonstrate that actual emissions are in compliance, then it must demonstrate potential emission rates when modeled are in compliance with acceptable risk levels under part 7012.0560, subpart 3 and do not pose risk to human health and the environment. It is also reasonable to not allow an extension to the deadline for an AERA protocol because the facility has one year from the date of the submittal of the screening threshold analysis certification for either submission of a CDP or an AERA.

MPCA developed and sent a survey to smaller facilities after providing a couple informal comment periods. Responses to the informal comment periods appeared to come largely from representatives of larger facilities. This survey helped ensure the feedback MPCA received came from a diverse representation of industries and facility sizes and provided a broader understanding of the impact of rules concepts for facilities that are likely to have less resources. Based on this survey to smaller facilities, most of these facilities stated that they could complete an AERA between six months and one year. Since the survey results determined that most of the facilities agreed to six months to a year, a year is a reasonable amount of time to complete an AERA. For consistency across the rule, it is reasonable for facilities to develop either the AERA protocol or the CDP in a year, without extension of that timeline by first developing a CDP and then deciding to submit an AERA protocol. Allowing additional time to complete both would needlessly postpone a reduction in risk posed by the facility. The one-year deadline is reasonable because it reduces prolonged risk and exposure to emitted air toxics, and prevents drawn out submission timelines.

Part 7012.0550 – AIR EMISSIONS RISK ANALYSIS PROTOCOL.

Subparts 1 to 5 are added to clarify what is required of a facility to submit in an AERA protocol. It is reasonable to clarify what information is required in an AERA protocol. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(1) and 4(a)(5) require the MPCA to address respectively, at a minimum, specific air toxics to be regulated, and requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions and the facilities compliance with emission limits in the facility's permit. An AERA protocol contains specific emissions information for regulated air toxics, as well as information to assist the agency in determining the amount of air toxics the facility emits and what limitations are currently or will need to be included in the facility's air permit to ensure compliance. It is reasonable to include information about what is required in an AERA protocol submittal, the content needed in an AERA protocol, the AERA protocol approval process, the AERA disapproval process, and how an air toxics facility would need to resubmit an AERA protocol. By detailing the information needed for an AERA protocol, it streamlines the process of an AERA protocol submittal. Additionally, it promotes cohesiveness and consistency between AERA protocol submittals between air toxics facilities. AERA protocols are an important part of the process to ensure that the AERA modeling, files, and information is acceptable before moving to the report stage. The AERA protocol stage ensures details such as potential to emit calculations and stack parameters are correct and in compliance with standard procedures before running a model and submitting the results. By providing this information at the protocol stage this ensures that the results at the report stage are more finalized and do not require a rigorous review as at the protocol stage.

Subpart 1. **Air emissions risk analysis protocol required.**

Subpart 1 is added to clarify that the owner or operator of an air toxics facility must submit an AERA protocol if emitting any air toxics above screening threshold values and if the air toxics facility is not submitting a CDP under part 7012.0150, subpart 2, item A. An air toxics facility submitting a completed AERA report to comply with part 7012.0150, subpart 2, item B must submit an AERA protocol to the commissioner for approval that complies with subpart 2 of this part. An AERA is a process that uses spreadsheets, computer models, and health benchmarks to

estimate the potential risks to human health and the environment from air pollution emitted by a facility. An AERA describes the potential risks posed to communities closest to the facility, which have the highest level of exposure to the facility's emissions. During the AERA process, the air toxics facility will model its facility to more accurately represent the potential health risks from air toxics emitted by the facility. It is reasonable to clarify the conditions in which an AERA protocol is required to provide clarity to facilities and help with consistency of submittals. If an air toxics facility is above screening threshold values, it has the choice to either develop a CDP or complete an AERA. These options have been given to air toxics facilities to not force a facility into one option over the other. It is reasonable to require that if the air toxics facility is above at least one screening threshold value and is not developing a CDP, that the facility would have to complete an AERA. The first step to a complete AERA report is to complete the protocol stage of the AERA. Thus, it is reasonable to require that if an air toxics facility is completing an AERA report under part 7012.0150, subpart 2, item B, that the air toxics facility must complete and receive approval for its AERA protocol first. The approval of an AERA protocol allows the air toxics facility to move onto the next stage of the process and complete the AERA report, and thus the AERA process. It is imperative that the AERA protocol be approved in a reasonable timeframe so that the AERA report is then approved. The AERA protocol must be completed within the timelines specified in part 7012.0555 from the submittal of an air toxics screening threshold analysis certification.

Subpart 2. **Required content.**

Subpart 2 and items A to C are added to clarify what content is required for an AERA protocol submittal. The protocol must be submitted in a format specified by the commissioner and must include, at a minimum, information about any construction or operational changes, all emissions sources, stack parameters, meteorological data, and computer dispersion modeling files. It is reasonable to clarify what content is required for an AERA protocol submittal. By stating what information is needed for the submittal, this will streamline the process for AERA protocol approvals. Additionally, by listing out the content needed for an AERA protocol, it clarifies to air toxics facilities what information is needed from the facilities and creates less confusion for air toxics facilities. Clearly stating the content needed for the AERA protocol will help limit the AERA disapprovals and limit the need of continuing resubmittals of AERA protocols.

Item A and subitems (1) to (4) are added to clarify the minimum requirements that an AERA protocol must contain. These requirements include the air toxics facility operations and proposed construction or operational changes, if applicable; all emission units, insignificant activities, and conditionally insignificant activities; stack parameters corresponding to each pollutant's potential emission rate; meteorological data, and computer dispersion modeling files. It is reasonable to clarify the content needed for an AERA protocol. Additionally, by listing out the content needed for an AERA protocol, it makes it clear to air toxics facilities what information is needed and creates less confusion for the air toxics facility, thus streamlining the process. By detailing the content needed for the AERA protocol, this will hopefully limit the AERA disapprovals and limit the need of continuing resubmittals of AERA protocols.

Subitem A(1) is added to clarify that the AERA protocol must contain a detailed description of the air toxics facility's operations and any proposed construction or operational changes proposed, if applicable. It is reasonable to require the facility to include existing operations, and any construction or operational changes that are being proposed at the air toxics facility. A facility would complete an AERA only if it is above screening threshold values for at least one air toxic and the facility is not developing a CDP. Detailing the current and potential future operations at the facility is important to understand the current and future risks at a facility. The facility may be adding, removing, or adjusting operations at the facility, unrelated to the results of the screening threshold analysis. Since an AERA uses potential to emit (PTE), it is important that the facility includes a detailed description of construction or operational changes that may impact the PTE. Given that the risk levels calculated in an AERA are dependent on PTE, it is reasonable for the air toxics facility to detail any modifications expected at the facility.

Subitem A(2) is added to clarify that the AERA protocol must contain all emissions units, both stack and fugitive emission sources, insignificant activities under part 7007.1300, and conditionally insignificant activities as defined under part 7005.0100. It is reasonable to clarify which emission units are included in an AERA protocol. For the screening threshold analysis portion, insignificant activities and conditionally insignificant activities were exempt from being included in the analysis. However, for an AERA both insignificant and conditionally insignificant activities must be included. While insignificant activities under part 7007.1300 and conditionally insignificant activities under parts 7008.4000 to 7008.4110, are labeled as "insignificant," this term is meant for administrative permitting purposes only and does not refer to possible impacts. These activities may have the potential to emit substantial amounts of air toxics or have impacts that pose significant risks. For this reason, both insignificant and conditionally insignificant activities must be included in an AERA. All emissions units must be included in an AERA as emissions units are likely the main contributor of air toxic emissions at a facility. Emissions sources could include, for example, combustion sources, non-combustion sources, and tanks. Since these activities can be a main contributor to air toxic emissions at the facility, these activities must be included in AERA. Fugitive emission sources are required in an AERA as these fugitive emission sources were required in the screening threshold analysis. Some examples of fugitive emission sources are storage piles, material handling operations, and equipment leaks. These fugitive sources can contribute a measurable amount of air toxics emissions at an air toxics facility. For this reason, fugitive emission sources are required to be included in an AERA. Lastly, the AERA estimates the cumulative risk at a facility, so it is essential that all stacks are accounted for in the AERA to understand these cumulative risks.

Emissions units subject to NESHAPs are required in the AERA process, so that additional potential action may be evaluated. Because the AERA takes into consideration the additivity of risks to compare to acceptable risk levels, emissions units and sources for which a NESHAP has been promulgated will still need to be included in the AERA to look at the total risk from the facility. The owner or operator of the air toxics facility is able to then look at all contributors to that risk to consider possible changes if changes are needed to reduce risk and potential impacts. The owner or operator of an air toxics facility may consider potential changes for any equipment with emissions contributing to higher risk levels, and that equipment may or may not be subject to an applicable NESHAP. It is possible that equipment with applicable NESHAPs have options to still reduce risk. It is reasonable that the owner or operator includes units with applicable NESHAPs in the AERA, so the facility has clarity in the information to make an informed decision based on which pollutants are driving risk. It is reasonable for the MPCA to also have these emissions included in the AERA so that the agency knows the potential impacts and different risks from the facility to ensure it is regulated in a way that is reasonably protective of human health and the environment.

The MPCA investigated whether emissions from emissions units for which a NESHAP has been promulgated could be above screening threshold values. Looking at all the facilities with state or federal individual permits in the seven metropolitan counties, only 62 facilities had at least one emissions unit for which a NESHAP has been promulgated. Out of the 62 facilities found to be subject to NESHAPs, 20 of those facilities' emissions were found to possibly exceed screening threshold values for those stacks subject to NEHSAPs. Even though the analysis showed a possible exceedance in screening threshold values for stacks subject to NESHAPs, the MPCA decided to exempt HAPs emissions from sources with applicable NESHAPs in the screening threshold analysis. It is reasonable to exempt HAP emissions from these sources in the screening analysis because the EPA has conducted extensive risk evaluations in the development of NESHAPs and these applicable regulations should require facilities to implement control equipment or best management practices to manage or even reduce risk. If facilities pose additional risk where other emissions of non-HAP air toxics exceed screening threshold values, those will be addressed in either a compliance determination protocol (CPD) or all emissions from the facility, including those with applicable NESHAPs, will be considered in the completion of an air emissions risk analysis (AERA).

Subitem A(3) and units (a) to (d) are added to clarify that the AERA protocol must contain all stack parameters corresponding to each pollutant's potential emission rate, accompanied by documentation of information sources, methods, and procedures used (unit a), test data referenced (unit b), relevant averaging times for each pollutant (unit c), and PTE calculations (unit d). It is reasonable to require an air toxics facility to provide information about stack parameters, potential emission rates, PTE calculations, and documentation on sources, methods and procedures used. PTE calculations, emission rates and documentation are essential for understanding the potential emission rates at an air toxics facility. These potential emission rates are used to estimate the potential risk that an air toxics facility poses. Thus, it is important to have these emission rates in order to be able to calculate the potential risks. One portion of an AERA is to submit a Risk Assessment Screening Spreadsheet (RASS), which calculates the estimated risk levels at a facility and compares these risk levels to acceptable risk levels. The RASS estimates the potential risks associated with air toxics emitted from an air toxics facility. The RASS is the one way for a facility to prove it is at or below acceptable risk levels. The air toxics facility may prove it is at or below acceptable risk levels in another format approved by the commissioner. However, the MPCA created the RASS to standardize the process and make the process easier for facilities to calculate the estimated risk levels. The RASS is available and ready for an air toxics facility to use. Additionally, the RASS has been used in the AERA process over the last 20 years. It would therefore be more convenient for the facility to use the RASS. The RASS, or another acceptable format of estimating risk levels, is essential to understand if the facility is at or below acceptable risk levels. If not for these estimations, the air toxics facility would not know its risk levels. An air toxics facility can use the default dispersion values in the RASS to calculate its risk levels, but it is unlikely that a facility would be below acceptable risk levels using default dispersion values if it is above screening threshold values. To calculate its risk levels using default dispersion values, the air toxics facility will need to provide stack parameter information, stack height and distance to fenceline (which may be different than the distance to property line), and potential emission rates. However, the default dispersion values are very conservative and will most likely result in the air toxics facility being above acceptable risk levels. Most air toxics facilities will have to model. Besides stack parameter information, the other main piece of information needed to complete the RASS is the PTE calculations in lb/hr and ton/yr. PTE calculations are essential for understanding how these emission rates were calculated. Within PTE calculations, the air toxics facility can document the information sources, methods, or procedures used, as well as test data references. Test data references and information sources, methods, or procedures are all used when calculating PTE. This information is necessary so that the MPCA can confirm that emission rates were calculated correctly. Additionally, the PTE calculations are required so that the MPCA can verify the correct emission rates were used in the RASS. If any of this information is not provided and validated by the MPCA, this may result in the facility incorrectly calculating its risk levels. This could be an issue if a facility is using the wrong information and shows it is at or below acceptable risk levels, but it is actually above acceptable risk levels and has a higher chance of posing a risk to human health and the environment.

Potential emissions are used in an AERA submittal to show the maximum allowed impacts from the permitted emission rates at a facility. If the facility were to use actual emissions, the facility would need to model every year to show it is at or below acceptable risk levels as actual emissions vary from year to year. Using potential emissions in an AERA shows that the facility, as permitted, is protective of human health and the environment. AERA results therefore show whether the facility still qualifies for the type of permit it holds or if it will need additional site-specific requirements. Any assumed restrictions in the operation of the facility reflected in the AERA will result in site-specific permit requirements for the facility if the restrictions are outside of the maximum operating capacity of the facility. Additional site-specific requirements are only allowed in state and federal individual permits.

The acceptable risk levels are set at a potential to cause health effects, not that health effects are certain. By using PTE, an AERA looks at the maximum risk that a facility could pose. Knowing the maximum potential risk at

a facility will ensure that facility does not exceed this risk instead of evaluating actual emissions and evaluating the risk after the emissions were already emitted.

Subitem A(4) is added to clarify the AERA protocol must contain all meteorological data and computer dispersion modeling files from an AMS/EPA regulatory dispersion model. It is reasonable to ask for all meteorological data and computer dispersion modeling files to be included in the AERA protocol submittal. Meteorological data, including temperature and wind speed, determines when and where pollutants concentrate. The submittal of the meteorological data is needed to ensure that the correct years of data are used, and the correct meteorological station is used. The MPCA provides pre-processed meteorological data for 24 sites across the state. The air toxics facility must use a meteorological station that is geographically close to the facility. The MPCA has created a tool, Minnesota's meteorological site selection tool, for facilities to correctly choose the closest meteorological station.[24] The MPCA updates the pre-processed meteorological data for AERMOD roughly every two years. In addition to the meteorological data, the air toxics facility must submit computer dispersion modeling files from an AMS/EPA regulatory emissions model, such as AERMOD, with their AERA protocol. To assess the risks at the air toxics facility, the facility must provide emission rates and dispersion values. After modeling an air toxic facility, the facility will enter its air dispersion values into the RASS, which will then calculate the risk from the facility. It is reasonable to ask for the computer dispersion modeling files so that MPCA can confirm that modeling was done correctly. The air dispersion modeling files must be submitted at the protocol stage, as these files must be accepted before moving to the AERA report stage of the process.

Item B is added to clarify that the protocol must be in a format specified by the commissioner. It is reasonable to require the air toxics facility to submit its AERA protocol in a format specified by the commissioner. All AERA protocols and reports are reviewed by the MPCA to check for completeness, accuracy of information, and to verify the facility is not above acceptable risk levels, among other items. To easily do this review, it is necessary to have all the submittals in the same format. This will help to expedite the process. By requiring the same format for all submittals, the MPCA will be able to spot any errors or missing information more efficiently than having a different format for each submittal. The MPCA is estimating an influx of AERA submittals due to this rulemaking, so it is reasonable to require them to all have the same format. This makes it easier for the MPCA to review but could also be helpful to consultants that are completing AERAs for multiple facilities to have the same format.

Subitem C is added to clarify that emission units that emit only air toxics that do not have an IHB listed in part 7012.0560, subpart 1, item G are exempt from being included in an AERA. It is reasonable to exclude emission units that have only air toxics without an IHB as these emission units cannot be assessed through an AERA. Risk levels are calculated by taking the dispersion value (default or modeled) divided by the IHB for a given air toxic and averaging time (acute, subchronic, chronic, and cancer). If an air toxic does not have an IHB for any of the averaging times, it is reasonable to exclude the air toxic from being included in an AERA. If an air toxic does not have an IHB then the facility is unable to calculate a risk level, thus not contributing to proving the air toxics facility is at or below acceptable risk levels.

Subpart 3. **Protocol approval**.

Subpart 3 is added to clarify that the commissioner must approve an AERA protocol that reflects the conditions and emissions at the air toxics facility and complies with subpart 2. It is reasonable to require that the commissioner must approve an AERA protocol that reflects the conditions and emissions at a facility. Once an AERA protocol is submitted to the MPCA, the commissioner will review the contents of the submittal and

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[24] *Met Site Selection Tool. Retrieved from https://pca-gis02.pca.state.mn.us/metselect/index.html.*

determine if the protocol is approved or not approved. An approval of an AERA protocol moves the air toxics facility to the next step which is completing an AERA report. The AERA report is very similar to the AERA protocol and is just the finalization of a completed AERA. If an air toxics facility submits an AERA protocol that contains the correct information and conditions that are occurring at the facility, it is reasonable to approve the AERA protocol.

Subpart 4. **Protocol disapproval.**

Subpart 4 and items A to D are added to clarify that if an AERA protocol is not approved that the notification will include the items listed in items A to D. If an AERA protocol is not approved the commissioner must notify the facility in writing that an AERA protocol submitted to comply with part 7012.0550 does not meet specified requirements. It is reasonable to not approve an AERA protocol if the facility did not submit all required information under subpart 2 or the information submitted is inaccurate. The MPCA must notify the facility in writing, as to why the AERA protocol failed to meet subpart 2 requirements, a contact at the MPCA to answer questions related to the disapproval, deadline of the protocol resubmittal, and a schedule for resubmitting necessary information. By including information as to why the AERA protocol was not approved, who to contact with questions, and when to resubmit the protocol, this will help expedite the process of a resubmittal and the acceptance of the AERA protocol.

Item A is added to clarify that the notification from the commissioner must identify why the submitted AERA protocol fails to comply with subpart 2. It is reasonable to specify the reason as to why the AERA protocol was not approved. Stating the reasons for not accepting the protocol will help the air toxics facility to focus on correcting the specific shortcomings. Having written documentation for the reasons for the disapproval provides clarity to the MPCA and the air toxics facility. Both parties having clear expectations of what is expected in the resubmittal will help expedite the resubmittal process for an AERA protocol.

Item B is added to clarify that the notification from the commissioner must provide an agency contact to answer questions related to the protocol disapproval. It is reasonable to provide the agency contact in the denial of the AERA protocol. This contact information is needed by the air toxics facility to know who reviewed the AERA protocol and whom to contact with any questions. This clarification will also help to expedite the resubmittal process, as the air toxics facility will have a contact for its protocol and will be able to ask any clarifying questions about its protocol, if needed.

Item C is added to clarify that the notification from the commissioner must specify the deadline for protocol resubmittal. It is reasonable to specify the deadline for the AERA protocol resubmittal. In the MPCA's experience, without a firm deadline, the AERA process can take months up to years to complete fully. A deadline has been specified in part 7012.0555 for the AERA protocol to be completed. To ensure that the air toxics facility complies with this deadline, it is reasonable to specify the deadline of any AERA protocol resubmittal. In the past, many facilities have had to resubmit the AERA protocol multiple times, so it is important to make sure that the facility knows the deadline for resubmittal and adheres to the overall AERA protocol deadline submittal specified in part 7012.0555.

Item D is added to clarify that the notification from the commissioner must establish a schedule for resubmitting supplemental information. It is reasonable to specify the schedule for resubmitting supplemental information. The AERA protocol has a deadline specified in part 7012.0555, from the time of the submitted screening threshold analysis certification. To adhere to this deadline, it is important that other deadlines in the AERA protocol process are specified. When an AERA protocol is submitted some portions of the protocol may be approved, but others may not be approved. Given this practice, it is reasonable to establish a schedule for resubmitting necessary information. In some cases, the MPCA just needs clarification on some aspects, but not a full resubmittal, so it is important to specify when that information needs to be submitted.

Subpart 5. **Resubmitting protocol.**

Subpart 5 is added to clarify that within 60 calendar days of disapproval; the owner or operator of an air toxics facility must resubmit a revised AERA protocol that addresses each factor identified as failing to comply with subpart 2. It is reasonable to clarify what facilities must submit when resubmitting an AERA protocol to minimize further rejections and increase the likelihood of the MPCA being able to approve the protocol. This allows the facility to know what it needs to do to move along in the AERA process. It is also reasonable to clarify and require the facility to resubmit a revised AERA protocol that addresses each factor identified to meet subpart 2 requirements to ensure that air toxics facilities do not resubmit the same denied AERA protocol. By requiring the air toxics facility update its AERA protocol, this will help move the facility closer to an approval, does not burden the MPCA by reviewing a previously denied AERA protocol, and keeps the air toxics facility on track to comply with the deadlines specified in part 7012.0555. It is reasonable to clarify a timeline of 60 calendar days from the date of disapproval for a facility to resubmit an AERA for the process to continue moving in a timely manner. Currently, the MPCA air permitting policy is to allow 30 days for applicants to provide missing information to address an incomplete application. An AERA protocol generally contains more complex and detailed information about a facility compared to an air permit application. Therefore, it is reasonable to allow 60 calendar days for the resubmittal of an AERA protocol due to the added complexity compared to a permit application.

Part 7012.0555 – AIR EMISSIONS RISK ANALYSIS PROTOCOL; SUBMISSION DEADLINES.

Subparts 1 and 2 are added to clarify the AERA protocol submittal deadlines for both existing and new air toxics facilities. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(2), requires the MPCA to address at a minimum, types of facilities to be regulated and 4(a)(5) requires the MPCA to address, requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions, and the facilities compliance with emission limits in the facility's permit. The AERA protocol submittal deadlines are specific to the types of facilities regulated by chapter 7012, and reporting requirements are established to assist the agency in receiving information in a timely manner. It is reasonable to specify the AERA protocol deadlines for both new and existing air toxics facilities. By stating the deadlines for the AERA protocol it will reduce confusion about timelines and help ensure that a complete protocol is submitted by the deadline.

Subpart 1. **Existing air toxics facilities.**

Subpart 1 is added to clarify that the owner or operator of an existing air toxics facility completing an AERA under part 7012.0150, subpart 2, must complete an AERA protocol within one year after the certification due date of an air toxics screening threshold analysis certification that identifies the air toxics facility emits one or more air toxics above screening threshold values. It is reasonable to set a one-year timeline for the submittal of a complete AERA protocol. The timeframe of one year is the same timeframe that a facility must submit a CDP. These timelines match for consistency and for ease of tracking. Based on a survey sent to small businesses in the seven metropolitan counties, most of the facilities that have completed an AERA said that the timeline to complete an AERA would be six months to one year. The MPCA decided to give the facilities more time to complete an AERA protocol due to complexity and decided on one year. Additionally, the MPCA wanted the timelines for the CDP and AERA submittal to match to reduce confusion and have consistent expectations for either option a facility may choose. So, when developing a CDP, a year is also reasonable. It is reasonable to set a timeline for an AERA protocol. This ensures that the facility is actively working to reduce its air toxics emissions that could pose a risk to human health and the environment.

Subpart 2. **Applications for new air toxics facilities.**

Subpart 2 is added to clarify the deadlines for submitting an AERA protocol for owners or operators who submit a complete application, as defined under part 7007.0600, subpart 1, for a new individual or general permit

within three years of the effective date of this chapter and who is required to complete an AERA under part 7012.0150, subpart 3, must submit a complete AERA protocol no later than one year after the application is deemed complete. It is reasonable to allow owners or operators who submit an application for a new individual permit within three years of rule adoption to submit a protocol after the time the air toxics facility submits its complete application because for complex facilities requiring an individual permit, creating a complete application may take several years. It would be unreasonable to require a complete protocol with these applications at the time of rule adoption because the time taken to complete the screening analysis and then complete an AERA protocol would cause significant delay in being able to submit a complete permit application and obtain a timely permit. The three-year window is reasonable to accommodate those owners or operators that begin project planning for the facility's project requiring an individual permit at the time of rule adoption. Additionally, the three-year period that allows for a submittal of a protocol after the application submittal is consistent with the three-year phased approach for existing facilities to submit their screening threshold analysis certification. Essentially, an existing facility that submits its screening certification three years after rule adoption would have the same deadline of one year to submit an AERA protocol as a new application submitted three years after rule adoption, if applicable. It is reasonable to have consistent submittal deadlines between new and existing sources within three years of rule adoption to reduce confusion during this transitional period.

Also, it is reasonable to require that the application submitted in the three-year time window be deemed complete in order to prevent an owner or operator from submitting an incomplete permit application and extending the application process past the three-year window. This then avoids the submittal requirements for applications received after the three-year window, which includes a complete AERA report with the permit application.

It is reasonable to require the AERA protocol to be submitted within one year of the permit application being deemed complete because existing facilities who are required to complete an AERA are also given one year to submit an AERA protocol after completing the screening certification under proposed part 7012.0550. It is reasonable to require similar timelines for facilities required to complete an AERA a short time (three years) after the rule effective date.

Note that there is no requirement to submit an AERA protocol for air toxics facilities that submit a new individual or general permit application after three years of rule adoption. This is because these facilities will be required to submit a complete AERA report concurrent with its application, which is outlined in part 7012.0565. An air toxics facility required to submit an AERA report with its application must submit a complete AERA protocol prior to its submittal of the permit application. This aligns with current MPCA policy for when criteria pollutant modeling is required to be submitted with an application.

Part 7012.0558 – INCORPORATION BY REFERENCE; AIR EMISSIONS RISK ANALYSIS.

Subparts 1 to 3 are added to clarify the sources used in an AERA. The incorporation by reference is allowed under Minnesota Statutes, section 14.07, subdivision 4. It is reasonable to include sources that are incorporated by reference to adhere to statutory requirements, and also to clarify the sources used throughout an AERA. This information is necessary for a facility completing an AERA to understand what resources are available for use and where to find them.

Subpart 1. **Inhalation health benchmarks.**

Subpart 1 and items A to F are added to clarify the sources for inhalation health benchmarks under part 7012.0560, subpart 1, item G, are incorporated by reference, are subject to frequent change, and are available as specified in items A to F. The sources of IHBs are important to list as there are many sources for IHBs, so clarifying which IHBs must be used in an AERA is necessary and it is reasonable to specify public and high-quality sources for IHB information. IHBs are an integral part of calculating the risk levels at a facility, so it is important

that the IHBs used in the AERA are the same for all facilities completing an AERA. It is reasonable to list the sources of IHBs as allowed under Minnesota Statutes, section 14.07, subdivision 4, and also to clarify to facilities which sources of IHBs can be used in an AERA. This ensures that the risks at each facility are calculated using the same IHBs, so the risk estimated at all the facilities is comparable since the same IHBs are used. It is reasonable to establish consistent application of requirements for regulated parties to reduce uneven economic and regulatory burden. These sources are not subject to frequent change, however, the IHB values from these sources are subject to frequent change. Since the IHB values are subject to frequent change, referencing the sources of IHBs allows for the most recent IHB values to be used in an AERA.

Item A is added to clarify that a source used in an AERA is the Center for Disease Control and Prevention, Agency for Toxic Substances and Registry (ATSDR), by the date listed in rule and as subsequently amended, Minimal Risk Levels (MRLs) for Hazardous Substances, available at https://wwwn.cdc.gov/tsp/mrls/mrlslisting.aspx. ATSDR provides reference concentrations (RfCs) (labeled Inhalation Minimal Risk Levels (MRLs) by ATSDR) used to evaluate health risks for acute, chronic and intermediate exposures. ATSDR is an environmental public health agency overseen by the U.S. Department of Health and Human Services. ATSDR is a federal public health agency for determining, preventing, and mitigating the human health effects of exposure to hazardous substances.[25] ATSDR has developed their MRLs with guidance from other agencies such as EPA. MRLs are used by health assessors and other responders to identify contaminants and potential health effects that may be of concern.[26]It is reasonable to define a source for IHBs; this clarification helps to know the source of the IHB, but also the different exposure times for which IHBs are derived. It is reasonable to clarify where the values from ATSDR are located. This provides clarity as to the IHBs used throughout the rule and includes incorporations by reference. Additionally, it is reasonable to list ATSDR as a source of IHBs as their version of an IHB (known as MRLs) are used widely to identify potential health effects that may be of concern. These MRLs have undergone external peer review, which allows for other scientists outside of ATSDR to comment on their MRLs.

Item B is added to clarify that a source used in an AERA is the California Office of Environmental Health Hazard Assessment, Chemical Database, by the date listed in rule and as subsequently amended, available at https://oehha.ca.gov/air. The California Environmental Protection Agency – Office of Environmental Health Hazard Assessment (CAL EPA)'s mission is to protect and enhance the health of individuals through scientific evaluations that inform, support, and guide regulatory and other actions. CAL EPA has RfCs (labeled Reference Exposure Levels (RELs) by CAL EPA) for acute, subchronic, and chronic exposures, as well as inhalation unit risks (IURs) to evaluate cancer risks. CAL EPA's methodology for developing RELs is similar to what EPA uses for developing RfCs. RELs undergo public comment and peer review as mandated by the Hot Spots Act.[27] It is reasonable to define a source listing IHBs to know where the MPCA sourced the IHB, and also the different exposure times for which IHBs are derived. It is reasonable to clarify where the values from CAL EPA are located. This provides clarity as to the IHBs used throughout the rule and includes incorporations by reference. Additionally, it is reasonable to clarify that CAL EPA is a source of IHBs as CAL EPA is a reputable source in toxics risk assessment. Furthermore, RELs undergo an extensive review and allow for public input before finalization.

Item C is added to clarify that a source used in an AERA is the United States Environmental Protection Agency's Integrated Risk Information System (IRIS), by the date listed in rule and as subsequently amended, available at https://www.epa.gov/iris. The IRIS program's mission is to identify and characterize health hazards of chemicals in the environment to help protect human health and the environment. IRIS has reference concentrations (RfCs)

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[25] *About the Agency for Toxic Substances and Disease Registry. Retrieved from https://www.atsdr.cdc.gov/about/index.html*
[26] *About Minimal Risk Levels. Retrieved from https://www.atsdr.cdc.gov/minimal-risk-levels/php/about/*
[27] *Air Toxics Hot Spots Program Guidance Manual by California's Office of Environmental Health Hazard Assessment . Retrieved from https://oehha.ca.gov/sites/default/files/media/downloads/crnr/2015guidancemanual.pdf*

for chronic and a few subchronic exposures as well as IURs. IRIS values are developed to ensure that the values developed are impartial toxicity information independent of the value's used by EPA's programs or other agencies. IRIS values have a public comment period and an external peer review.[28] It is reasonable to define a source for IHBs to clarify where the MPCA sourced the IHB, and also the different exposure times for which IHBs are derived. It is reasonable to clarify where the values from IRIS are located. This provides clarity as to the IHBs used throughout the rule and includes incorporations by reference. Additionally, it is reasonable to clarify that IRIS values are a source of IHBs as IRIS is a reputable source in toxics risk assessment. Furthermore, IRIS values undergo an extensive review and allow for public input before finalization.

Item D is added to clarify that a source used in an AERA is the Minnesota Department of Health (MDH)'s Air Guidance values for health-based values (HBV), risk assessment advice (RAA), and volatile organic compounds inhalation toxicity value review (VOC), by the date listed in rule and as subsequently amended, available at https://www.health.state.mn.us/communities/environment/risk/guidance/air/table.html. MDH develops health-based guidance values to evaluate potential human risk from exposures to chemicals in ambient air. MDH has RfCs for chronic, subchronic, and acute exposures as well as IURs. HBV and RAA values are usually requested by the MPCA or other state agencies and have not been through public rulemaking process. VOC values are derived values for vapor intrusion investigations. These values are available on MDH's website and are subject to frequent change. MDH's air guidance values are developed to protect more susceptible portions of the population. Air guidance values may be used by the public, industry, state and local risk managers, and other stakeholders to help evaluate potential health risks to people from exposures to chemicals in the air.[29] It is reasonable to define a source for IHBs to clarify where the MPCA sourced the IHB, and also the different exposure times for which IHBs are derived. It is reasonable to clarify where the values from MDH are located. This provides clarity as to the IHBs used throughout the rule and includes incorporations by reference. Additionally, MDH air guidance values are a reputable source for IHBs. These air guidance values do not go through a public comment period or an external review like other sources of IHBs, but MDH is a trusted source for IHBs and has an internal review process by MDH toxicologists. MDH works closely with MPCA to determine which chemicals to review, thus the chemicals that have air guidance values are likely chemicals that are more present in Minnesota or emerging chemicals of concern.

Item E is added to clarify that a source used in an AERA is the United States Environmental Protection Agency's Provisional Peer-Reviewed Values (PPRTVs) Assessments, by the date listed in rule and as subsequently amended, available at https://www.epa.gov/pprtv. The PPRTV Program's mission is to protect human health and environment by identifying and characterizing the health hazards and providing an important source of toxicity information and toxicity values for chemicals of concern in the Superfund Program. The PPRTV program has RfCs for chronic and subchronic exposure as well as IURs. PPRTV values receive an internal review by EPA scientists and an external peer review by independent scientific experts.[30] It is reasonable to define a source for IHBs to clarify where the MPCA sourced the IHB, and also the different exposure times for which IHBs are derived. It is reasonable to clarify where the values from PPRTV are located. This provides clarity as to the IHBs used throughout the rule and includes incorporations by reference. Additionally, it is reasonable to clarify that PPRTV

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[28] Basic Information about the Integrated Risk Information System. Retrieved from https://www.epa.gov/iris/basic-information-about-integrated-risk-information-system - process

[29] Air Guidance Values by Minnesota Department of Health. Retrieved from https://www.health.state.mn.us/communities/environment/risk/guidance/air/table.html.

[30] Basic Information About Provisional Peer-Reviewed Toxicity Values (PPRTVs). Retrieved from https://www.epa.gov/pprtv/basic-information-about-provisional-peer-reviewed-toxicity-values-pprtvs.

values are a source of IHBs as PPRTV is a reputable source in toxics risk assessment. Furthermore, PPRTV values undergo an extensive review and allow for external independent scientific experts to review.

Item F is added to clarify that a source used in an AERA is the United States Environmental Protection Agency's National Ambient Air Quality Standards (NAAQS), by the date listed in rule and as subsequently amended, available at https://www.epa.gov/criteria-air-pollutants. It is reasonable to include NAAQS as a source for IHBs as they are federally regulated standards that are already used for criteria pollutants. There are some air toxics that do not have an inhalation health benchmark from another source but do have a NAAQS standard. This currently includes lead and lead compounds for chronic and subchronic values, and the NO_2 chronic value. It is reasonable to use the NAAQS standard as they are federally regulated standards and will provide IHB information when available.

Subpart 2. **Air quality dispersion modeling.**

Subpart 2 is added to clarify that the AMS/EPA regulatory dispersion model under part 7012.0560, subpart 1, item H, is incorporated by reference, is subject to frequent change, and is available at https://www.epa.gov/scram. Air dispersion modeling is essential for understanding the potential risk of emissions released from an air toxics facility. There are many models that can estimate the dispersion model outputs, however, the AMS/EPA regulatory dispersion model is the preferred model used for air dispersion modeling. EPA has determined this is the preferred model and has stated such in their *Guideline on Air Quality Models* published as Appendix W to 40 CFR Part 51.[31] It is reasonable to maintain consistency between federal and state practices by using existing and supported federal models. This model is widely used and many consultants and facilities in Minnesota are familiar with the regulatory model. It is reasonable to clarify where the AMS/EPA regulatory model and any documentation applicable to the model is located. This provides clarity as to which model, provides consistency throughout submittals, and fulfills the statutory requirement to include incorporations by reference.

Subpart 3. **Sources for speciation of mercury.**

Subpart 3 and items A to C are added to clarify the sources for speciation of mercury. Total mercury emissions need to be speciated into particulate bound, reactive gaseous, and elemental mercury. The data sources listed in items A to C are used for speciation of mercury under part 7012.0560, subpart 2, item E. It is reasonable to specify the hierarchy of mercury speciation and clarify the sources for each speciation. This provides consistency across submittals and fulfills the statutory requirement to include incorporations by reference.

Item A is added to clarify that one source for speciation of mercury is facility or industry stack testing using the most current method from the United States Environmental Protection Agency, available at https://www.epa.gov/emc/emc-promulgated-test-methods. EPA has provided test methods that have been proposed or promulgated in the Federal Register and codified in the Code of Federal Regulations (CFR). It is reasonable to clarify a source for speciation of mercury. This provides clarity as to how mercury emissions should be calculated and includes incorporations by reference.

Item B is added to clarify that one source for speciation of mercury is the methodology described in the technical support document of the National Air Toxics Assessment available at https://www.epa.gov/AirToxScreen/airtoxscreen-technical-support-document. The National Air Toxics Screening Assessment (AirToxScreen) is EPA's ongoing review of air toxics across the United States. This screening tool helps to identify which pollutants, emission sources, and places may need to be studied further for possible risks to

[31] *Guideline on Air Quality Models; Enhancements to the AERMOD Dispersion Modeling System. Retrieved from https://www.epa.gov/system/files/documents/2024-11/appendix_w-2024.pdf.*

public health from air toxics. AirToxScreen uses emission inventory information from the National Emissions Inventory (NEI) to estimate risks. It is reasonable to clarify a source for speciation of mercury. This provides clarity as to how mercury emissions should be calculated and includes incorporations by reference.

Item C is added to clarify that one source for speciation of mercury is the methodology described in the technical support document of the National Emissions Inventory of the United States Environmental Protection Agency available at https://www.epa.gov/air-emissions-inventories. The National Emissions Inventory (NEI) is a comprehensive and detailed estimate of air emissions of criteria pollutants, criteria precursors, and HAPs. Information from NEI is used in risk screening tools such as AirToxScreen. It is reasonable to clarify a source for speciation of mercury. This provides clarity as to how mercury emissions should be calculated and includes incorporations by reference.

Part 7012.0560 – AIR EMISSIONS RISK ANALYSIS REPORT.

Subparts 1 to 8 are added to clarify the requirements for the AERA report, acceptable risk levels, and other information pertaining to the submittal of an AERA report. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subdivisions 4(a)(1) and 4(a)(5) require the MPCA to address respectively, at a minimum, specific air toxics to be regulated, requirements for reporting information to the agency to assist the agency in determining the amount of the facility's air toxics emissions and the facilities compliance with emission limits in the facility's permit. In subdivision 4(b)(1), the Session Law also requires, in developing the rules, that the MPCA establish rule requirements that reflect the different risks to human health and the environment posed by the specific air toxics and amounts emitted by a facility such that facilities posing greater risks are required to provide more frequent evidence of permit compliance. An AERA report contains specific emissions information for regulated air toxics, as well as information to assist the agency in determining the amount of air toxics the facility emits and what limitations are currently or will need to be included in the facility's air permit to ensure the air toxics facility is at or below acceptable risk levels. Any assumed restrictions in the operation of the facility reflected in the AERA report will result in permit requirements for the facility if the restrictions are outside of the maximum operating capacity of the facility. This is reasonable because it ensures the facility is operating in a way that is not posing a risk to human health and the environment.

It is reasonable to clarify what is required of a facility for an AREA report and information pertaining to the submittal of an AERA report. By specifying the requirements for the AERA report, this reduces confusion, creates consistency across submittals from all facilities, and helps ensure that an air toxics facility submits a complete AERA report.

Subpart 1. **Air emissions risk analysis; report content.**

Subpart 1 and items A to L are added to clarify that, except as provided in subpart 4, an owner or operator of an air toxics facility must submit a completed AERA report conducted according to the protocol approved under part 7012.0550, in a format specified by the commissioner. AERAs have been completed by facilities since 2004. Over the last 20 years there have been slight changes to the AERA process, but the main process of how facilities estimate risks have stayed the same. The facility must submit a completed AERA report conducted in accordance with the approved protocol, in a format specified by the commissioner, and must contain, at a minimum, the content listed in items A to L. It is reasonable to clarify the requirements for an AERA report so that reports contain materials needed to ensure consistency across all submittals, and to ensure that the reports meet the standards set by the MPCA. Detailing the content needed for an AERA report limits confusion for the air toxics facility as to what is required and helps expedite the process for an AERA report review and approval.

Item A and subitems (1) to (4) are added to clarify that a summary of the risk levels, IHBs, and air dispersion modeling output information at the air toxics facility must be submitted. At a minimum, this summary must include each of the acceptable risk levels, a list of Inhalation Health Benchmarks (IHBs), reference concentrations

(RfCs), and inhalation unit risks (IURs) used, air dispersion modeling output information, or another approved method by the commissioner for calculating the inhalation, multipathway, and endpoint risk. It is reasonable to require that the air toxics facility summarizes risk information in an AERA report. To approve an AERA report, the air toxics facility must either be at or below acceptable risk levels or submitting an ATRP. To prove the air toxics facility is at or below these acceptable risk levels it would need to provide documentation proving it is at or below these acceptable risk levels or making changes to get at or below acceptable risk levels.

Subitem A(1) and units (a) to (d) are added to clarify the acceptable risk levels that the facility must be at or below for its AERA report to be approved. Subpart 3 goes into detail about the values that are used as acceptable risk levels, while this subpart lists and describes the different acceptable risk levels evaluated in an AERA. These acceptable risk levels do not account for only inhalation risks but also account for other pathways of risk, called multipathway risk. Multipathway risks account for other pathways for which air toxics can impact a human other than inhalation. These multipathway risks are investigated in a few different scenarios; resident, farmer, and urban gardener. It is reasonable to clarify the content the facility must submit to the MPCA for the commissioner to approve the AERA report. It is reasonable to clarify the acceptable risk levels for facilities and the public to know what levels are acceptable or unacceptable for an AERA report. These acceptable risk levels are determined to be protective of human health and the environment. If an air toxics facility is above these acceptable risk levels, the air toxics facility may be posing a risk to human health and the environment.

Unit (a) is added to clarify that one of the acceptable risk levels to evaluate in an AERA is cancer risk. Cancer risks are characterized by using an excess lifetime cancer risk, representing the incremental probability that an individual will develop cancer over a lifetime due to exposure to a carcinogen. Cancer risk is exposure of air emissions from a given air toxics facility and is the probability that a hypothetical human receptor will develop cancer based on an assumed set of exposure, model, and toxicity assumptions. It is reasonable to include the cancer risk in the AERA report as it is important to understand the risk of possibly developing cancer based on emissions from an air toxics facility. Cancer can be deadly in some cases, but in any case, impacts the quality of life for a person. It is reasonable to understand the potential increased risk faced by the residents near an air toxics facility and take steps to protect human health.

Unit (b) is added to clarify that one of the acceptable risk levels to evaluate in an AERA is the hazard quotient for noncancer acute, subchronic, and chronic inhalation risk. It is reasonable to require the air toxics facility to include the hazard quotient for acute, subchronic, and chronic inhalation risk in the AERA report. A hazard quotient is the ratio of a single substance exposure level to an IHB derived from a similar exposure period. The hazard quotient can help to determine if there is an increased risk of adverse health effects to potential populations. The acute, subchronic, and chronic inhalation risks refer to the time averaging of the risk. Acute inhalation risk is exposure to an air toxic within a short period of time, usually over one hour or up to 24 hours. Subchronic inhalation risk is multiple exposures occurring over an extended period of time, such as greater than 24 hours to one year. Chronic inhalation risk is the consistent exposure or multiple exposures occurring over an extended period, such as greater than one year to a lifetime. It is reasonable to set an acceptable risk level to evaluate the hazard quotient for acute, subchronic, and chronic inhalation risks. This will determine if there is a risk of adverse health effects over different exposure periods from inhalation.

Unit (c) is added to clarify that one of the acceptable risk levels to evaluate in an AERA is the hazard quotient for farmer noncancer, farmer cancer, urban gardener noncancer, urban gardener cancer, resident noncancer, and resident cancer multipathway risk. It is reasonable to require the air toxics facility to calculate the hazard quotient for multiple multipathway risks. A hazard quotient is the ratio of a single substance exposure level to an IHB for that substance derived from a similar exposure period. The hazard quotient can help to determine if there is an increased risk of adverse health effects to potential individuals. For multipathway risk, a multipathway screening factor is multiplied by the hazard quotient to result in a multipathway hazard quotient risk number.

Multipathway screening factors were developed by the MPCA in 2009 and were updated in 2015.[32] These multipathway screening factors were derived using the process of completing a multipathway risk assessment developed by EPA.[33] The MPCA has simplified the process by EPA to not have to model the exposure pathways and routes for every project. The modeling for the relevant pollutants was done once and is updated based on new IHBs. A farmer noncancer and cancer multipathway risks are the noncancer and cancer multipathway risks for a farmer scenario. Noncancer and cancer multipathway risks evaluate either the noncancer or cancer risk from different exposure routes, some examples are inhalation, oral, and dermal. A "farmer" is a hypothetical person that inhales air, incidentally ingests soil, ingests homegrown produce, drinks home-produced milk, and eats home-grown meat products, including eggs, that could be affected by an air toxics facility's emissions. An urban gardener noncancer and cancer multipathway risk are the noncancer and cancer multipathway risks for an urban gardener scenario. An "urban gardener" exposure scenario assumes a hypothetical person inhales air directly, incidentally ingests soil, ingests home-grown produce, and eats home-raised chicken eggs that could be affected by an air toxics facility's emissions. A resident noncancer and cancer multipathway risk are the noncancer and cancer multipathway risks for a resident scenario. The "resident" exposure scenario assumes a hypothetical person inhales air directly, incidentally ingests soil, and ingests home-grown produce that could be affected by a facility's air toxics emissions. It is reasonable to evaluate the multipathway risks for different scenarios as risk from air toxics is cumulative; it is reasonable to assess risk through multiple pathways in addition to inhalation exposure. This ensures that the air toxics emissions from an air toxic facility are not posing a risk to human health and the environment.

Unit (d) is added to clarify that one of the acceptable risk levels to evaluate in an AERA is the hazard index for acute, subchronic, and chronic noncancer health endpoints, that represent risks posed over different durations of time. It is reasonable to require an air toxics facility include the hazard index for acute, subchronic, and chronic health endpoints in its AERA report. The hazard index is the sum of hazard quotients for substances with the same or similar toxic endpoints, given the same exposure duration. A health endpoint means an observable adverse biological effect from chemical exposure used to group chemicals for the purpose of evaluating risks from multiple chemicals. It is reasonable to assess the different health endpoints over different averaging times because there are different risks posed over different durations of time. By investigating the health endpoint risks, it ensures that the cumulative risk of an air toxics facility is assessed in an AERA report.

Subitem A(2) is added to clarify that a list of IHBs that includes RfCs and IURs following the approved hierarchy listed in item G of this part must be included in the AERA report. It is reasonable to specify that the air toxics facility must include a list of IHBs that follow the hierarchy listed in this rule. The RASS has a list of IHBs that include RfCs and IURs that follow this same hierarchy. An air toxics facility may use another way to assess its risks, but in doing so the facility must prove that the IHBs used follow the same hierarchy listed in rule. It is reasonable to require a facility to list these IHBs as the IHBs are an important part of calculating the risks at a facility. If the IHBs are changed just slightly this may over or underestimate the risk at a facility and may not accurately depict the risk at an air toxics facility. Requiring a list of IHBs helps provide consistency across all submittals and helps clarify that an AERA report submittal is correct.

Subitem A(3) and units (a) to (d) are added to clarify the air dispersion modeling output information from an AMS/EPA regulatory model must be included in the AERA report. At a minimum this must include output information listed in units (a) to (d). This AMS/EPA regulatory model is referenced in 40 CFR Part 51, Appendix W

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[32] Pratt, G. and M. Dymond. (April 2009). Multipathway Screening Factors for Assessing Risks from Ingestion Exposures to Air Pollutants. Retrieved from https://www.tandfonline.com/doi/epdf/10.3155/1047-3289.59.4.419?needAccess=true.

[33] Air Toxics Risk Assessment Reference Library by EPA. Retrieved from https://www.epa.gov/sites/default/files/2013-08/documents/volume_1_reflibrary.pdf.

which outlines the guidelines for air quality models. It is reasonable to use AMS/EPA regulatory model as it is the preferred atmospheric dispersion model. It is reasonable to clarify the air dispersion modeling output that must be included in an AERA report, and it is reasonable to require a model consistent with the code of federal regulations. The MPCA requires these outputs to validate the estimated risk levels determined by an air toxics facility through the AERA process.

Unit (a) is added to clarify that output information from an AMS/EPA regulatory model must include hourly averaging over the most recent five years of meteorological data. It is reasonable to require the air toxics facility to include output information from the AMS/EPA regulatory model that includes hourly averaging over five years of meteorological data. The hourly modeled output information is used to calculate the acute risks at the facility. Acute IHBs are either derived for one hour or 24 hours. The acute IHBs that were derived for one hour will use the hourly modeled output for a given stack, divided by the IHB. This will calculate a risk number that will then be summed across all stacks and will be compared to the acceptable risk levels. The acute inhalation risk and acute health endpoint are both part of the acceptable risk levels and use hourly model output to calculate these risk levels. Thus, it is reasonable to require the air toxics facility to submit hourly modeling data so that the MPCA can confirm that acute risks were accurately calculated for an air toxics facility. Using the highest value averaged over five years of meteorological data is the most conservative for risk assessment and to protect human health and the environment. The use of five years of meteorological data is the recommended amount of time in EPA's 40 CFR Part 51 Appendix W.

Unit (b) is added to clarify that output information from an AMS/EPA regulatory model must include 24-hr averaging over the most recent five years of meteorological data. It is reasonable to require the air toxics facility to include output information from the AMS/EPA regulatory model that includes 24-hour averaging over five years of meteorological data. The 24-hour modeled output information is used to calculate the acute risks at the facility. Acute IHBs are either derived for one hour or 24 hours. The acute IHBs that were derived for 24 hours will use the 24-hour modeled output for a stack, divided by the IHB. This will calculate a risk number that will then be summed across all stacks and compared to the acceptable risk levels. The acute inhalation risk and acute health endpoint are both part of the acceptable risk levels and use 24-hour model output to calculate these risk levels. Thus, it is reasonable to require the air toxics facility to submit hourly modeling data so that the MPCA can confirm that acute risks were accurately calculated for an air toxics facility. Using the highest value averaged over five years of meteorological data is the most conservative for risk assessment and to protect human health and the environment. The use of five years of meteorological data is the recommended amount of time in EPA's 40 CFR Part 51 Appendix W.[34]

Unit (c) is added to clarify that output information from an AMS/EPA regulatory model must include monthly averaging over the most recent five years of meteorological data. It is reasonable to require the air toxics facility include output information from an AMS/EPA regulatory model that includes monthly averaging over five years of meteorological data. The monthly modeled output information is used to calculate the subchronic risks at the facility. To calculate subchronic risk for a stack the monthly output will be divided by the IHB. The calculated subchronic risk is then summed across all stacks and will be compared to the acceptable risk levels. The subchronic inhalation risk and subchronic health endpoint are both part of the acceptable risk levels and use monthly model output to calculate these risk levels. Thus, it is reasonable to require the air toxics facility to submit monthly modeling data so that the MPCA can confirm that subchronic risks were accurately calculated for an air toxics facility. Using the highest value averaged over five years of meteorological data is the most

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[34] *Guideline on Air Quality Models; Enhancements to the AERMOD Dispersion Modeling System. Retrieved from* https://www.epa.gov/system/files/documents/2024-11/appendix_w-2024.pdf

conservative for risk assessment and to protect human health and the environment. The use of five years of meteorological data is the recommended amount of time in EPA's 40 CFR Part 51 Appendix W.[34]

Unit (d) is added to clarify that output information from an AMS/EPA regulatory model must include annual average for each year of the most recent five years of meteorological data. It is reasonable to require the air toxics facility to include output information from an AMS/EPA regulatory model that includes annual average for each five years of meteorological data. It is important that the output is the highest for each year and not averaged over the five years. This way of modeling is based on how the nitrogen dioxide (NO_2) annual modeled output is compared to the National Ambient Air Quality Standard (NAAQS) annual standard is calculated, by using an annual mean. The annual modeled output information is used to calculate the chronic and cancer risks at the facility. To calculate the chronic or cancer risk for a stack, the annual output will be divided by the IHB for either the chronic or cancer IHB depending on which risk is being calculated. The calculated chronic and cancer risk is then summed across all stacks and will be compared to the respective acceptable risk levels. The chronic inhalation risk, cancer risk, chronic health endpoint, and all the multipathway risks are all part of the acceptable risk levels and use annual modeled output to calculate these risk levels. Thus, it is reasonable to require the air toxics facility to submit annual modeling data so that the MPCA can confirm that acute risks were accurately calculated for an air toxics facility. The highest annual average is chosen because this is a similar practice used for the NO_2 annual NAAQS. This ensures that the highest annual output is used and not the average of all five years.

Subitem A(4) is added to clarify that calculation methods, in a format approved by the commissioner, for estimating the inhalation, multipathway, and endpoint risks using the hierarchy in item G of this part for inhalation health benchmarks must be included in the AERA report. It is reasonable to allow air toxic facilities to calculate their inhalation, multipathway, and endpoint risk that follow the hierarchy in this rule. The MPCA has provided a tool, the RASS, for air toxics facilities to easily enter their modeled output and emission rates. The RASS calculates all the acceptable risk levels and will alert the air toxic facility to any risk levels that are above the acceptable risk levels. However, if an air toxics facility does not want to use the RASS, the facility is able to create another way to calculate risks that is approved by the commissioner. It must be approved by the commissioner to confirm that the risk levels are being calculated correctly. If an air toxics facility uses its own tool, it is important that the risks are calculated correctly to prove that the air toxics facility is not above acceptable risk levels. It is reasonable to provide an option to use other methods for calculating risks to allow for flexibility where there may be advancements in the future and a facility may have a different method for calculating risks that uses the same inputs.

Item B is added to clarify the AERA report must include a checklist of all necessary AERA supporting documents, including facility information, the reason for completing an AERA, required AERA forms, required permit forms, and tools for estimating risk. It is reasonable to clarify that the report must include a checklist, facility information, the reason for an AERA completion, required forms, permit forms, and tools for estimating risk levels. This information is necessary for facilities to know what is required for an accurate review of risk levels at a facility. The AERA materials checklist is necessary to help ensure that all items that must be included in the AERA report are actually included. Additionally, this checklist helps MPCA staff in their review to determine what items have been included or excluded in the AERA report. Facility information is important to understand where the air toxics facility is located, its operational details, and any changes proposed to the air toxics facility. This information is needed to indicate which AERA forms, permit forms, and risk tools are included in the AERA report. This is needed by the MPCA in its review to make sure that all the correct documents and information were provided. It is reasonable to ask for information to be included in the AERA report as it will help save the MPCA time and cost with its review of the AERA report.

Item C is added to clarify the AERA report must also include facility information, project description, general neighborhood information, exposure information, and maps of sensitive receptors, nearby permitted air emissions facilities, zoning, land use, farming locations, and fishable water bodies. It is reasonable to clarify that

the AERA report must include facility information and project information to ensure a complete report based on the type of project and facility and to assess the risks associated with the facility. It is reasonable to clarify that the AERA report must include exposure information, and maps of sensitive receptors, nearby permitted air emissions facilities, zoning, land use, farming locations, and fishable waterbodies to accurately assess the risk associated with the facilities. Facility information is important to make sure that the remaining information provided, such as maps, matches the facility submitting the AERA report. The project description helps the MPCA understand the layout of the facility, what operations occur at the facility, and if applicable, what changes are being made to the facility. The general neighborhood information is important to understand the population density near and around the air toxics facility. Exposure information is necessary to understand who could be exposed to the highest risk. This is needed to understand not only where the highest risk may be, but what sort of population is impacted by this highest risk.

Maps are essential to MPCA's review of an AERA. Maps help display the area around an air toxics facility and provide information to help with decisions regarding multipathway risks. Maps that must be included in the AERA report are maps of sensitive receptors, nearby permitted air emissions facilities, zoning, land use, farming locations, and fishable water bodies. A map of sensitive receptors is needed to understand where groups of people are located who, due to people's age or health status, are sensitive to air pollutants. The map of sensitive receptors should include locations for schools, daycare facilities, hospitals, nursing homes, recreational areas, senior centers, and other public or private facilities where sensitive people may congregate. This map helps the MPCA in its review of how the air toxics facility could impact not only the general population but also sensitive individuals. A map of nearby air emissions facilities is needed to assess the cumulative risk around the facility. While the MPCA may not include the emissions from the nearby air toxics facilities in the review, the MPCA is able to visually see how the air toxics facility and nearby facilities may collectively contribute to the risk in this area.

Zoning and land use maps are required to show what the land is used for around the facility. This map is needed for the multipathway risk levels, to understand if any crops may grow near the air toxics facility. Deposition from the air toxics emissions can deposit onto crops and can enter a person through dermal or ingestion exposures. The zoning map is needed to see where future development could occur near the air toxics facility. This information is needed in MPCA's review of the AERA report to understand the impact of the air toxics facility on other exposure pathways other than inhalation. A map of the farming locations is required to help when assessing the multipathway risk at a facility. The farming locations map is also important to understand potential future land use, and this is especially important for new facilities. Air toxics can settle out of the air and deposit onto crops near the facility and can enter a person through dermal or ingestion exposures. Furthermore, if the farm has cattle or other animals, these animals could eat grass that had air toxics deposited on them. If a person eats the animal that consumed the grass with air toxics, the air toxics are then ingested by the person eating the animal or animal products. The farming location information is important in the MPCA's assessment of the AERA report to assess the multipathway risks and to determine if the facility will have an impact on future land use.

A fishable water bodies map is required to help assess the risk of an air toxics facility on nearby water bodies. The map of fishable water bodies will help the MPCA to assess if deposition from the air toxics facility is likely in these fishable water bodies. This could impact individuals who fish on these waters and eat the fish. The fish may live in a body of water that has air toxics deposition causing the fish to have higher concentrations of air toxics such as mercury, lead, PFAS, and other bio-accumulative elements and compounds. If a person then eats this fish, the person is now ingesting the air toxics that were deposited into the lake, impacting the fish. This map is reasonable to include because the locations of the fishable water bodies help the MPCA assess the multipathway risk from an air toxics facility.

Maps are essential for understanding the area around an air toxics facility. The maps can show what is currently around the facility, but also what can be built. For example, the zoning map could show future development

around the facility. Maps are needed in an AERA to visually see the area around the facility and to understand what populations may be impacted by the emissions from an air toxics facility. Additionally, these maps are necessary for understanding which populations would be most impacted through multipathway risk near and around a facility.

Item D is added to clarify that a list of modeling files, detailed modeling descriptions, AERA emissions source summary, a meteorological data summary, a terrain and geospatial summary, and a building summary need to be included in the AERA report. It is reasonable to require the air toxics facility to include information about the air dispersion modeling that was conducted to complete the AERA report. The list of modeling files and methods is important to understand how the modeling was conducted for the AERA report and to verify results. The air toxics facility would have to specify if it used the RASS or another way of determining acceptable risk levels at the facility. The air toxics facility will also have to indicate what AMS/EPA regulatory modeling files will be submitted with the AERA report. EPA's preferred refined air quality models are AERMOD, CTDMPlus, and OCD.[35] Currently the AMS/EPA regulatory model is AERMOD. Furthermore, the MPCA uses AERMOD for all air dispersion modeling demonstrations. The MPCA determined that AERMOD is the preferred model to use due to peer-reviewed AERMOD performance literature, case studies, and AERMOD demonstrations by EPA. AERMOD has demonstrated superior predictive performance in comparison to other modeling platforms.[36] It is reasonable to require a list of modeling files in an AERA report because it helps the MPCA understand what files should be included in the report submittal, and more quickly notice if a file was not submitted but should have been.

A detailed modeling description is also required. This includes information about criteria air pollutant modeling, air dispersion model specifics, and receptor summary. Criteria air pollutant modeling may be conducted at the same time as an AERA report, but for the purposes of this rule, criteria air pollutant modeling will most likely not coincide with an AERA report as this rule focuses on air toxics. However, if criteria air pollutant (CAP) modeling was conducted along with the AERA, information must be provided on which CAPs were modeled for criteria modeling, how the CAPs compare to the Minnesota Ambient Air Quality Standards NAAQS/(MAAQS), and any CAPs included in the AERA. This information is needed for the MPCA to review an AERA and determine if there is any overlap between the AERA modeling and the CAP modeling. Some overlap in the information between AERA and CAP modeling could include stack information, emission rates used, and any limits taken in the model, among other things. This is important to make sure that the information used in the CAP modeling that is also used in the AERA modeling is consistent. Information on the air dispersion model specifics is also required. This information includes if the high-first-high (H1H) values were used in modeling, the AERMOD version number, and any other AERMOD options that were used in the air toxics modeling. This information is needed for the MPCA to understand which version of AERMOD was used in the modeling and to verify that the facility modeled H1H values to get its dispersion values. The receptor summary information is required in the AERA report. Receptors are specific locations in the modeling domain where the model needs to provide results (*i.e.,* air toxics concentrations). Receptors are placed in areas designated as "ambient air" within the modeling domain. "Ambient air" is outdoor air that the public has access to, and does not include air within a facility's property boundaries where public access is restricted. A receptor summary includes the receptor grid dimensions, receptors placed along the property boundary, ensuring the receptors follow the MPCA modeling practices, and any information about any flagpole receptors. Receptor elevation is assumed to be at ground level, but in certain situations receptors are included to represent structures where people reside at higher elevations, such as a high-rise apartment complex. Flagpole receptors allow the user to select the height of the receptor to account

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[35] Guideline on Air Quality Models; Enhancements to the AERMOD Dispersion Modeling System. 40 CFR Part 51 Appendix W. Retrieved from https://www.epa.gov/system/files/documents/2024-11/appendix_w-2024.pdf.
[36] MPCA Air Dispersion Modeling Practices. Retrieved from https://www.pca.state.mn.us/sites/default/files/aq2-58.pdf.

for these situations. Receptors are integral in understanding the modeled dispersion values in the ambient air outside of an air toxics facility. If the receptors are not placed in the correct location, this could result in an overestimate or underestimate of modeled dispersion values. This would impact the calculated risk levels at a facility and may incorrectly show that the facility is above or below acceptable risk levels. Submitting the receptor information is reasonable because it helps MPCA verify receptors are placed correctly in the model.

AERA emissions source summary information is required in the AERA report. This information includes the minimum and maximum stack height, if there are any merged stacks and a list of merged stacks, if the operating scenario is using less than 8760 hours per year, if there are any capped and/or horizontal stacks, and list of point sources modeled at the facility. This information helps to understand the stacks at the facility and the dispersion of air toxics emissions. In the MPCA's review, the agency will confirm that the stack heights listed in this form match other information provided by the air toxics facility. Additionally, this emission source summary is needed to understand merged stacks at the facility. A merged stack is multiple stacks in a similar location that are represented by one location. For example, there may be five space heaters at a facility within a few feet of each other. By merging these space heaters and representing them as one location, it allows the facility to model one stack as opposed to five. This allows the facility to still include all space heaters but model the information more efficiently by not including more stacks than necessary. These merged stacks could have different heights, stack temperature, stack velocity, and stack diameter. The merged stack must use the lowest, most environmentally conservative values as the modeled parameters. It is important to include this information in the AERA report to understand the difference in the merged stacks and to understand what numbers were used in the modeling.

Other modeling information that will need to be submitted includes a meteorological data summary, a terrain and geospatial summary, and a building summary. This modeling information is essential for running the model. This information is used in the model to determine the dispersion of air pollution and where geographically the highest concentrations are predicted. The meteorological data summary must include information about the meteorological station used, the years used, the surface station used, and if the data was obtained from the MPCA. MPCA has AERMOD-ready meteorological data for 24 sites across the state and bordering states. This meteorological summary is required in an AERA report so that the MPCA can verify that the correct meteorological data and years were used in the modeling. Facilities must use the most recent years to help ensure the model is as representative of current conditions as possible. A terrain and geospatial summary are required in an AERA report. This summary details what terrain files were used in AERMAP and any other UTM coordinates, or additional terrain and geospatial information used in the AERA report. This terrain and geospatial information are important for MPCA's review to confirm that the terrain data used in the modeling is accurate. Additionally, the MPCA will run AERMAP using the terrain files to confirm that the data used in the modeling was correct. A building summary is required for an AERA report, which includes information about the Building Profile Input Program (BPIP)-PRIME version used and information about which buildings were included. It is reasonable to require submittal of which version of BPIP-PRIME is used to verify the modeling results. Additionally, if some buildings are not included in the modeling, the reasoning would need to be explained in this summary.

Non-point sources must be identified in the AERA report. These non-point sources include volume sources, open pit sources, and area sources. It is reasonable to ask for these non-point sources to be identified if these sources were included in the modeling submitted with the AERA report. This information will help the MPCA understand what non-point sources are located at the air toxics facility and how these sources are contributing to risk levels. All of this information helps the MPCA understand how the modeling was conducted and helps in its review of the AERA report.

Item E is added to clarify that emissions source summary, operating scenario summary, emission factory summary, emission factors developed from stack tests, and a list of chemicals with additional considerations must be included in the AERA report. It is reasonable to require an air toxics facility to include emissions

information in its AERA report. Potential to emit (PTE) calculations must be submitted by the air toxics facility to confirm that PTE was calculated correctly and the emission rates used in the RASS (or another approved risk calculation tool) were correct. This ensures that the facility is accurately calculating its risk levels to compare to the acceptable risk levels. An emissions source summary is required. This summary will include information about which types of sources are quantified in the AERA, where some of the types of sources are quantified in the AERA, or where none of the specific type of sources were quantified in the AERA. These types of sources include combustion sources, non-combustion sources, onsite mobile source tail pipe emissions, idling vehicle tail pipe emissions, and fugitive sources (*ex.* paved roads, unpaved roads, storage piles, material handling operations, and equipment leaks). The air toxics facility must provide rationale as to why a source type is not included in an AERA report. By including an emissions source summary, when the MPCA reviews an AERA, it can easily identify which source types may not have been included and the reasoning behind not including some or all of these source types.

An operating scenario summary is required in an AERA report. This summary must include information about if the operating scenario is less than 8760 hours per year, if there are permit limits, if the PTE calculations include capture and control efficiencies, and if there was a different method used for emission rates calculated. This information will help the MPCA understand any limits the air toxics facility plans on taking and this information could be used if the facility must complete an Air Toxics Reduction Plan (ATRP). An emission factor summary is required to be included in an AERA report. The emission factor summary includes information about the emissions units or stacks, which emission factor reference was used, table number from reference, publication date, and rationale for selecting the data source. Information about emission factors developed from stack tests are also required in an AERA report. Information about the method of calculation, chemicals, emission source, and test report method are required. Emissions factor information is important to ensure that the air toxics facility is using the most recent emissions factors when calculating its PTE. It is reasonable to require providing this information to verify if the air toxics facility is using the correct emission factors, as this would impact the amount of potential emissions calculated and could impact the calculated risk levels.

A summary of chemicals with additional considerations is required in an AERA report. An example of one of these considerations is that glycol ethers are estimated as a total mass or individual glycol ethers are estimated. There are different considerations for an air toxics facility to contemplate, but the list is restricted to dioxin/furans, polychlorinated biphenyls (PCBs), aldehydes, petroleum hydrocarbons aliphatic (C7-C11), hexavalent chromium, glycol ethers, polycyclic aromatic hydrocarbons (PAHs), nitrogen oxides, asbestos-like fibers, and mercury. By detailing the additional considerations that an air toxics facility is using for specific air toxics, it allows the MPCA's review to be more efficient. The information will clarify why the emissions in the PTE calculations vary from standard practice.

Item F is added to clarify that a signed certification that, under penalty of law, the enclosed documents and all attachments submitted are true, accurate, and complete are included in the AERA report. It is reasonable to require the air toxics facility to certify that the AERA report is accurate of operations at the facility. This also puts the burden on the air toxics facility to provide accurate information. This is reasonable because the AERA report identifies the level of risk a facility poses to human health and the environment, and it is imperative that the result is based on true, accurate, and complete data.

Item G and Subitems (1) to (6) are added to clarify the sources listing IHBs for all air toxics emitted at the air toxics facilities and the hierarchy for which IHBs must be selected in the order of preference listed in the rule. Inhalation health benchmarks (IHBs) are a reference level at which there is a potential risk of adverse health effects from inhalation of air toxics. There are different sources for IHBs because different organizations develop IHBs for different purposes, use different methodologies and assumptions, and aim to protect different populations. Additionally, some sources do not derive values for certain exposure durations and having a hierarchy with multiple sources allows for those values' inclusion. These sources of IHBs are used because these

sources are credible organizations that use a rigorous, peer-reviewed process based on extensive toxicological and epidemiological data to establish IHBs. It is reasonable to specify the sources listing IHBs and the hierarchy for the IHBs to create consistency in submittals and save time in selecting IHBs to use in an AERA. IHBs come from a variety of sources and often an air toxic will have an IHB value from multiple sources. The IHBs must be selected in the following order of preference: MDH (HBV, RAA, VOC toxicity values), IRIS, PPRTV, ATSDR, CAL EPA, and NAAQS. Because of the quantity of air toxics, an in-depth toxicological review for each one would be limited given current MDH resources. Additionally, MPCA does not have the best suited experts to develop nor review IHBs, so the values are more efficiently and accurately developed by MDH and other sources. Therefore, a hierarchy of toxicity value resources is needed. If a hierarchy is not used, then the number of air toxics would be limited to the list of air toxics reviewed by MDH. A hierarchy is selected so that the MPCA could use a broader list of IHBs, which would provide the best opportunity to evaluate these air toxics and protect the communities surrounding these air toxics facilities. Using the hierarchy increases the number of air toxics that can be assessed from 73 to 338 pollutants total. Hierarchical approaches are needed because no single organization has developed IHBs at all durations of interest. The hierarchy selected is consistent with the U.S. EPA Regional Screening Levels (RSL)[37] with the exception of placing MDH-derived values (HBV, RAA, VOC toxicity values) at the top of the hierarchy. The hierarchy from the RSLs is selected because it is also used by the MPCA in developing Soil Reference Values, and toxicity values should be consistent across agency programs. These resources are selected due to the programs' rigorous, peer-reviewed processes based on toxicological and epidemiological data. Additionally, some resources, such as IRIS and CAL EPA, allow for public comment, which gives those IHBs a more comprehensive review. MDH (HBV, RAA, VOC toxicity values) are prioritized first in the hierarchy because these values are typically the most recent derived or evaluated values, using best available science and methodology. MDH develops values that are of concern to Minnesota to protect public health. MDH values undergo comprehensive and rigorous evaluation of toxicity data.[38] To derive noncancer values, MDH has developed five steps to complete this process. The first step is to review chemical data and identify key studies, next determine the point of departure (POD) for each study, adjust to a human equivalent concentration (HEC), apply appropriate uncertainty factors, and select most sensitive critical effect.[38] By the end of the process the air guidance value using the most sensitive health endpoint is chosen. MDH may develop air values for multiple exposure durations which is important because it allows for the ability to evaluate chemicals at different durations as humans may be exposed to chemicals at different time durations. For example, an individual may only be exposed to a chemical for a few hours. The IHB used to evaluate the risk for an individual in this situation would be different than an individual in a situation where they are exposed to the chemical for a year or longer. The different durations allow the chemicals to be evaluated for different exposures and are not limited to just one certain exposure scenario.

Additionally, the MPCA and the MDH work together to decide which air toxics to review, so the air toxics with values from MDH are often requests by the MPCA based on emerging or potential geographic concern. The MPCA looks at trends of air toxics to see which air toxics are being reported and which air toxics are driving risks in MNRISKS. From this information, the MPCA can better determine which air toxics should be evaluated by MDH further.

It is reasonable to specify the hierarchy of IHBs. Some air toxics have multiple resources of IHBs, identifying the preferred order of IHB sources limits confusion for the air toxics facility and creates consistency across air toxics

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[37] U.S. EPA Screening Levels, 2024. Retrieved from https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide.
[38] Air Guidance Values Technical Support Document, September 2025. Retrieved from https://www.health.state.mn.us/communities/environment/air/docs/airguidancetech.pdf

facilities. IHBs are essential for calculating the risk at an air toxics facility, so specifying which IHBs to use is essential for consistency across air toxics facilities and for accurate calculation of risk levels.

Subitem G(1) and units (a) to (c) are added to clarify one source listing IHBs is Minnesota Department of Health (MDH). Units (a) to (c) list the different values that MDH derives. These include the health based values (HBVs), risk assessment advice (RAA), and volatile organic compound (VOC) inhalation toxicity values. MDH develops health-based guidance values to evaluate potential human risk from exposures to chemicals in ambient air. An air guidance value is a concentration of a chemical that is likely to pose little or no risk to human health. Units (a) and (b) are MDH's HBVs and RAA. These values are usually requested by MPCA or other state agencies and have not been put through public rulemaking process. These values are technical guidance made available by MDH. Unit (c) is VOC inhalation toxicity values. MPCA requested MDH to derive values for vapor intrusion investigations, termed intrusion screening values (ISVs). It is reasonable to include MDH as a source of IHBs as often the IHBs derived are by request of the MPCA. The MPCA requests that MDH look at specific air toxics for a number of reasons. Some examples include that the previous value MDH derived is older, a new value was released by another source (such as IRIS, CAL EPA, etc.), or the air toxic is a risk driver in risk assessments such as AERAs and MNRISKS. MDH has RfCs for acute, chronic, and subchronic exposures as well as IURs. The RfCs are used to calculate acute, chronic, and subchronic inhalation risk, while the IURs are used to calculate cancer risks.

Subitem G(2) is added to clarify one source listing IHBs is the U.S. EPA's Integrated Risk Information System (IRIS). The IRIS program's mission is to identify and characterize health hazards of chemicals in the environment to help protect human health and the environment. IRIS has RfCs for chronic and a few subchronic exposures as well as IURs. It is reasonable to include IRIS as a source of IHBs as it is an EPA program that develops impartial toxicity information. The RfCs for chronic and subchronic exposures are used to calculate chronic and subchronic inhalation risks, while the IURs are used to calculate cancer risks.

Subitem G(3) is added to clarify one source listing IHBs is the U.S. EPA's Provisional Peer-Reviewed Toxicity Values (PPRTV). PPRTV values are toxicity values primarily derived for use in EPA's Superfund Program. The PPRTV Program's mission is to protect human health and environment by identifying and characterizing the health hazards and providing an important source of toxicity information and toxicity values for chemicals of concern in the Superfund Program. The PPRTV program has RfCs for chronic and subchronic exposure as well as IURs. It is reasonable to use PPRTVs as a source of IHBs as it provides values that protect human health. The RfCs for chronic and subchronic exposures are used to calculate the chronic and subchronic inhalation risks, while the IURs are used to calculate cancer risks.

Subitem G(4) is added to clarify one source listing IHBs is the Agency for Toxic Substance and Disease Registry (ATSDR). ATSDR provides reference concentrations (RfCs) (labeled Inhalation Minimal Risk Levels (MRLs) by ATSDR) used to evaluate health risks for acute, chronic and intermediate exposures. It is reasonable to include ATSDR as a source because ATSDR is the lead federal public health agency for determining, preventing, and mitigating human health effects of exposure to hazardous substances. The RfCs for acute, chronic, and intermediate exposures are used to calculate the acute, chronic, and subchronic inhalation risks.

Subitem G(5) is added to clarify one source listing IHBs is the California Office of Environmental Health Hazard Assessment (CAL EPA). The CAL EPA's mission is to protect and enhance the health of individuals through scientific evaluations that inform, support, and guide regulatory and other actions. CAL EPA has RfCs (labeled Reference Exposure Levels (RELs) by CAL EPA) for acute and chronic exposures as well as inhalation unit risks (IURs) to evaluate cancer risks. It is reasonable to use CAL EPA as a source as it has derived RELs and IURs but can be used nationally for other regulatory support. The acute and chronic RELs are used to calculate acute and chronic inhalation risks, while the IURs are used to calculate cancer risks.

Subitem G(6) is added to clarify one source listing IHBs is the National Ambient Air Quality Standards (NAAQS). NAAQS were first created with the last amendment of the Clean Air Act in 1990. NAAQS values are standards for

six criteria pollutants that can be harmful to public health and the environment.[39] These standards must not be exceeded, and these standards are used like an IHB when calculating risk levels and determining if a facility is above acceptable risk levels. Additionally, there are some pollutants that do not have an IHB from another source but have a NAAQS value. It is reasonable to use and include NAAQS values in the hierarchy as they are a federal standard already used to determine acceptable concentrations of pollutants in the air in order protect human health, and they fill in gaps of data. NAAQS is last in the hierarchy which only allows for use of only a few NAAQS values. Additionally, NAAQS have different averaging times than in the RASS (the spreadsheet used to estimate risk levels) so this logistically limits the number of NAAQS values that can be used. Overall, this results in only a handful of NAAQS values used in the AERA process.

Item H is added to clarify that air quality dispersion modeling files from the AMS/EPA regulatory model in a format specified by the commissioner must be submitted. At a minimum this information must include all data and inputs necessary to execute the model. Having the data and inputs necessary to execute the model included in the AERA report ensures that the MPCA can run the model and confirm the outputs that are the same as submitted in the AERA report. It is reasonable to require submittal of all data and inputs necessary to execute the AMS/EPA regulatory model with an AERA report so that the MPCA can confirm the results. These modeling files are essential for confirming the results in an AERA report and approving the report.

Item I is added to clarify that potential to emit (PTE) calculations in a format specified by the commissioner must be included in the AERA report. It is reasonable to require that PTE calculations must be included in an AERA report and in a format specified by the commissioner. The PTE rates are used in the RASS to calculate the risk levels at an air toxics facility. The PTE calculations will demonstrate how those PTE rates were determined. By including the PTE calculations, the MPCA can verify that PTE rates were calculated and entered into the RASS correctly. If the PTE rates were incorrect or if the data entered into the RASS was incorrect, this could incorrectly determine the risk levels at a given air toxics facility. The PTE calculations must be in a format specified by the commissioner. This allows for consistency across all the air toxics facilities and allows for a more efficient review from the MPCA. Furthermore, if all PTE calculations are in the same format, the MPCA can more easily review these calculations and spot errors.

Item J and subitems (1) to (3) are added to clarify that a General Public Preclusion Plan (GPPP) must be included in the AERA report. Subitems (1) to (3) are added to clarify, at a minimum, what the GPPP must include. It is reasonable to require an air toxics facility completing an AERA report to submit a GPPP. The GPPP will state where the ambient air boundary is and how the air toxics facility plans on stopping the public from entering into the air toxics facility's property across that boundary. The EPA defines "ambient air" at 40 CFR § 50. 1 (e) as "that portion of the atmosphere, external to buildings, to which the general public has access." Since the modeling is conducted using receptors along the ambient air boundary and outward, the risk is not assessed within an air toxics facility's property as long as it is inaccessible to the public. Some of the acute risk IHBs were derived for durations as short as 1 hour. So, it is imperative that the public is not subject to air toxics that could impact the person in as short a time as an hour; they must be prevented from entering any area on the facility's property as the risk is not evaluated within the facility's property and is therefore unknown.

Subitem J(1) is added to clarify that the GPPP must include a map that shows the location of the ambient air boundary. It is reasonable to require the air toxics facility to include a map in the GPPP that states the ambient air boundary. This map will outline the facility's boundary for where the public is precluded from entering across the ambient air boundary and onto the air toxics facility's property. This map is necessary for the MPCA to understand the ambient air boundary during the MPCA's review of the modeling submitted for the AERA report.

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[39] NAAQS Table by EPA. Retrieved from https://www.epa.gov/criteria-air-pollutants/naaqs-table.

The facility boundary in the AERMOD modeling must match the facility boundary shown in the GPPP. It is reasonable to require a GPPP map to clarify where the public does and does not have access to the facility's property.

Subitem J(2) is added to clarify that the GPPP must include what measures are being or will be used to preclude access (*i.e.* locations of fencing, signage, patrols, or security cameras). It is reasonable to require that the GPPP must include what measures are being done or will be done to preclude access of the public to the air toxics facility's property. This information is important to understand how the facility plans on precluding the public and makes the air toxics facility accountable to ensure these measures are put into place. This information is necessary to understand what measures are in place or will be in place. If the MPCA deems these measures as not sufficient in precluding the public, the air toxics facility must update the GPPP to ensure public safety. It is reasonable to require submitting this information in a GPPP because the MPCA must have reasonable assurance of where the public does and does not have access.

Subitem J(3) is added to clarify that the GPPP must include a narrative description of the preclusion measures. It is reasonable to require a narrative description of the preclusion measures. An air toxics facility may state it has installed cameras. However, the narration would describe how many cameras were installed, where the cameras were placed, how often the cameras are replaced, etc. The narration will provide a comprehensive overview of how the facility plans to preclude access, which is necessary for the MPCA to understand what measures are or will be in place and to determine if the measures are adequate to ensure access is precluded to the public.

Item K is added to clarify that identification of operations required to demonstrate compliance with acceptable risk levels in subpart 3 of this part must be included in the AERA report. It is reasonable to require the air toxics facility to clarify the operations that are required to demonstrate compliance with acceptable risk levels. The air toxics facility may have assumed operational or emissions limits or made changes in its operations to stay at or below acceptable risk levels. It is reasonable to ask the facility to clarify what those limits or changes are. This is helpful for the MPCA in their review of the AERA report and also allows for consistency between the AERA report and the permit. If permit limits are assumed in an AERA to stay at or below acceptable risk levels, detailing those limits ensures these limits are incorporated into the permit.

Item L is added to clarify that monitoring, recordkeeping, and reporting proposed by the facility to ensure a reasonable level of compliance with acceptable risk levels in subpart 3 of this part must be included in the AERA report. It is reasonable to require the air toxics facility includes monitoring, recordkeeping, and reporting in the AERA report that ensures the air toxics facility is in compliance with acceptable risk levels. Minnesota Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(a)(4) to 4(a)(6) states that the rule must address monitoring, reporting, and record keeping related to air toxics emissions. PTE calculations are used in the AERA and may incorporate restrictions that are not practicably enforceable as these limits are not incorporated into a permit with correlating monitoring, recordkeeping, and reporting to provide a reasonable assurance of compliance. It is reasonable to require the facility to include information about monitoring, recordkeeping, and reporting in the AERA report that would make assumed restrictions practicably enforceable to ensure compliance when incorporated in a permit. This will help ensure that the facility is in compliance with acceptable risk levels while following monitoring, recordkeeping, and reporting requirements. This information is also required in Session Law and helps MPCA review the AERA report for amendments needed to the air permit.

Subpart 2. **Additional report content.**

Subpart 2 and items A to E are added to clarify additional content required for the AERA report in specific circumstances. This additional content includes information about internal combustion engines, if a Human Health Risk Assessment Protocol (HHRAP) analysis was conducted, cumulative effects, or if mercury emissions are greater than three pounds per year. It is reasonable to require an air toxics facility to submit additional information that is relevant to the AERA report. Subpart 1 lists the content required to be included in every AERA

report completed by an air toxics facility. The additional content listed in this subpart is only required if it is applicable to the air toxics facility. Some content may not be applicable to an air toxics facility and in that case, it would not have to include this content in its AERA report.

Item A is added to clarify that additional content is required with an AERA report under the circumstances described in items B to E. Subpart 1 listed the content that is required for all AERA report submissions. However, there may be cases where only some submissions need additional information when circumstances are applicable. It is reasonable to clarify when and what additional information needs to be included in the AERA report. This limits confusion for air toxics facilities when completing an AERA and provides consistency across submittals.

Item B is added to clarify that when an internal combustion engine is used for emergencies, the air toxics facility must include the facility name, address, and other identifying information, emission unit description, and emergency use certification in a format specified by the commissioner in the AERA report. It is reasonable to require facilities to provide information about internal combustion engines that are used only for emergencies because emergency use and allowed maintenance can still generate significant emissions and potential health risks. The air toxics facility must include information about the facility, including the address, facility name, etc. This ensures that when MPCA is reviewing this information that it is for the correct air toxics facility. The air toxics facility will have to submit information about the emergency internal combustion engines. This includes information about the stack/vent number, type of use, rated heat input (mmBtu/hr), rated mechanical output (HP and RPM), fuel type (include % sulfur), fuel consumption rate (gal/hr or cf/hr), stack height (m), engine location (UTM coordinates in NAD 1983), and testing frequency and duration. This information is necessary to understand the parameters of the emergency internal combustion engines. This information informs the MPCA where the emergency engines are located and the engines' capacities in order to determine if these engines may need to be included in the AERA. The air toxics facility will also have to certify that the engine is used for "emergency" or "emergency use only". Furthermore, the air toxics facility must certify that the engines will meet or continue to comply with applicable requirements, in accordance with part 7007.0500, subpart 2, item (K), subitem (2) and subpart 2, item (K), subitem (3). It is reasonable to require the facility to certify that the information provided is correct to clarify and help ensure that the engines are for emergency purposes and are expected to comply with applicable rules and regulations.

Item C is added to clarify that when a Human Health Risk Assessment Protocol (HHRAP) is completed, the air toxics facility must include facility information, information on following the guidance, HHRAP-based analysis tools, AERA AMS/EPA regulatory modeling settings, HHRAP-based software settings, toxicity values, and watershed and water body parameters in the AERA report. It is reasonable to require an air toxics facility to include information about any HHRAP analysis done at the facility. An HHRAP analysis is completed if a facility does a more refined risk analysis to prove it is at or below acceptable risk levels. This type of modeling involves the calculation of dispersion factors as well as wet and dry deposition-related factors. These dispersion and deposition factors are used to calculate media concentrations and multipathway risk estimates. The output from HHRAP will be compared to acceptable risk levels to verify that a facility is at or below acceptable risk levels. This information must include the facility information such as the facility name to ensure that the reviewer at MPCA is reviewing the correct facility. The air toxics facility must indicate if it followed MPCA's modeling guidance when completing the HHRAP analysis or if it followed a different guidance. It is reasonable to determine what guidance was followed when completing a HHRAP analysis, so the MPCA can review the HHRAP analysis more efficiently. The facility must indicate which HHRAP-based analysis tool was used. HHRAP-based analysis tools include Integrated Exposure Uptake Biokinetic (IEUBK), AMS/EPA regulatory modeling settings (AERMOD), Industrial Risk Assessment Program (IRAP), or any other tool used. This information is important to know which tool was used for this assessment. Each tool can assess different air toxics in different ways. It is reasonable to understand which tool was used to reduce confusion and so that MPCA's review is more efficient. If AERMOD was used, the

air toxics facility must include information about input and output files, how the risks were calculated, what benzo(a)pyrene gas deposition properties were used, and what particle distributions were used. This information is necessary to understand how the modeling was conducted in AERMOD. This will provide insight into the parameters selected for the modeling, as a change in parameters could impact the output values. If a HHRAP-based software, such as IRAP, was used then the settings for this software must be submitted. This information about the HHRAP-based software must include whether the drinking water pathway was turned off, whether the HHRAP analysis incorporates non-default exposure assumptions, and what fisher ingestion rates were used. Since the HHRAP analysis looks at the multipathway risk to an individual, it is reasonable to require information about the different pathways in which an individual can be impacted by these air toxics. The air toxics facility must submit information about the toxicity values, also known as IHBs, used in the analysis. IHBs are crucial for understanding the risks posed by an air toxics facility. It is reasonable to understand if different IHBs were used by the facility in the HHRAP analysis as this impacts the results of the AERA. Lastly, watershed and water body parameters must be included in the HHRAP analysis. General Minnesota values are provided, but if there are site specific values, those values must be used to ensure the results are as accurate as possible. The air toxics facility must submit values for the average annual wind speed, the fraction of watershed that is impervious, the Universal Soil Loss Equation (USLE) erodibility factor, the USLE length slope factor, the air viscosity, the water viscosity, the sediment delivery empirical slope coefficient, the dry particle deposition velocity, the dry vapor depositional velocity, the average annual precipitation, the average annual temperature, the average annual irrigation, the average surface runoff from pervious areas, the water body temperature, the total suspended solids, the Cover Management Factor, the USLE rainfall factor, and the average evapotranspiration. All this information is reasonable to collect to understand what values were used in the HHRAP analysis. Any values different than the Minnesota defaults must be indicated as the results of the HHRAP analysis may change depending on the values used.

Item D is added to clarify that when the commissioner determines risk from other sources of air toxics may interact with the air toxics facility in such a way as to cause potential cumulative effects, the facility is required to include qualitative cumulative analysis information, quantitative results, and uncertainties in a format specified by the commissioner in the AERA report. It is reasonable to require information about the cumulative impacts of an air toxics facility if requested by the commissioner. Information about the cumulative effects includes a map of potential air emission sources, nearby monitoring stations, or locations of maximum risk near an air toxics facility. The facility must include quantitative results that include the cumulative impacts of ambient monitoring data, modeled off-site sources, and the facility's impacts. The air toxics facility must assess what percent contribution the facility has on the total cumulative sum. The facility must also submit information about the proposed facility specific endpoint risk. This information on the cumulative risk and the specific endpoint risk is needed to understand how much risk the facility is contributing to the area around the facility versus what background risk exists. Some facilities are in areas where other air toxics facilities are in close proximity to the air toxics facility completing the AERA. It is important to understand the cumulative impacts of a facility because it may not just be the facility contributing to risks in the area. Changes, particularly reductions, in a facility's emissions are more important when there are multiple sources contributing to increased risk in the same area. Submitting the specific endpoint risk is reasonable to require so MPCA understands which endpoints are more likely to be impacted by the air toxics facility. Lastly, the air toxics facility must address any uncertainties to the cumulative analysis. This is reasonable so MPCA better understands if the air toxics facility has indicated values that may not accurately represent the cumulative risk near the air toxics facility. It is reasonable to require the air toxics facility to assess its cumulative risk as it helps to understand how much risk the air toxics facility contributes to the existing and aggregated risk.

Item E and subitems (1) to (3) are added to clarify that if actual mercury emissions are equal to or greater than three pounds per year, total mercury emissions need to be speciated into particulate bound, reactive gaseous and elemental mercury and must be included in the AERA report. The speciation of mercury is process specific

and the hierarchy for the most preferred method to the least preferred method is listed in subitems (1) to (3). The hierarchy is: facility or industry stack testing using the most current EPA method (subitem (1)) from EPA's Air Emissions Measurement Center, methodology described in technical support document of the National Air Toxics Assessment (AirToxScreen) or the U.S. EPA National Emissions Inventory (NEI, subitem (2)), and default speciation of 20% elemental, 60% particulate, and 20% oxidized(subitem (3))[40]. This hierarchy ensures the facility is using facility specific data first. If that is not possible, then the facility must speciate based on the technical support document for AirToxScreen or NEI. Then lastly, if the facility is unable to speciate using other methods, the facility may use the default speciation. It is reasonable to require the facility to provide more information about its mercury emissions if it emits more than three pounds per year as it will have to do a more refined assessment into the facility's mercury emissions. If a facility emits more than three pounds per year the facility will have to assess its mercury emissions, which is typically through the MPCA Mercury Risk Estimating Method (MMREM). While the facility could use another method, the MMREM is available to provide consistency in submittals and to help ensure all data needed for review is provided. This approach uses mercury concentrations in Minnesota fish and measured ambient background mercury deposition. To complete the MMREM, the air toxics facility will need to input information from the facility to determine the risk posed by mercury from the facility to the fish in specific bodies of water. The information the facility will need to provide includes information for mercury speciation, how the mercury air concentrations over the water body were calculated, which water bodies were analyzed, the sources of the watershed information, and existing ambient fish tissue concentrations. Mercury speciation through the MMREM process must follow the hierarchy listed in subitems (1) to (3). The information that the air toxics facility used to complete the MMREM is important to incorporate into the AERA report. This information will help MPCA review the AERA report and clarify what information was used and the sources of the information. The three pounds per year threshold is consistent with part 7007.0502 and it is reasonable to create consistency across rules.

Subpart 3. **Acceptable risk levels.**

Subpart 3 and items A to D are added to require that an owner or operator of an air toxics facility must not cause or allow the facility-wide air toxics emissions to result in the predicted maximum ambient impact that exceeds the acceptable risk levels in this subpart. The owner or operator must use the following acceptable risk levels in its air emissions risk analysis listed in items A to D. It is reasonable to require that a facility must be at or below acceptable risk levels to protect health and the environment. The facility must use the specified acceptable risk levels that have been established and reviewed to be protective of human health and the environment. The cancer risk acceptable risk level is a long-standing value that has been used in Minnesota as far back as 1996 and are used in Michigan and Wisconsin, as examples of other region 5 states.[41] [42] It is reasonable to require that a facility must not cause or allow emissions of air toxics that result in a predicted maximum ambient impact that exceeds the acceptable risk levels to prevent the negative health outcomes that could arise from exceeding the established acceptable risk levels. The acceptable risk levels have been set to protect human health and the

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[40] *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities by U.S. EPA (2005). Retrieved from https://rais.ornl.gov/documents/2005_HHRAP.pdf.*

[41] *Michigan rules, Department of Environmental Quality, Air Quality Division, Air Pollution Control, Part 2. Air Use Approval, R 336.1231. Retrieved from https://ars.apps.lara.state.mi.us/AdminCode/DownloadAdminCodeFile?FileName=R%20336.1201%20to%20R%20336.1299.pdf&ReturnHTML=True.*

[42] *Wisconsin Department of Natural Resources, Chapter NR 445 Control of Hazardous Air Pollutants, Subchapter II — Emission Requirements, Review and Notifications for Stationary Sources of Hazardous Air Contaminants, 445.08 Compliance requirements. Retrieved from https://docs.legis.wisconsin.gov/code/admin_code/nr/400/445/ii/08/2/c .*

environment, so if those levels are exceeded it could pose increased risk. It is reasonable to set standards consistent with historical use within Minnesota and that are consistent with other region 5 states.

Items A to D are added to clarify the list of acceptable risk levels. It is reasonable to detail the acceptable risk levels that an air toxics facility must be at or below to complete its AERA report or the facility would be required to develop an ATRP. These acceptable risk levels are levels that are likely to pose little or no risk to human health, including sensitive populations, over a specified time-period. It is reasonable to specify what these acceptable risk levels are so an air toxics facility knows the levels that it must meet. Also, by setting acceptable risk levels, this sets levels for all air toxics facilities and helps create consistency across air toxic facilities and AERA reports.

Item A is added to clarify that the cancer risk at the air toxics facility must not exceed 1 in 100,000. It is reasonable to specify that the acceptable risk level for cancer is 1 in 100,000 rounded to one significant figure. Cancer risks are characterized by using an excess lifetime cancer risk, representing the incremental probability that an individual will develop cancer due to exposure to a carcinogen over a lifetime. The U.S. EPA has established an acceptable cancer risk range of one in a million (or 1×10^{-6}) to one in 10,000 (or 1×10^{-4}).[43] While the U.S. EPA recommends using a lifetime risk level between 10^{-4} and 10^{-6}, the choice of a specific lifetime risk level is left to the discretion of the state's regulatory agency. Minnesota's long-standing public health policy is to derive values that limit excess cancer risk to 1 in 100,000 (1×10^{-5}) as a negligible, or acceptable, additional lifetime risk from exposure to carcinogens. A risk level of 1×10^{-5} has previously been adopted in three Minnesota rules: the MDH Rules for Health Risk Limits (parts 4717.7100 to 4717.7800), the MPCA's Solid Waste Rules (part 7035.2815, subpart 4, item H, subitem (5), subitem (b)) and MPCA Surface Water Rules (part 7050.0218, subpart 6, item C). Additional rationale for choosing a lifetime risk level of 1×10^{-5} is provided in a MDH Briefing Paper[44]. It is reasonable to specify a risk level that is consistent with historical practice within Minnesota and other states in EPA region 5.

Item B is added to clarify that the hazard quotient for acute, subchronic, and chronic inhalation risks must not exceed 1 (rounded to one significant figure) for each risk. It is reasonable to set one of the acceptable risk levels as the hazard quotient for acute, subchronic, and chronic inhalation risk to 1 (rounded to one significant figure). The hazard quotient is the ratio of a single substance exposure level to an IHB for that substance derived from a similar exposure period (e.g. acute, subchronic, or chronic). The equation for hazard quotient is:

$$HQ = \frac{EC}{IHB}$$

where:

HQ = the hazard quotient for an individual air toxic

EC = Substance exposure concentration

IHB = Inhalation health benchmark

If a hazard quotient is less than 1, noncancer health effects are not likely to occur for people exposed to air toxics, including sensitive populations. However, when the hazard quotient is greater than 1, it does not mean that health effects will, or are likely to occur, although the risk of associated health effects increases as the amount and duration of exposure increases. A hazard quotient greater than 1 increases the potential for adverse

[43] *National Contingency Plan 40 CFR 300.430.*

[44] *Minnesota Department of Health. Statement of Need and Reasonableness. Retrieved from https://www.health.state.mn.us/communities/environment/risk/docs/rules/hrvsonar.pdf.*

effects.[45] An acceptable risk level of 1 (rounded to one significant figure) is consistent with EPA's risk assessment advice[46] and historical use within Minnesota. The MPCA uses rounding to account for the lack of precision in the data used to calculate the hazard quotient.[47] Furthermore, a hazard quotient greater than 1 poses a possibility for increased risk of health effects but it is not certain. While the MPCA does not want an air toxics facility to emit at a level that may pose health risks, it wants to also address the uncertainty and variability in the data used to calculate these risk levels. Given this information, the MPCA has set the acceptable risk level for the hazard quotient for acute, subchronic, and chronic inhalation risks to 1 (rounded to one significant figure) for each risk. This means a risk value up to 1.49 would round down to 1. It is reasonable to specify an acceptable risk level that is consistent with historical practice within Minnesota.

Item C is added to clarify that the hazard quotient for farmer noncancer, farmer cancer, urban gardener noncancer, urban gardener cancer, resident noncancer, and resident cancer multipathway risks at an air toxics facility must not exceed 1 (rounded to one significant figure) for each risk. It is reasonable to set one of the acceptable risk levels as the hazard quotient for farmer noncancer, farmer cancer, urban gardener noncancer, urban gardener cancer, resident noncancer, and resident cancer multipathway risk to 1 (rounded to one significant figure). The hazard quotient is the ratio of a single substance exposure level to an IHB for that substance derived from a similar exposure period (e.g. chronic). The equation for hazard quotient is:

$$HQ = \frac{EC}{IHB}$$

where:

HQ = the hazard quotient for an individual air toxic

EC = Substance exposure concentration

IHB = Inhalation health benchmark

If a hazard quotient is less than 1, noncancer health effects are not expected for people exposed to the air toxics. However, when the hazard quotient is greater than 1, health effects are possible, but not certain.[11] An acceptable risk level of 1 (rounded to one significant figure) is consistent with historical use within Minnesota. The MPCA uses rounding to account for the lack of precision in the data. Furthermore, a hazard quotient greater than 1 poses a possibility for health effects but it is not certain. While the MPCA does not want an air toxics facility to emit at a level that may pose health risks, it wants to also address the uncertainty and variability in the data used to calculate these risk levels. Given this information, the MPCA has set the acceptable risk level for the hazard quotient for farmer noncancer, farmer cancer, urban gardener noncancer, urban gardener cancer, resident noncancer, and resident cancer multipathway risks at an air toxics facility must not exceed 1 (rounded to one significant figure) for each risk. This means a risk value up to 1.49 would round down to 1. An acceptable risk level of 1 (rounded to one significant figure) is consistent with EPA's risk assessment advice.[48] It is reasonable to

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[45] *Cancer Risk and Noncancer Hazard Index. Retrieved from https://oehha.ca.gov/sites/default/files/media/downloads/risk-assessment/fact-sheet-california-human-health-screening-levels-chhsls/riskfactsheet.pdf.*
[46] *Air Toxics Risk Assessment Reference Library. Retrieved from https://www.epa.gov/sites/default/files/2013-08/documents/volume_1_reflibrary.pdf.*
[47] *Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures. Retrieved from https://archive.epa.gov/osa/raf/web/pdf/chem_mix_08_2001-2.pdf.*
[48] *Air Toxics Risk Assessment Reference Library. Retrieved from https://www.epa.gov/sites/default/files/2013-08/documents/volume_1_reflibrary.pdf.*

specify an acceptable risk level that is consistent with EPA's risk advice as well as historical practice within Minnesota.

Item D is added to clarify that the hazard index for acute, subchronic and chronic noncancer health endpoints at an air toxics facility must not exceed 1 (without rounding down to one significant figure) for each health endpoint. It is reasonable to set one of the acceptable risk levels as the hazard index for acute, subchronic and chronic noncancer health endpoints at an air toxics facility to 1 (without rounding down to 1 significant figure) for each health endpoint. The hazard index is the sum of more than one hazard quotient for multiple substances with the same or similar toxic endpoint. The equation for hazard index is:

$$HI = HQ_1 + HQ_2 + \cdots + HQ_i$$

where:

HI = hazard index; and

HQ = hazard quotient for the ith air toxic.

If a hazard index is less than 1, noncancer health effects are not expected for people exposed to the air toxics. However, when the hazard index is greater than 1, noncancer health effects are possible, but not certain.[21] A hazard index of 1 (without rounding down to one significant figure) for each health point is consistent with historical use within Minnesota. For other acceptable risk levels there may have been some uncertainty or variability accounted for in the acceptable risk level. However, in this case there is very little uncertainty in the effects on a given health endpoint. Since there is more certainty of the impact of an air toxic on a given health point, the MPCA has set the acceptable risk level to 1 (without rounding down to one significant figure) for each health point. It is reasonable to specify an acceptable risk level that is consistent with historical practice within Minnesota.

Items A to D require clarification on rounding and significant figures due to the precision in the data included in a final AERA risk estimate. Standard rules for rounding apply which will commonly lead to an answer of one significant figure in both risk and hazard estimates. Hazard quotients, hazard indices, and cancer risk estimates are usually reported as one significant figure for presentation and summary purposes. The MPCA recommends rounding only the final reported results, not the intermediate calculations. In some circumstances there may be enough information to report single pollutant risk estimates to more than one significant figure. This may be the case when there is a toxicity value with low uncertainty, facility specific toxicity value, and nearby meteorological data. However, this is case specific and the MPCA will need to review the work. Tables showing risk calculations may also require more than one significant figure to represent the calculations transparently. More than one significant figure needs to be used in these circumstances.

Subpart 4. **Using a previously completed analysis.**

Subpart 4 and items A to D are added to clarify that a facility may submit a request to use a previously completed air emissions risk analysis to the commissioner for approval. The commissioner must approve a request where the owner or operator clearly demonstrates that it meets A to D. It is reasonable to specify the conditions under which an air toxics facility may use a previous AERA. It is reasonable not to create extra work for an air toxics facility and not to duplicate recent work on an AERA. However, it is also reasonable for the MPCA to add conditions to limit the use of a previous AERA to ensure that there is no increased risk to human health and the environment if a previous AERA is used.

Item A is added to clarify that the owner or operator must demonstrate that the prior AERA report was completed on or after the effective date of this chapter. It is reasonable to allow a facility to use a previous AERA report that was completed after rule promulgation. Allowing a facility to use a prior AERA report limits the duplicative work for an air toxics facility. It is reasonable to limit the use of prior AERAs to after the date of

adoption of this rule because, prior to the current rule, there was no legal framework to require facilities to conduct an AERA, or if it did, there was no legal framework to require actions if the AERA showed risks above acceptable risk levels. Having no acceptable risk levels in rule has made it harder for the MPCA to enforce these acceptable risk levels. After rule promulgation, any completed AERA report would have to comply with these acceptable risk levels. Requiring that the AERA report is completed after rule promulgation is reasonable as this ensures the facility is at or below acceptable risk levels. Additionally, after rule promulgation, the air toxics facility would have had to complete all required actions listed in this rule. An AERA report completed after rule promulgation would contain all the information that the MPCA needs for its review and demonstrates that the air toxics facility does not exceed acceptable risk levels.

Item B is added to clarify that the owner or operator must demonstrate that the prior AERA report was completed no earlier than three years before the due date under part 7012.0200. It is reasonable to require that a previously submitted AERA was completed no earlier than three years before the due date under part 7012.0200. By allowing an air toxics facility to use a previous AERA report within three years of the new AERA deadline, this ensures that the air toxics facility is using the most recent meteorological data, modeling methods, and operating information for its facility. Some air toxics facilities may not change operations from year to year. However, meteorological data will change each year. When new AERAs are completed, facilities are expected to use the most recent meteorological data. Thus, it is imperative that the facility uses the most recent meteorological data in their AERA, therefore limiting the prior AERA report to three years ensures that this most recent meteorological data is used.

Item C is added to clarify that the owner or operator must demonstrate that the prior AERA report results demonstrate compliance with part 7012.0560, subpart 3, which relates to acceptable risk levels. It is reasonable to require the air toxics facility to demonstrate that any previous AERA report used complies with acceptable risk levels in part 7012.0560, subpart 3. Previously, there were no regulations to require an air toxics facility to be at or below acceptable risk levels. After rule promulgation, any completed AERA report would have to comply with these acceptable risk levels. By requiring that the AERA report was completed after rule promulgation as required under item A, this also ensures that the facility is at or below acceptable risk levels.

Item D is added to clarify that any modifications at the facility since the prior AERA was completed must only consist of changes that did not result in increased risk from air emissions impacts. It is reasonable to require that any changes or modifications at the air toxics facility from the last AERA report have not resulted in an increased risk from air emissions impacts. This is reasonable because the previous AERA report may have shown that the air toxics facility is at or below acceptable risk levels. However, after the AERA report was completed, the facility could have changed operations and increased emission rates from air toxics. The air toxics facility will not know what potential risks these additional air toxic emissions pose unless another AERA report is completed. Thus, if air toxics emission rates increase at a facility or there are other changes that increased risk, it is reasonable to require the facility to complete another AERA report and not use a previous AERA report.

The MPCA included in the rules that if the air toxics facility complies with items A to D and none of the emissions units at the facility have increased air toxics emissions, the facility may submit a previous AERA for consideration. However, changes in the facility's air toxics emissions or other AERA parameters can impact the AERA results. Therefore, the Commissioner reserves the right to evaluate the previous AERA for compliance with chapter 7012 and approve or deny the request. It is reasonable for the Commissioner to have the discretion to approve or deny a request to use a previous AERA because changes in emissions parameters or methodologies used may underestimate the risk at an air toxics facility and could falsely show that a facility is at or below acceptable risk levels.

Subpart 5. **Report approval**.

Subpart 5 is added to clarify that the commissioner must approve an AERA report that accurately reflects the conditions and emissions at the facility. This must include any actions, completed or pending, needed to achieve compliance with acceptable risk levels under part 7012.0560, subpart 3. It is reasonable to require that the commissioner must approve an AERA report that reflects the conditions and emissions at a facility. Once an AERA report is submitted to the MPCA, the MPCA reviews the contents of the submittal and determines if the report is approved or not approved. An approval of an AERA report finalizes the AERA process for an air toxics facility. If an air toxics facility submits an AERA report that contains the correct information and conditions that are occurring at the facility, including the facility being at or below acceptable risk levels, it is reasonable to approve the AERA report. It is reasonable to include requirements for AERA report approval to clarify expectations for the facility and MPCA, and help create consistency across all submittals.

Submittal of actions needed for compliance with acceptable risk levels is required in the AERA report and required for approval of the AERA report. The air toxics facility may complete an AERA but may be unable to refine modeling parameters nor complete actions at the facility to avoid exceeding acceptable risk levels prior to the AERA report submittal deadline. The facility will have to indicate whether it will be submitting an ATRP, CDP, and/or have taken actions to comply with acceptable risk levels. It is reasonable to allow the facility to indicate that it will develop an ATRP, CDP, and/or if it has taken actions to comply with acceptable risk levels because typically an AERA report is approved because the facility is at or below acceptable risk levels. There may be a case where the facility exceeds acceptable risk levels but plans to develop an ATRP or CDP outlining pending actions to comply with acceptable risk levels.

Subpart 6. **Report disapproval.**

Subpart 6 and items A to D are added to clarify that if the commissioner disapproves an AERA, the commissioner must notify the air toxics facility and include the information listed in items A to D. If an AERA report is not approved, the commissioner must notify the facility that an AERA report submitted to comply with parts 7012.0560 and 7012.0565 does not meet specified requirements. It is reasonable to not approve an AERA report if it does not comply with the requirements in rule, and with the disapproval of the AERA report, it is important to include information that is needed for resubmittal of the report. This information includes why the AERA report failed to meet the requirements listed in subparts 1 to 3 in this part, a contact at the MPCA to answer questions related to the disapproval, deadline for the report resubmittal, and a schedule for resubmitting necessary information. By including information as to why the AERA report was not approved, this will help expedite the process of a resubmittal and then the accepted AERA report. It is reasonable to include requirements for AERA report disapproval to clarify expectations for the facility and the MPCA, and help create consistency across all submittals.

Item A is added to clarify that the notification from the commissioner must identify the reasons the submitted AERA report fails to meet subparts 1 to 4. It is reasonable to specify the reason as to why the AERA report was not approved. Stating why the report was not approved will help the air toxics facility to focus on the aspects of the AERA report that need revision or additional information. This is reasonable to include as it will help to expedite the resubmittal process for an AERA report and officially document why the report was not approved.

Item B is added to clarify that the notification from the commissioner must list an agency contact to answer questions related to the disapproval. It is reasonable to provide the agency contact in the disapproval of the AERA report. This contact information is needed by the air toxics facility to know who reviewed the AERA report and who to contact with any questions. By clarifying who the contact person is, this helps limit confusion at the air toxics facility as to who the facility needs to contact about its AERA report. This information is reasonable to include as it will also help to expedite the resubmittal process, as the air toxics facility will have a contact for its AERA report to ask additional questions and obtain detailed explanations about the report disapproval.

Item C is added to clarify that the notification from the commissioner will include a schedule for resubmitting necessary information. Requiring a schedule for resubmitting necessary information helps the air toxics facility adhere to the deadlines specified in part 7012.0565. When an AERA report is submitted, some portions of the report could be approved, but other portions of the report may not be approved. In some cases, the MPCA may only need a small clarification on some aspects of the AERA report, but other parts may be complex and require extensive revisions. Therefore, it is reasonable to establish a schedule in the notification to properly align with the workload for resubmitting necessary information. It is reasonable to include a schedule to reduce confusion and help expedite the resubmittal process.

Item D is added to clarify that the notification from the commissioner must provide the deadline for the report resubmittal. It is reasonable to specify the deadline for the AERA report resubmittal. In the MPCA's experience, the AERA process can take months up to years to fully complete. To ensure that the air toxics facility continues to work towards an approvable AERA report, it is reasonable to specify the deadline for any AERA report resubmittal. In the past, many facilities have had to resubmit the AERA report multiple times, because the AERA report submittal had incorrect information or was missing information to deem the report complete. Therefore, it is reasonable to make sure the facility knows the deadline for resubmittal so that the facility adheres to the overall AERA report submittal deadline specified in part 7012.0565.

Subpart 7. **Report resubmittal.**

Subpart 7 is added to clarify that within 60 calendar days of disapproval, the owner or operator of an air toxics facility must resubmit a revised AERA report that addresses each factor identified under subpart 6, item A. It is reasonable to require the facility to resubmit a revised AERA report that addressed each factor identified under subpart 6, item A. This requirement is added to ensure that air toxics facilities do not resubmit the same disapproved AERA report and instead work to improve and revise their AERA report. It is reasonable to require the air toxics facility to update its AERA report, because this will hopefully move the facility closer to an approval, does not burden MPCA with reviewing a previously denied AERA report, and keeps the air toxics facility on track to complete the AERA process within the deadline specified in part 7012.0565.

It is also reasonable to clarify a timeline of 60 calendar days from the date of a disapproved report for a facility to resubmit an AERA report so that the process continues to progress in a timely manner. Currently, the MPCA air permitting policy typically allows 30 days for applicants to provide missing information to address an incomplete permit application. An AERA report generally contains more complex and detailed information about a facility compared to an air permit application. Therefore, it is reasonable to allow 60 days for the resubmittal of an AERA report due to the added complexity.

Subpart 8. **Permit amendment required.**

Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, sec. 5, subd. 5 requires the commissioner to amend air quality permits within three years of adopting the rules as necessary to conform with the rules. Subpart 8 is added to clarify that the owner or operator of an air toxics facility with an individual permit under parts 7007.0200 to 7007.0250 must submit a major permit amendment application to incorporate site-specific limits used in an AERA report within 180 calendar days of the MPCA approval of the AERA report. It is reasonable to require the air toxics facility with an individual permit to submit a permit amended to account for any limits assumed in an AERA report within 180 calendar days of the approval of the AERA report. To remain at or below acceptable risk levels, an air toxics facility may have assumed limits in its AERA report. In order to make limits assumed in an AERA enforceable, a permit amendment is necessary to ensure appropriate monitoring and recordkeeping requirements are added to the permit. If the air toxics facility does not operate at these limits, this could lead to an exceedance in acceptable risk levels.

It is reasonable to require a permit amendment application submittal within 180 calendar days of the AERA report, because a 180-calendar day timeline matches the timeline for other required application submittals in Minnesota rules. Examples include:

- Part 7007.1110, subpart 11, item (B), requirement for registration permits to submit an application for a Part 70, state, or general permit within 180 days of making a change that makes them ineligible for a registration permit;
- Part 7007.1142, subpart 3a, item (A), subitem (2), requirement for capped permits to submit an application for a Part 70, state, or general permit within 180 days of a regulatory change that makes them no longer eligible for a capped permit.

A 180-calendar day timeline allows the owner or operator time to determine adequate monitoring and recordkeeping and prepare an amendment application after submitting an AERA report with a proposed limit.

Note that it is not just individual permit holders who may choose to take site specific limits during an AERA. Existing registration, capped, and general permit holders who are above screening threshold values, and are unwilling or unable to submit a CDP, would proceed to an AERA. If, as part of the AERA, site-specific permit conditions are required to remain at or below acceptable risk levels, these permit holders would be required to apply for a new permit type. There are no timelines included in chapter 7012 for these scenarios because the timelines for applying for a new permit type when a facility becomes ineligible for its existing permit are already outlined in the existing applicable rule parts, listed below:

- For registration permit holders, part 7007.1110, subpart 16.
- For capped permit holders, part 7007.1142, subpart 6.
- For general permits, part 7007.1100, new subpart 11.

After an air toxics facility submits AERA results which include the effects of site-specific limits, if the facility does not notify the commissioner within 30 days of the change and type of permit application that will be submitted under part 7007.1110, subpart 11(A), the agency would send a written request that a new permit application is required, which would begin a timeline of 120 days before the new application must be submitted. It is reasonable to require a permit amendment application submittal to make limits assumed in an AERA are enforceable, by ensuring appropriate monitoring and recordkeeping requirements are added to the permit. It is also reasonable to set deadlines for permit amendment submittals so that the MPCA will meet the three-year requirement in Session Law.

Part 7012.0565 – AIR EMISSIONS RISK ANALYSIS REPORT; SUBMISSION DEADLINES.

Subpart 1. **Existing air toxics facilities**.

Subpart 1 is added to clarify that the owner or operator of an existing air toxics facility is required to submit an AERA report in accordance with the approved protocol required in part 7012.0550 and must submit within 180 calendar days of the submittal date of an approved AERA protocol. It is reasonable to clarify that a facility, that is not completing a CDP, must submit an AERA report within 180 days of an approved AERA protocol. It is standard practice of the MPCA air permitting program to require 180 days from an AERA protocol approval for the submittal of an AERA report. It is reasonable to maintain consistency in expectations for submissions of AERA reports.

Subpart 2. **New air toxics facilities**.

Subpart 2 and items A to C are added to clarify the deadlines for submitting a complete AERA for owners or operators applying for an individual or general permit, after the effective date of this chapter that are required to submit a complete an AERA under part 7012.0150, subpart 3. It is reasonable to provide clarity on deadlines that

apply for an owner or operator that submits an application for an individual or general permit after the effective date of this chapter.

Item A is added to clarify that the deadlines in this subpart apply to the owner or operator of an air toxics facility that is applying for an individual or general permit after the effective date of this chapter and is required to complete an AERA under part 7012.0150, subpart 3. It is reasonable to specify timelines to submit AERA results for individual or general permit applications received after the effective date of the rule to ensure that owners or operators applying for an individual or general permit after the effective date of the rule are aware of the timeline to comply with the rule.

Item B is added to clarify that owners or operators who submit a complete application for a new individual or general permit within three years after rule adoption must submit an AERA report in accordance with the approved protocol required in part 7012.0550 no later than 180 calendar days after the submittal date of an approved AERA protocol. It is reasonable to require the submittal of AERA results no later than 180 days after the submittal date of an approved protocol because the MPCA's ongoing permitting practice is to require modeling results 180 days after approval of the protocol. It is reasonable to maintain consistency in requirements for submittals of AERA reports.

Additionally, the three-year time period that allows for a submittal of a report after the application submittal is consistent with the three-year phased approach for existing facilities to submit their screening threshold analysis certification. It is reasonable to have consistent submittal deadlines in the three-year time period after rule adoption to reduce confusion during this transitional period.

Item C is added to clarify that owners or operators who submit a complete application for a new individual or general permit more than three years after the effective date of this chapter must include a complete AERA report according to part 7012.0560 with the permit application. The AERA report must show compliance with acceptable risk levels under part 7012.0560, subpart 3. It is reasonable to require that owners or operators who submit an application for a new individual permit later than three years after rule adoption include AERA results with the application because air permit applications are supposed to include a compliance demonstration for all applicable requirements. Chapter 7012 is an applicable requirement and AERA results are the compliance demonstration for those facilities that either choose to not complete the screening threshold analysis or are unable to remain at or below screening threshold values. The submission of AERA results with a permit application is consistent with MPCA permitting practice of requiring that criteria pollutant modeling results, when required, be submitted with an application in order for that application to be deemed complete. It is reasonable to require AERA results be included with the application only beginning three years after effective date of this chapter to accommodate those owners or operators that begin project planning for their projects requiring an individual permit at the time of rule adoption.

Part 7012.0568 – NOTIFICATION TO POTENTIALLY IMPACTED RESIDENTS.

Subparts 1 to 4 are added to clarify the notification to potentially impacted residents, the content of the notification, the notification deadlines, and notification records. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(b)(3) requires the MPCA to establish testing, monitoring, reporting, record keeping, and inspection requirements for air toxics emissions from facilities that reflects any exposure of residents of environmental justice areas to the facility's air toxics emissions. This notification is a form of reporting and contains required actions the facility must take to reduce risk, possibly including testing and monitoring that the facility must complete. It is reasonable to specify what content this notification must include and the deadlines and records that must be kept of this notification as this notification satisfies the language stated in the Session Law, but it is also important for residents to understand the potential risks that could be

present in their neighborhood. Other states, such as Oregon and South Coast of California, have notices to residence in these states' air toxics regulations rules.

While different, this is similar to right-to-know legislation or laws that help ensure the public is informed about toxic substances, including air toxics, that may pose risks to their health and safety. The Emergency Planning and Community Right-to-Know Act (EPCRA) is one example of this. EPCRA provides the infrastructure for many programs, including the Toxic Release Inventory (TRI) used for reporting air toxics emissions to the EPA that are available for public review to prepare and plan for exposures.[49] Similar to this type of right-to-know law, it is reasonable to require notifications to potentially impacted residents to provide information for communities to plan and prepare for possible risks. It is reasonable to provide further notification to potentially impacted residents on completed actions to inform communities that risks have been mitigated so community plans and preparations may be adjusted.

Subpart 1. **Notification to potentially impacted residents.**

Subpart 1 and items A and B are added to clarify that if an AERA results in risks above acceptable risk levels, a facility must notify potentially impacted residents located where risk estimates are equal to 90 percent of acceptable risk levels; or locations three miles or closer to the air toxics facility and are a school, daycare, senior living facility, hospital, or juvenile detention facility. This notification must include information on actions to be taken by the facility to reduce air toxics emissions to at or below acceptable risk levels. This notification must be made in writing and distributed, by depositing in the United States mail, with postage prepaid to every address. This subpart applies for both notifications required under part 7012.0568.

Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(b) requires the MPCA to establish testing, monitoring, reporting, record keeping, and inspection requirements for facilities that reflect different risks to human health and the environment posed by the specific air toxics and amounts emitted by a facility, such that facilities posing greater risks are required to provide more frequent evidence of permit compliance, including but not limited to performance tests, agency inspections, and reporting; reflect the facility's record of compliance with air toxics emission limits and other permit conditions; and reflect any exposure of residents of an environmental justice area to the facilities' air toxics emissions. It is reasonable to require a notification to potentially impacted residents to satisfy the language in the Session Law. The Session Law is met in the following ways. These notifications are a reporting requirement for facilities that pose greater risks. One notification is required when the air toxics reduction plan (ATRP) is finalized, and another is required once compliance with this enforceable document is complete. Who receives these notifications is based on both potential pollutant impacts exceeding acceptable risk levels and location type. These notifications require additional locations where people may congregate for a significant amount of time, ensuring that residents of environmental justice areas that commute to these locations and live in other census tracts are also made aware of their potential exposure. These additional locations are public gathering spaces and where people more sensitive to air toxics pollution, such as the young, elderly, or those with health conditions, likely spend time. Schools and hospitals are also locations where people experiencing housing insecurity or homelessness may potentially receive notification. It is reasonable to clarify which residents or sensitive receptors should be notified. This allows for less confusion from the air toxics facility on who should be notified and makes the process more streamlined.

Item A is added to clarify that the notification must be made in writing and distributed to every address located within a circle of the air toxics facility at the center and a radius determined by the farthest point identified

[49] *US EPA. What is EPCRA? Retrieved from https://www.epa.gov/epcra/what-epcra.*

where risk estimates are equal to 90 percent of acceptable risk levels and that is a residence or business. Requiring notification to potentially impacted residents is a reporting requirement and meets the directive of the Session Law. This notification is required when a facility completes an AERA and exceeds acceptable risk levels and is therefore an additional reporting requirement occurring when a facility is posing greater risks. Requiring the notification when the facility exceeds acceptable risk levels and taking action to reduce potential impacts reflects the facility's record of compliance with chapter 7012 requirements and permit conditions required as a result. Requiring that the notification is provided to any residential and business address, as well as schools, daycares, senior living facilities, hospitals and juvenile detention facilities, ensures due diligence in notifying residents of environmental justice areas while at home as well as when people are potentially at work, school, or other locations for extended periods of time. Because the Session Law specifies that the requirements must reflect any exposure of residents of environmental justice areas, as opposed to specifying application to facilities located only in environmental justice areas, this requirement applies to all facilities where chapter 7012 applies as residents of environmental justice areas may be exposed to air toxic emissions, regardless of whether people are located at their residence. Applying this requirement across all areas is reasonable because residents of environmental justice areas may be exposed to emissions from air toxics facilities as they work, attend school, observe their religion, or participate in activities regularly in census tracts outside of environmental justice areas. Applying this requirement across all areas is reasonable as it creates consistent application of regulatory requirements; it provides clarity and reduces confusion around applicability, as well as reduces uneven economic and regulatory burden.

Item A is based on modeling results that show where air toxics are likely to have impacts and includes a 10 percent buffer to help ensure the facility informs all potentially impacted residents around the facility. Basing item A on modeling results, rather than a set distance, also potentially limits the number of mailers needed when the modeling results fall under any chosen set distance. It is reasonable to limit the distance mailers are required to areas where there are potential impacts on residents. Additionally, it is reasonable to require notification to potentially impacted residents to provide early and transparent information to residents who may be exposed to a facility's air toxics emissions so they may make informed decisions to prepare for potential risks to their health.

Item B is added to clarify that the notification must be made in writing and distributed to every address three miles or closer to the air toxics facility and are a school, daycare, senior living facility, hospital, or juvenile detention facility via US mail. It is reasonable to require air toxics facilities to notify schools, daycares, senior living facilities, hospitals and juvenile detention facilities when AERA results show risk levels above acceptable risk levels and there may be potential unacceptable health risks as these are locations where residents who are sensitive receptors are likely to spend significant amounts of time. Even if the modeled results show acceptable risk levels are not exceeded at one of these listed locations, people who are more susceptible to air pollution could still experience health impacts from exposure to air toxics at lower risk levels. Modeling shows where possible concentrations are higher. However, air is not stagnant so there could be areas potentially near higher concentrations that could still impact human health. These locations may also not be included on typical mailing lists for residential and business addresses. The public has a right to know what pollutants they are exposed to and the steps the facility is taking to reduce the health impacts. Additionally, the Minn. Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(b)(3) requires the MPCA to ensure that the rule reflects exposure to residents in environmental justice areas. Requiring facilities to notify those who could be impacted by facility's emissions fulfills the Session Law requirement that this rule must reflect any exposure of residents of environmental justice areas. It is reasonable to apply this requirement to all facilities where chapter 7012 applies because it provides consistency and clarity and reduces confusion around applicability, if notification would only apply in environmental justice areas.

Item B is based on the type of location where people more susceptible to air pollutants, called "sensitive receptors," will likely spend more time. Some included locations may not typically be considered a business or a residence and require specifically naming in the rule to help ensure they are included in the notification process. Item B uses a set distance of three miles to simplify the process the facility uses to locate the additional listed locations. The distance of three miles is reasonable based on a US EPA proximity analysis using three miles to look at demographic data around power plants; which included several power plants that are air toxics facilities in Minnesota. This proximity analysis shows a higher percentage of Black, Indigenous, and communities of color, and low-income communities living near power plants than national and state averages in Minnesota.[50] The US EPA proximity analysis used three miles to remain consistent with other environmental justice literature and studies. The US EPA lists these studies in their analysis. It is reasonable to use three miles to remain consistent with both the US EPA proximity analysis and other environmental justice literature and studies.

It is reasonable to include specific locations where people with more sensitivity to air pollution congregate, and to help ensure that more susceptible people that may live elsewhere as well as people experiencing housing insecurity or homelessness are also informed. This is due diligence that also helps ensure residents of other environmental justice areas receive notifications when they may be exposed to a facility's air toxics. The MPCA expects fewer locations of these types within the set distance, making it easier for facilities to locate and provide notifications, without the same expense anticipated when providing notifications to all residential and business addresses within a static distance. Additionally, it is reasonable to require notifications to both people residing in areas likely to be impacted and locations where people more susceptible to air toxics, such as the young, elderly, or those with health conditions, likely spend time to help ensure residents are informed to plan and prepare for possible risks.

Subpart 2. **Content requirements..**

Subpart 2 and items A through E are added to clarify the content requirements for notifications that acceptable risk levels are exceeded. The owner or operator of an air toxics facility complying with subpart 1 must provide notifications that include information in items A to F, at a minimum. The commissioner must review the content of the notifications before they are sent. This subpart applies for both notifications required under part 7012.0568. It is reasonable to specify the content requirements of the notifications to ensure that the notifications contain all the information important for the public to know and helps provide consistency between notifications from different facilities.

Item A is added to clarify that an air toxics facility complying with subpart 1 must include in the notifications a statement that the facility is required to reduce their potential air toxics emissions' impacts and has an approved plan to reduce potential impacts to below levels required in part 7012.0560, subpart 3. This requires a transparent statement to communities to provide them with an opportunity to plan and prepare for possible risks. It is reasonable to provide a statement of why the public is receiving the notifications, for transparency and to provide an upfront statement for why the facility is taking additional action to reduce potential risk.

Item B is added to clarify that an air toxics facility complying with subpart 1 must include a list of air toxics targeted for reductions. Air toxics all have different risks associated with them and impact different health endpoints. It is reasonable to require the air toxics facility includes a list of which air toxics drive this exceedance. The public will better understand which air toxics are driving risks. Acceptable risk levels look at the cumulative risks at a facility so there may be more than one air toxics that is driving the risks. By listing the air toxics, the

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[50] *US EPA. EJ Screening Report for the Clean Power Plan. Retrieved from: https://19january2017snapshot.epa.gov/sites/production/files/2016-04/documents/ejscreencpp.pdf.*

public can understand if there is a specific air toxic that could impact them more based on prior health conditions. Furthermore, detailing which acceptable risk levels are exceeded informs the public on what time durations could potentially lead to an increased risk and the public can plan accordingly.

Item C is added to clarify that an air toxics facility complying with subpart 1 must include information as to where a copy of the AERA report can be obtained in the notification. The AERA report will include a summary of the risk levels and comparison of risk levels to acceptable risk levels, information provided by the facility, and any other documentation that led to the completion of an AERA report. It is reasonable to include where information from the AERA report can be found in the notification to allow the public the ability to review all the documentation that the facility has provided. While not everyone in the public may have the technical knowledge to understand everything in the AERA report, it provides transparency to the public to review the more technical aspects, verify the results where they are able, and ask more in-depth questions to facility and MPCA contacts.

Item D is added to clarify that an air toxics facility complying with subpart 1 must include a list of actions with associated timelines, completed or pending, to achieve compliance with acceptable risk levels under part 7012.0560, subpart 3 in the notification. If acceptable risk levels are exceeded, this means there is potential for increased risk due to air toxics emissions from an air toxics facility. It is reasonable to require the air toxics facility to provide what actions will be or have been taken and the associated timeline so the public may plan and prepare for potential risks. This is information the facility develops as part of the air toxics reduction plan under part 7012.0570. Drafts of these notifications are due with a draft of the air toxics reduction plan to help ensure the public receives accurate and sufficient information about what to expect. It is reasonable to inform the public on actions needed for compliance and when the air toxics facility expects compliance with the acceptable risk levels so the public may make informed decisions on potential health risks.

Item E is added to clarify that an air toxics facility complying with subpart 1 must include in the notification an air toxics facility contact name, title, mailing address, phone number, and an email address to which AERA questions can be directed. After receiving the notification, the public may have questions for the facility on the AERA it submitted, including actions the facility intends to take and the timeline to complete these actions. It is reasonable to provide the air toxics facility contact information for the public to direct their questions to someone at the facility that has knowledge of the AERA submittal.

Item F is added to clarify that an air toxics facility complying with subpart 1 must include in the notification agency contact information, mailing address, phone number, and email address to which questions on the AERA review can be directed. After receiving the notification, the public may have questions for the MPCA about the AERA report submittal. It is reasonable to provide contact information for the MPCA technical staff knowledgeable of the specific AERA report to help ensure questions are answered accurately and streamline the process for any questions the public may have on a specific AERA report. This is similar to the practice for public notices of air quality permits, that includes the contact information for the MPCA permit engineer who wrote the permit.

Subpart 3. **Notification deadlines.**

Subpart 3 and items A to C are added to clarify the resident notification deadlines that the owner or operator of an air toxics facility complying with subpart 1 must comply with the deadlines under this subpart. Deadlines are essential to make sure that all the information is provided to the MPCA and the public in a reasonable amount of time. It is reasonable to specify these deadlines in rule to ensure that the air toxics facility is complying with the rule and providing the notification to the public in a reasonable amount of time since some acceptable risk levels are assessing risk at a shorter duration. It is reasonable to specify deadlines in rule to maintain consistency for all air toxics facilities navigating this process and to clarify expectations for actions.

Item A is added to clarify that the commissioner must receive draft notifications complying with subpart 2 for review as part of the ATRP submittal under part 7012.0570, subpart 2. The commissioner must review each

notification before it is distributed to ensure all of the notifications' contents are accurate, and no information is missing from the notifications. It is reasonable to require the air toxics facility to submit a draft notification to the commissioner with the draft ATRP to ensure there is enough time for review and development of the notifications' content.

Item B is added to clarify that the owner or operator of an air toxics facility must issue a notification within 21 calendar days of an approved ATRP. An air toxics facility completes an ATRP because it is above acceptable risk levels. Some of these acceptable risk levels are assessed on a shorter time duration. It is imperative that the public is notified when acceptable risk levels are exceeded since it could potentially impact the public at a shorter duration, as short as one hour in some cases for acute risk. It is reasonable to set a deadline of 21 calendar days from the approval of an ATRP that the notification must be issued. Once the owner or operator receives approval of their ATRP and draft notification to potentially impacted residents, the owner or operator will need to prepare and deposit the notification for distribution. Twenty-one calendar days, or three weeks, allows time for the facility to print the notifications after approval of the ATRP and then provide the notifications to the United States mail for distribution. Twenty-one calendar days allows up to 15 business days and 18 days that United States Post Offices are typically open. This timeframe also considers that there may be up to two federal holidays within this span of time where a Post Office may be closed, and there are still 13 business days or up to 16 days that post offices are potentially open. This is a sufficient amount of time to complete this requirement and also ensures that residents are notified in a timely manner of potential air toxics emissions' impacts and the steps needed or taken by the facility to reduce those potential impacts. This timeframe is reasonable because it balances the need to notify residents with the time needed logistically to provide notifications. The facility will already have the MPCA-reviewed notification once the ATRP is finalized, so the timeline will start at the same time the content is ready.

Item C is added to clarify that the owner or operator of an air toxics facility must provide a notification within 21 calendar days of completing all actions required to achieve compliance with acceptable risk levels under part 7012.0560, subpart 3. Prior to this notification the facility would have to send a notification to the public stating it was required to reduce their potential air toxics emissions' impacts and had an approved plan to reduce potential impacts to below levels required in part 7012.0560, subpart 3, where the acceptable risk levels are listed. The content for this notification is also listed in part 7012.0568, subpart 2. This is the same as the first notification with updated information listing the actions completed to achieve compliance with acceptable risk levels. It is reasonable to set a deadline for another notification that must be sent to the public stating that the facility has completed all actions required to achieve compliance with acceptable risk levels to update the public that the facility addressed the potential risks. Twenty-one calendar days is reasonable because it balances the need to notify residents with the time needed logistically to provide notifications. Twenty-one calendar days is consistent with the timeline for the initial notification deadline. It is reasonable to maintain the same timeframe to reduce confusion around expectations for implementation. The facility will know when compliance will be achieved and therefore should have ample time to prepare for when they will need to send the notification.

Subpart 4. **Notification records.**

Subpart 4 and items A to C are added to clarify that an owner or operator of an air toxics facility with an approved ATRP must keep records of items A to C. These records include a copy of the notification issued, a copy of the invoice of postage paid and record of the date the notifications were issued, and a list of addresses where the notifications were distributed. This subpart applies for both notifications required under part 7012.0568. Maintaining records ensures that the facility complied with this part of the rule and helps to verify where the notifications were sent. It is reasonable to require the facility to keep records of the notifications issued to the public to show compliance with the subpart and it is needed to verify where the notifications were sent, helping identify any areas that were possibly missed.

Item A is added to clarify that the air toxics facility with an approved ATRP must maintain a copy of the notification issued pursuant to subpart 1 and 3. The issued notifications contain all the content in subpart 2 and detail the acceptable risk levels that are exceeded and how the facility plans to or has already complied with acceptable risk levels. It is reasonable to require a facility to maintain a copy of the notifications that were sent to the public. This ensures that the notifications sent were the notifications approved by the commissioner and holds the facility accountable to make the changes stated in the notifications, as approved in the ATRP.

Item B is added to clarify that the air toxics facility with an approved ATRP must maintain a copy of the invoice for postage paid to distribute the notifications, and record of the date the notifications were distributed. Maintaining documentation that the notifications were sent and paid for by the air toxics facility ensures that the notifications were sent. It is reasonable for the facility to maintain records of the postage paid and when the notifications were issued to ensure that the facility can prove the notifications were sent.

Item C is added to clarify that the air toxics facility with an approved ATRP must maintain a list of addresses or mail routes where the notifications were distributed. The list of addresses where the notifications were sent is essential for confirming that the facility sent the notification to all impacted residents, businesses, and locations where there are likely sensitive receptors. It is reasonable for the facility to maintain records of the addresses where the notification was sent to confirm that the notifications were sent to the correct areas. It is reasonable to require records that help ensure compliance with rule requirements. Additionally, if there is a question in the future as to whether a certain group was contacted, the facility has the list to confirm.

Part 7012.0570 – AIR TOXICS REDUCTION PLAN; REQUIREMENTS.

Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(3), (a)(4), (a)(5), and (a)(6) requires the MPCA to address, at a minimum, performance tests, monitoring, reporting, and recordkeeping for air toxics. Additionally, Minn. Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, sec. 5, subd. 4(b)(1) and 4(b)(2) require the MPCA to develop rules that must establish testing, monitoring, reporting, recordkeeping, and inspection requirements that reflect different risks to human health and the environment posed by specific air toxics, and the air toxics facility's record of compliance with air toxics limits and other permit conditions. To comply with the Session Law, the MPCA requires that if an air toxics facility's AERA demonstrates that any risk levels are above acceptable risk levels under part 7012.0560, subpart 3, that it either must submit a CDP to reduce actual emissions to be at or below screening threshold values or submit an Air Toxics Reduction Plan (ATRP) to reduce potential emissions to be at or below acceptable risk levels. An ATRP is a document establishing enforceable procedures to reduce air toxics emissions to at or below acceptable risk levels. This is a needed and reasonable step in the regulatory framework because facilities posing higher risks to human health and environment posed by air toxics are required to develop actionable steps to reduce air toxics. An ATRP outlines performance testing or monitoring, reporting, and recordkeeping the air toxics facility will do for all air toxic(s) that are contributing to exceedance(s) of acceptable risk levels. It is reasonable to require facilities to prepare an ATRP because the Session Law directs the MPCA to develop rules that address performance tests, monitoring, reporting, and recordkeeping for air toxics. Additionally, this is one option given to an air toxics facility to complete if it is above acceptable risk levels. Instead of forcing facilities into one option if they are above acceptable risk levels, the facility is given the option to either develop a CDP or complete an ATRP. The ATRP is used to ensure that the air toxics facility makes changes to reduce permitted allowable emissions, or PTE, so impacts remain at or below acceptable risk levels.

Subparts 1 to 8 are added to clarify the requirements, content, and reporting required for an ATRP. It is reasonable to clarify when an ATRP is required, the content, and reporting requirements of an ATRP because it avoids confusion for the facility and helps create consistency across all submittals. The ATRP is a new compliance plan for facilities, and it is important that the details of this plan are described. This helps air toxics facilities to understand what information it needs to provide for an ATRP and may help an air toxic facility determine if it

would prefer to complete an ATRP versus a CDP. Additionally, it is reasonable to specify when an ATRP is required, the content, and submittal parameters to expedite the process of submitting an ATRP.

Subpart 1. **Air toxics reduction plan required.**

Subpart 1 and items A and B are added to clarify when a facility must submit an ATRP under subpart 2. It is reasonable to clarify the criteria that a facility must use in determining whether it needs to submit an ATRP. By stating when an ATRP is required provides clarity to air toxics facilities under what conditions they would need to submit an ATRP. Also, stating the requirements may help air toxics facilities to decide whether to submit an ATRP to show risks based on PTE are at or below acceptable risk levels or develop a CDP to comply with screening threshold values.

Item A is added to clarify that a facility must submit an ATRP if a CDP will not be submitted under subpart 8 to reduce actual emissions to be at or below screening threshold values under part 7012.0300, subpart 1. It is reasonable to require a facility to submit an ATRP if the facility is not submitting a CDP because the facility must demonstrate how it will reduce PTE to meet acceptable risk levels under part 7012.0560, subpart 3. The MPCA is allowing facilities to choose whether to submit an ATRP or a CDP to provide flexibility in how to comply with the rule. A CDP is less comprehensive than an ATRP and does not require formal approval, but it requires possibly more conservative reductions of actual emissions to meet screening threshold values. An ATRP is more comprehensive than a CDP and requires a formal approval as well as incorporation of conditions of the plan into the facility air permit, but it allows for more refined, site-specific emission limits based on modeled risk levels. Due to the need for site-specific permit conditions, registration, capped, and general permit holders will no longer be able to retain these types of permits if the facility elects to submit an ATRP. This is reasonable because registration, capped, and general permits do not allow for the ability to incorporate site-specific requirements.

Item B is added to clarify that a facility must submit an ATRP if impacts from potential air toxics emission rates are above acceptable risk levels and potential air toxics emission rates cannot immediately be reduced to at or below acceptable risk levels under part 7012.0560, subpart 3. It is reasonable to require a facility to submit an ATRP if potential air toxics emissions' impacts are above acceptable risk levels under part 7012.0560, subpart 3 because the facility is posing a potential threat to human health and the environment and must demonstrate how it will meet acceptable risk levels to remove the potential threat. Acceptable risk levels are the levels at which there is no appreciable increased risk of adverse health effects to individuals who would be exposed to the facility's air toxics emissions. If an air toxics facility's potential emissions' impacts are above acceptable risk levels the likelihood of adverse health effects increases. To mitigate this risk, it is reasonable for the air toxics facility to submit an ATRP to document how it will get to and stay at or below acceptable risk levels using permitted potential emissions.

Subpart 2. **Submission timeline and content.**

Subpart 2 and items A to C are added to clarify the submission deadline and the content that must be included in an ATRP. It is reasonable to clarify the submission deadline and the content that must be included in the ATRP because it provides facilities direction in preparing an ATRP and complying with the rule. Listing the requirements helps the MPCA ensure the facility has included the required information and that the facility is following what it has detailed. This is reasonable because the MPCA will be receiving and reviewing the ATRPs, along with detailing required content, this ensures consistency in submittals. This is reasonable because it also helps reduce time for the MPCA to review and therefore efficiently uses agency resources.

Item A is added to clarify that the commissioner must receive a complete ATRP within one year after the owner or operator submits a complete AERA report that identifies the facility is above one or more acceptable risk levels. The commissioner must approve or disapprove an ATRP according to this part. It is reasonable to specify a timeframe for submitting an ATRP so that facilities are aware of how much time it has available to complete an ATRP. The one-year deadline gives facilities time to evaluate multiple options and determine their best option for

how to reduce air toxics emission's impacts that could pose a risk to human health and the environment, and to comply with acceptable risk levels under part 7012.0560, subpart 3. Additionally, the one-year timeframe is reasonable because it is the same timeframe for facilities submitting a CDP or an AERA protocol when actual air toxic emissions are above screening threshold values. Having the same timeframe for the CDP, AERA protocol, and ATRP provides consistency and easier tracking. Having a one-year timeframe also ensures that any impacted persons do not continue to be exposed for a long time. One year provides the air toxics facilities adequate time to comply without unduly exposing the community to air toxics.

Item B is added to clarify that if the commissioner determines that an air toxics reduction plan fails to provide information required under this subpart that is necessary to ensure protection of human health and the environment, the commissioner must request that an updated ATRP be submitted and must notify the owner or operator according to subpart 5. It is reasonable to specify that if the commissioner determines that an ATRP fails to provide the information required to ensure protection of human health and the environment, the commissioner must notify the owner or operator and request an updated ATRP because the intent of the ATRP is to ensure the facility will comply with acceptable risk levels under part 7012.0560, subpart 3. If the ATRP does not demonstrate this, it is reasonable for the commissioner to notify the owner or operator and request an updated ATRP to ensure that the ATRP is protective of human health and the environment.

Item C and subitems (1) to (9) are added to clarify the required content that the ATRP must include. The content that is required in an ATRP includes: identifying the acceptable risk levels exceeded and the air toxics targeted for reduction, the date that compliance will be achieved, limits or controls that will be taken at the facility, the steps to be taken and associated timelines for each action, a description of direct physical measurements and indirect measurements, justification for measurement methods selected, and a description of records kept onsite. It is reasonable to clarify what must be included in the ATRP because it provides facilities direction in preparing an ATRP. Detailing the content required in an ATRP also provides clarity to both air toxics facilities and the MPCA. It ensures consistency and provides a standard expectation of the ATRP and clarity of what is acceptable for all regulated parties submitting. The MPCA will be receiving the ATRPs and approving them, under subpart 3, so listing the requirements will help the MPCA ensure that a facility has included all the necessary information to determine the proposed actions are effective in reducing potential impacts to at or below acceptable risk levels and therefore protective of human health and the environment.

Subitem C(1) is added to clarify that the acceptable risk level(s) exceeded, name and CAS registry number, if applicable, of the air toxics to be targeted for reduction, and the associated process or equipment must be included in the ATRP. It is reasonable to require inclusion of the acceptable risk level(s) exceeded, air toxics to be targeted for reduction, and the associated process or equipment is identified in the ATRP so that it is clear to the MPCA and the facility what acceptable risk levels are exceeded and what air toxics and equipment the facility will focus on to reduce emissions' impacts to meet acceptable risk levels. The main purpose of the ATRP is to identify operations, processes, or materials to be adjusted so that air toxics emissions' impacts are brought to at or below acceptable risk levels. To accomplish this, air toxics to be targeted for reduction, and associated processes or equipment need to be listed in the ATRP. Clearly stating in the ATRP which acceptable risk levels are exceeded and what air toxics and processes or equipment the facility will target to achieve acceptable risk levels is necessary for the review and approval of the ATRP. It is reasonable to require inclusion of only the air toxic(s) targeted for reduction because multiple air toxics may be contributing to an exceedance of an acceptable risk level, but the facility may only have to target a specific air toxic to meet acceptable risk levels. Affected facilities will not be expected to reduce air toxics that do not contribute to exceedances of acceptable risk levels, but reducing emissions of one air toxic may inherently reduce other air toxics. Requiring this information will also help in MPCA's review of the ATRP and, later, to verify that the process or equipment and air toxic(s) identified in the ATRP are being reduced at the specific process or equipment.

Subitem C(2) and units (a) and (b) are added to clarify the date of compliance with acceptable risk levels under 7012.0560, subpart 3 must be included in the ATRP. Unit (a) is added to clarify the date of compliance must not be later than three years after the date of an AERA report approval if control equipment will be installed. Unit (b) is added to clarify that date of compliance must not be later than two years after the date of an AERA report approval if control equipment will not be installed. It is reasonable to require facilities to comply with acceptable risk levels within three years of receiving an AERA report approval because it is consistent with Federal rules for hazardous air pollutants (40 CFR 63), which require compliance within three years of rule promulgation. The MPCA is adopting this deadline to this rule, requiring compliance within three years of the date of an AERA report approval, when control equipment must be installed, because facilities will not formally have confirmation that they are above acceptable risk levels until they have completed an AERA. Since part 63 Federal standards are technology-based standards, compliance generally requires updating or modifying controls. In instances where a facility is not relying on updating or installing controls as part of its ATRP, it is reasonable to require a two-year compliance timeline because compliance measures not requiring controls are generally less capital and planning intensive. Examples of such measures might include altering process materials or production. A two-year compliance timeline over other timelines, such as one-year, was determined because some air toxics facilities will need time to complete research and development, sourcing, purchasing, and implementation. For air toxics facilities complying by taking less capital-intensive measures, it is reasonable to require a shorter compliance timeline to reduce the risk posed by air toxics because there is less to coordinate with outside parties to complete changes.

Subitem C(3) is added to clarify that the limits, restrictions, or controls taken to reduce air toxics emissions' impacts to acceptable risk levels must be included in the ATRP. Examples of actions a facility could take to be at or below acceptable risk levels could include changing materials used at the facility, installing control equipment, or eliminating a process. It is reasonable to require that any measures or activities taken to meet acceptable risk levels are identified in the ATRP so that it is clear to , the MPCA, the facility, and the general public, how the air toxics facility will comply with acceptable risk levels. The ATRP is an enforceable document that an air toxics facility will develop and follow to stay at or below acceptable risk levels. In item A, the MPCA requires that the air toxic facility identify the air toxics targeted for reduction and the associated process or equipment. Since the air toxics facility can identify the source contributing to exceeded risk levels, it is reasonable for the air toxics facility to detail what limits, restrictions, or controls it will take to reduce its air toxics emissions' impacts to be at or below acceptable risk levels. The air toxics facility will have to identify changes that must be made at the facility to no longer exceed acceptable risk levels. It is reasonable to ask the facility to detail its changes in the ATRP because this informs the MPCA of what the facility is proposing to change and keeps the air toxics facility accountable to those changes.

Subitem C(4) is added to clarify that the sequence of actions or operations, with timelines for each action, to implement subitem (3) be included in the ATRP. In item C (1), the MPCA requires the air toxic facility to identify the limits, restrictions, or controls to be taken to meet acceptable risk levels. It is reasonable to require that actions or operations, and associated timelines, for implementing actions listed in item C(1) to be included in the ATRP so it is clear to the MPCA and the facility what steps the facility must take, and when. This ensures the facility meets compliance deadlines identified in item B, to reduce its air toxics emissions' impacts to at or below acceptable risk levels. Additionally, by requiring actions or operations and timelines to be included in the ATRP, this allows the MPCA to verify that a facility is implementing its ATRP and working towards reducing its air toxics emissions to comply with acceptable risk levels by the deadlines of this part.

Subitem C(5) is added to clarify that a description of direct physical measurement of emission rates, including performance tests or Continuous Emissions Monitoring Systems (CEMS), if feasible, for all air toxics contributing to the exceedance of acceptable risk levels must be included in the ATRP. Performance tests must be conducted and approved by the commissioner under parts 7017.2001 to 7017.2060. CEMS must be operated and approved

by the commissioner under parts 7017.1002 to 7017.1180. Surrogate pollutants measured in place of any air toxics must be identified. It is reasonable to require direct physical measurements of emission rates, when available, so that emissions are verified to meet acceptable risk levels under part 7012.0560, subpart 3. It is also reasonable to require direct physical measurement, including performances tests or CEMS because EPA guidance identifies performance testing and CEMS are preferred and are the best method for estimating emissions.[51] It is reasonable to require that performance tests and CEMS are conducted in accordance with chapter 7017 because the requirements and processes for monitoring and testing are already described in this chapter, and most industries are familiar with the requirements in rule. It is reasonable to require consistency across rules to reduce confusion. Performance test methodology and feasibility is also complex, and what may work at one facility may not work at other facilities. Air pollutants can mask each other, which makes it difficult to determine what air toxics are present as well as known quantities of each air toxic. It is reasonable to require facilities to identify surrogate pollutants it would be measuring, so that it is clear to the MPCA and an air toxics facility what air toxics are being monitored and how the air toxics are being measured, even if a given pollutant cannot be directly measured. It is also reasonable to allow surrogate pollutants to be measured in place of air toxics because Federal rules for hazardous air pollutants (40 CFR 63) regulate some hazardous air pollutant emissions via surrogate pollutants and subsequently allow for monitoring and/or measuring of surrogate pollutants in place of specific HAPs. For example, carbon monoxide is used as a surrogate for formaldehyde in some Part 63 standards that regulate emissions from fossil fuel combustion. Test methods do not exist for all listed air toxics, and if these methods do exist, certain test methods may be cost prohibitive for some air toxics facilities. Testing a pollutant of similar nature can provide a reasonable, alternate form, of more direct measurement. It is reasonable to detail the direct physical measurements of actual emissions, because it allows the MPCA to see how these measurements are conducted and more clearly provides a metric for compliance with the ATRP.

Subitem C(6) is added to clarify that a description of indirect measurement methods to calculate actual emissions, in accordance with chapter 7019, when direct measurement is not feasible, must be included in the ATRP. It is reasonable to require indirect measurement of actual emissions if direct physical measurement methods are not available so that emission levels are verified to meet the acceptable risk levels outlined in part 7012.0560, subpart 3. It is also reasonable to allow indirect measurement of actual emissions because the technology is not available to use performance testing and CEMS methods for all air toxics. For example, EPA has developed two performance tests for PFAS: OTM-45 and OTM-50. These performance tests only include analytical methodologies to test for certain PFAS compounds. Performance test methods do not exist for all the air toxics subject to this rule, and the costs for certain performance test methods may be cost prohibitive for some facilities. Performance test methodology and feasibility is also complex, and what may work at one facility may not work at other facilities. For example, the stack configuration, such as horizontal stacks, at a facility may limit the feasibility to conduct the required methodology of a performance test. Pollutants can also mask each other in test results, which can make it difficult to determine what air toxics are present as well as the quantities of each air toxic. It is reasonable to allow facilities to use different approaches to calculate emissions because the indirect measurement methods of chapter 7019 are widely used and accepted for measuring emissions by the EPA and other states.

Subitem C(7) is added to clarify that an explanation of all measurement methods available and justification for method(s) selected, if applicable, including why direct measurement, if available, was not selected must be included in the ATRP. It is reasonable to require that the ATRP includes an explanation of all measurement

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[51] *AP-42, Volume I, Fifth Edition, U.S. EPA, January 1995. Retrieved from https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors.*

methods available, justification for the method(s) chosen, and why direct measurement, if available, was not selected so that a facility evaluates all options of measurement to determine if direct physical measurement methods exist for specific air toxics, and if not, the facility evaluates all indirect measurement methods available to determine the most accurate measurement of air toxics emissions. It is also reasonable to require the facility to provide this review and justification as the facility is the most knowledgeable about the operations and limitations at the facility. Part 7017.2020 describes the requirements for third-party performance testing companies. It is reasonable to expect the air toxics facility to work with these companies to understand the technical feasibility of direct measurement options and whether these options are the best method for air toxics emissions measurement. Furthermore, the air toxics facility will need to determine if economic feasibility is a factor due to direct measurement methods like CEMS or performance testing being available but potentially not economically viable due to the potential high cost of these methods. It is reasonable that the air toxics facility provides these justifications so that the MPCA is made aware of the facility's circumstances and can effectively evaluate the ATRP. Additionally, the air toxics facility should be able to justify what methods it is using for emissions measurement. If an air toxics facility is unable to justify how it is calculating its emissions, it brings into question the validity of the PTE calculations and therefore the effectiveness of the ATRP. It is reasonable to require information about measurement methods to verify the effectiveness of the ATRP to reduce the potential risk posed by the facility.

Subitem C(8) is added to clarify that a description of what records will be kept onsite to verify continuous compliance, once compliance with acceptable risk levels under part 7012.0560, subpart 3 is achieved, must be included in the ATRP. It is reasonable to require facilities to identify records to be kept onsite for verification of compliance so MPCA staff can verify that the facility's air toxics emissions are compliant with acceptable risk levels. By clarifying that an air toxics facility must keep records onsite to verify continuous compliance, it leaves less room for confusion for the facility and ensures the air toxics facility staff understand what records are needed to be kept to comply with its ATRP.

Subitem C(9) is added to clarify that any other information necessary to ensure compliance with acceptable risk levels under part 7012.0560, subpart 3 must be included in the ATRP. It is reasonable to require that any other information necessary to ensure compliance with acceptable risk levels must be included in the ATRP so that it is clear to the owner or operator that any information needed to demonstrate how the facility will comply with the acceptable risk levels under part 7012.0560, subpart 3, must be included in the ATRP. For some facilities, the requirements specified in subitems C(1) through (8) may not be exhaustive enough to demonstrate how the ATRP will bring the facility into compliance with the acceptable risk levels. Allowing other information to be included in the ATRP allows facilities flexibility in complying with the rule.

Subpart 3. **Approval of air toxics reduction plan.**

Subpart 3 is added to clarify that the commissioner must review the ATRP and notify the owner or operator of an air toxics facility upon approval. The commissioner must approve an ATRP where the owner or operator clearly demonstrates that the ATRP is complete and complies with all requirements in subpart 2. It is reasonable to clarify that the MPCA will review and approve the ATRP so that it is clear to the facility that the ATRP must be approved by the MPCA. It is also reasonable to require the MPCA to review and approve the ATRP to ensure it meets the requirements of subpart 2 and will help ensure compliance with acceptable risk levels and provide protection of human health and the environment.

Subpart 4. **Implementing air toxics reduction plan.**

Subpart 4 is added to clarify that the owner or operator of an air toxics facility must implement the ATRP as approved by the commissioner under subpart 3 of this part. It is reasonable to clarify that the owner or operator of an air toxics facility must implement the approved ATRP, so it is clear what the expectations are for the approved ATRP. The intent of the ATRP is to bring an air toxics facility into compliance with acceptable risk levels

under part 7012.0560, subpart 3, which cannot be achieved unless the owner or operator follows their approved ATRP.

Subpart 5. **Resubmittal required; notification.**

Subpart 5 and items A to C are added to clarify that the commissioner must notify a facility if an ATRP fails to provide the information necessary to ensure compliance with acceptable risk levels, and that resubmittal of an ATRP is required. Items A to C detail the requirements for the notification of ATRP resubmittal. It is reasonable to clarify that the commissioner will notify a facility if an ATRP is insufficient and needs to be resubmitted so that it is clear to the MPCA and a facility of why and when a facility would need to resubmit its ATRP. The MPCA will be reviewing and approving the ATRP under subpart 3 of this part, and if the MPCA determines an ATRP does not comply with subpart 2 above, rather than rejecting the ATRP, the facility will have an opportunity to revise and resubmit its ATRP.

Item A is added to clarify that the commissioner must notify the air toxics facility of the specific areas of the ATRP identified by the commissioner that must be updated with required information. It is reasonable to require the MPCA to notify a facility of the specific areas of an ATRP that require additional information because this is consistent with other chapters (parts 7001.0090; 7001.0650; 7007.0700; 7035.5600, 7037.1100; 7037.1300; and 9210.0160) that also require the MPCA to specify the portions of, or reason for, an application, or plan, being incomplete. By requiring the MPCA to provide this information, it reduces confusion for the facility because the facility is made aware of what sections of the ATRP need to be revised, and it potentially allows the facility to resubmit its ATRP prior to the 30-day deadline because the facility will be notified of what section(s) of the ATRP are deficient. It is reasonable to clarify deficiencies to reduce the workload of a facility by focusing on items that need addressing rather than the whole ATRP.

Item B is added to clarify that the commissioner must notify the air toxics facility that its ATRP must be resubmitted within 30 calendar days. It is reasonable to require the MPCA to notify a facility of a 30-day deadline for resubmitting its ATRP because it provides a clear timeline for a facility to revise its ATRP and it provides consistency for all resubmittals. It is also reasonable to require a facility to resubmit a revised ATRP within 30 calendar days of notification because it is consistent with other chapters (parts 7001.0150; 7001.0520; 7001.0650; 7001.3410; 7001.4390 and 7009.1040) that also allow 30 calendar days for a facility to respond or provide information.

Item C is added to clarify that the commissioner must notify the air toxics facility that any updated ATRP remains subject to commissioner approval. It is reasonable to clarify that the MPCA must notify a facility of whether a resubmitted ATRP is approved because it reduces confusion for the facility. Item A requires the MPCA to identify specific areas of the ATRP that must be updated, and just because a facility updates these specific areas does not inherently mean the ATRP is complete and sufficient for compliance with acceptable risk levels. Therefore, the MPCA will have to reassess the ATRP for completeness and adequacy. This requirement is reasonable to ensure the public is protected.

Subpart 6. **Permit amendment required.**

Subpart 6 is added to clarify that a facility with an individual permit under parts 7007.0200 to 7007.0250 must submit a major permit amendment application to incorporate an ATRP under part 7012.0570 within 180 calendar days of MPCA approval of an ATRP. It is reasonable to require a major permit amendment application with an approved ATRP to incorporate the ATRP into the permit. The ATRP may include emission limits, throughput or operating restrictions, added control equipment, performance testing or CEMS installation that would need to be incorporated into a permit.

It is reasonable to require an application for a permit amendment be submitted within 180 calendar days of the approval of an ATRP, because a 180-calendar day timeline is consistent with other required application submittals in Minnesota rules. Examples include:

- Part 7007.1110, subpart 11, item (B), requirement for registration permits to submit an application for a Part 70, state, or general permit within 180 days of making a change that makes them ineligible for a registration permit;
- Part 7007.1142, subpart 3a, item (A), subitem (2), requirement for capped permits to submit an application for a Part 70, state, or general permit within 180 days of a regulatory change that makes them no longer eligible for a capped permit.

A 180-calendar day timeline provides the owner or operator time to consider other applicable regulations related to the facility's ATRP and prepare an amendment application after approval of an ATRP.

Subpart 7. **Reporting.**

Subpart 7 and items A to C are added to clarify the reporting requirements for an ATRP. It is reasonable to clarify what the reporting requirements are for an ATRP because it provides clarity for the facility and the MPCA on when and what information needs to be submitted to the MPCA to provide a reasonable assurance of compliance with the ATRP. This reduces confusion and helps create consistency across all reports required.

Item A is added to clarify that the owner or operator of an air toxics facility required to have an ATRP under this part must submit progress reports and notifications to the commissioner according to items B and C. It is reasonable to specify that ATRP progress reports and notifications must be submitted because it provides clarity and prevents confusion by clearly identifying what an owner or operator must submit to comply with the rule.

Item B and subitem (1) to (3) are added to clarify that progress reports at least every six months must be submitted by July 30 and January 30, until the air toxics reduction plan has been incorporated into the facility's permit. The progress report must contain the deadlines for achieving the activities, milestones, or compliance required in the ATRP and dates when the activities, milestones, or compliance were achieved. The report must note whether any deadlines in the ATRP were not or will not be met (subitem B(1)), explain why any deadlines were not or will not be met (subitem B(2)), and include any preventative or corrective measures that have been or will be adopted as a result (subitem B(3)). It is reasonable to require a facility to submit progress reports on an ATRP at least every six months because part 7007.0800 requires progress reports at the same frequency, which provides consistency across rules. It is also reasonable to clarify what information must be included in the progress reports so a facility is aware of what information it must submit to the MPCA. Additionally, by requiring a facility to submit progress reports, the MPCA is informed on the facility's progress with complying with its ATRP, and it allows the MPCA to track the facility's compliance with the deadlines it has set in its ATRP.

Item C is added to clarify that a notification of compliance with acceptable risk levels must be submitted in a format specified by the commissioner. The notification must be submitted for each risk level identified in an AERA as above acceptable risk levels. The notification is due 15 calendar days after the date of compliance with an acceptable risk level. It is reasonable to require a facility to submit a notification of compliance with acceptable risk levels because it allows the MPCA to track the facility's compliance with acceptable risk levels under part 7012.0560, subpart 3. It is also reasonable to require that the notification be submitted within 15 calendar days of the date of compliance with acceptable risk levels because the MPCA requires regulated parties to provide other notifications, such as initial startup, within 15 calendar days, which provides consistency across agency processes.

The Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(a) states that the air toxics facility must report air toxics emissions and amounts, and record compliance with air toxics emission limits. The language under Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(b)(1) states that

the air toxics facility must provide evidence of permit compliance, including reporting. By having an air toxics facility that has completed an ATRP submit progress reports on how the facility is making progress to reduce risks to at or below acceptable risk levels and submit a notification to the MPCA once the facility is in compliance with acceptable risk levels, the MPCA is fulfilling the Session Law directive. Furthermore, under Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(b)(2), the facility must record compliance with air toxics emissions limits. Within the ATRP the air toxics facility will have to state how it will comply with the acceptable risk levels. The progress report will update the MPCA on what the facility is doing to comply with the acceptable risk levels and the notification that the facility does comply with acceptable risk levels fulfills this Session Law language.

Subpart 8. **Alternative to air toxics reduction plan.**

Subpart 8 is added to clarify that if a facility models air toxics emissions impacts above acceptable risk levels in part 7012.0560, subpart 3, but can achieve and remain at or below screening threshold values under part 7012.0300, subpart 1 through taking restrictions or making operational changes, the facility may submit a compliance determination protocol under part 7012.0450 as part of the completed AERA report and in place of an air toxics reduction plan in compliance under this part. It is reasonable to allow a facility to develop a CDP instead of an ATRP because it allows a facility flexibility in deciding how to comply with the rule while ensuring protection of human health and the environment. To comply with the rule, the air toxics facility can make changes to not exceed screening threshold values or to not exceed acceptable risk levels. Both options allow an air toxics facility to make changes at the facility, but the changes are either to actual emissions or PTE. It is also reasonable to require that a facility choosing to submit a CDP, after conducting at AERA, must submit the CDP within one year of the AERA report approval to avoid an unofficial submittal deadline extension to submitting a CDP, and therefore postponement of compliance. This is reasonable to reduce uneven economic and regulatory burden across all air toxics facilities.

Part 7012.0600 – RECORD KEEPING.

Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(6) requires the MPCA to address, at a minimum, recordkeeping related to air toxics. Additionally, Minn. Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, sec. 5, subd. 4(b)(1) and (b)(2) require the MPCA to develop rules that must establish testing, monitoring, reporting, recordkeeping, and inspection requirements that reflect different risks to human health and the environment posed by specific air toxics, and the air toxics facility's record of compliance with air toxics limits and other permit conditions. To comply with this, the MPCA requires that a facility keep records of conditionally insignificant activities (CIA), if applicable, environmental justice area status, inventory of emission points, and other records to demonstrate compliance with this rule.

Subpart 1 to 6 are added to clarify recordkeeping that is required with this chapter. It is reasonable to identify records that must be kept in accordance with this chapter because it provides a clear expectation of what information a facility must maintain and have available.

Subpart 1. **Requirement.**

Subpart 1 is added to clarify that a facility must keep all records used to determine compliance with this chapter onsite, for a period of five years, and provide records, upon request, to the commissioner. It is reasonable to require a facility to keep records relating to the rule on-site so that MPCA staff can verify that the facility is complying with this rule. Additionally, other parts of this rule identify records that must be kept to comply with those parts, and it is reasonable to specify that a facility must keep all records necessary to demonstrate compliance with all parts of the rule that apply to the facility. It is reasonable for facilities to maintain records for a period of five years because this is consistent with other chapters (7007, 7011, 7017, and 7019).

Subpart 2. **Additional records for conditionally insignificant activities.**

Subpart 2 and items A and B are added to clarify that a facility claiming material usage as a conditionally insignificant activity (CIA) under chapter 7008 must keep records and calculate emissions for air toxics that are not VOCs and that are not particulate matter, following the methods used to demonstrate compliance with the limits under chapter 7008. If requested by the commissioner, the owner or operator of an air toxics facility must submit items A and B for any of the previous five calendar years in a format specified by the commissioner. This is reasonable because the existing part 7008.4100 language related to conditionally insignificant material usage does not explicitly include emissions of air toxics that are not VOCs and are not particulate matter. Material usage can also result in emissions of air toxics that are not HAPs nor VOCs but will be regulated under chapter 7012 for air toxics facilities. Instead of including these additional requirements in part 7008.4100, where requirements apply to facilities statewide, these are included here because these requirements only apply to facilities in the seven metropolitan counties. The initial air toxics identified as not particulate matter and not VOCs include those in Table 7.

Table 7. Air toxics subject to 7012 CIA recordkeeping

CAS number	Air toxic
7664-41-7	Ammonia
10049-04-4	Chlorine Dioxide (CLO2)
540-88-5	Tert-Butyl Acetate
7664-93-9	Sulfuric acid (aerosol forms only)

Table 7 is not an exhaustive list of possible air toxics where this recordkeeping may be required for conditionally insignificant activities. The air toxics in Table 7 are pollutants included as part of the 2023 emissions inventory that are not particulate matter, VOCs, nor HAPs.

The emission of air toxics that are not VOCs nor particulate matter were not considered under chapter 7008 and as a result, were not explicitly included in recordkeeping requirements. For air toxics facilities to continue to treat emissions units as conditionally insignificant under part 7008.4100, and not have to include them in the screening threshold values analysis for chapter 7012, the owner or operator of an air toxics facility must also maintain records of any non-VOC and non-PM air toxics.

Completion of an AERA does require including all air toxics emissions, including non-particulate matter and non-VOC air toxics from conditionally insignificant activities, and these recordkeeping requirements ensure this information is maintained and available. These recordkeeping requirements are consistent with those in part 7008.4100 to minimize the additional records the owner or operator must maintain.

Item A and subitems (1) to (3) are added to clarify that the owner or operator of an air toxics facility claiming a conditionally insignificant activity under chapter 7008 must keep the following records listed in subitems (1) to (3) for air toxics that are not VOCs and that are not particulate matter. If requested by the commissioner, the owner or operator must provide the records for any of the previous five calendar years. This information is needed to complete calculations in subpart 3. These requirements are similar to the existing requirements under chapter 7008. It is reasonable to establish specific record keeping requirements so that it is clear what records are needed for owners and operators of air toxics facility in order to complete calculations. It is reasonable for facilities to maintain records for a period of five years because this is consistent with other rule chapters (7007, 7011, 7017, and 7019).

Subitem A(1) is added to clarify that the facility must maintain records for each calendar year of the number of gallons of air toxic-containing materials purchased or used. This information is needed to complete calculations in subpart 3 of this part. This requirement is consistent with those in part 7008.4100 to minimize the additional

records the owner or operator must maintain. It is reasonable to establish specific record keeping requirements so that it is clear what records are needed for owners and operators of air toxics facility in order to complete calculations for conditionally insignificant activities.

Subitem A(2) is added to clarify that a facility must maintain a record of the safety data sheet (SDS) or vendor certification of the maximum air toxics content for each air-toxics-containing material purchased or used. This information is needed to complete calculations in subpart 3 of this part. This requirement is consistent with those in part 7008.4100 to minimize the additional records the owner or operator must maintain. It is reasonable to establish specific record keeping requirements so that it is clear what records are needed for owners and operators of air toxics facility in order to complete calculations for conditionally insignificant activities. It is reasonable to require facilities to keep record of their SDS or a signed statement from the supplier for an air toxic-containing material purchased or used because the facility or MPCA may need these records to verify the accuracy of the air toxics emissions calculations.

Subitem A(3) is added to clarify that if a facility assumes a reduction of air toxics emissions due to recycling or disposing of materials off site, the facility must keep records of the amount of material shipped off-site for recycling, the air toxic content shipped off-site for recycling, and the calculations done to determine the amount of air toxics to subtract. Acceptable records include: the SDS, invoices, shipping papers, and/or hazardous waste manifests. It is reasonable to require that facilities keep records of the amount of material recycled or disposed of, and their calculations for what should be subtracted from the total material used so MPCA staff can verify that the calculations are representative of what should be subtracted from the total material used and also ensure that the material was properly recycled or disposed. This information is needed to complete calculations in subpart 3 of this part, if an owner or operator wishes to take credit for recycled materials. This requirement is consistent with those in part 7008.4100 to minimize the additional records the owner or operator must maintain. It is reasonable to establish specific record keeping requirements so that it is clear what records are needed for owners and operators of air toxics facility to complete calculations for conditionally insignificant activities, and the commissioner can verify the calculations are correct when included in air emissions risk analyses.

Item B and subitems (1) to (3) are added to clarify that if requested by the commissioner the air toxics facility claiming a conditionally insignificant activity under chapter 7008 must calculate and record any of the items listed in subitems (1) to (3) for the previous five calendar years, in a format specified by the commissioner. It is reasonable to establish requirements that clarify what information may be needed for the direct inspection by the commissioner to verify emission calculations are correct and current when these emissions are included in air emissions risk analyses.

Subitem B(1) is added to clarify that if requested by the commissioner the air toxics facility must calculate and record the air toxic emissions using the method in subpart 3 of this part for the previous five calendar years. These air toxic emissions will be included in AERAs, if an AERA is required under part 7012.0550 or if an owner or operator chooses to complete an AERA for other reasons. It is reasonable to include requirements consistent with existing requirements in part 7008.4100 to minimize the additional records the owner or operator must provide. It is reasonable to establish requirements that clarify what information may be needed for the direct inspection by the commissioner to verify emission calculations are correct and current when included in AERAs.

Subitem B(2) is added to clarify that if requested by the commissioner the air toxics facility must calculate and record the calculation used to arrive at the total for each of subitem (1) for the previous five calendar years. The commissioner must verify that emissions calculations are completed in a verifiable manner and using acceptable and correct methods. It is reasonable to include requirements consistent with existing requirements in part 7008.4100 to minimize the additional records the owner or operator must provide. It is reasonable to establish requirements that clarify what information may be needed for the direct inspection by the commissioner to verify emission calculations are correct and current when included in air emissions risk analyses.

Subitem B(3) is added to clarify that if requested by the commissioner the air toxics facility must list the associated emissions units in which the material was used for the previous five calendar years. The commissioner must verify that emissions calculations are completed in a verifiable manner and applied accurately to emissions units. It is reasonable to include requirements consistent with existing requirements in part 7008.4100 to minimize the additional records the owner or operator must maintain. It is reasonable to establish requirements that clarify what information may be needed for the direct inspection by the commissioner to verify emission calculations are correct, current, and applied accurately when included in AERAs.

Subpart 3. **Calculating CIA air toxics emissions.**

Subpart 3 and items A and B are added to clarify that in addition to calculations required under chapter 7008, a facility claiming material usage as a conditionally insignificant activity under that chapter must calculate air toxic emissions using one of the methods listed in item A or B when required under subpart 2. If the facility ships waste material from material usage activities off-site for recycling, the amount of air toxics recycled may be subtracted from the amount of air toxics calculated in item A or B. This is reasonable because the existing part 7008.4100 language related to conditionally insignificant material usage does not explicitly include emissions of air toxics that are not VOCs and are not particulate matter. Material usage can also result in emissions of air toxics that are not also VOCs nor particulate matter.

Completion of an AERA requires including all air toxics emissions, including from conditionally insignificant activities, and these emissions calculation requirements ensure this information is completed in a consistent and verifiable manner. These calculation requirements are consistent with those in part 7008.4100 to minimize the additional calculation methods the owner or operator must use, and thus minimize the work needed for completing and reviewing the calculations. It is reasonable to clarify the calculation method used to reduce confusion for facilities choosing to qualify for this conditionally insignificant activity. The owner or operator may use either item A or item B in this subpart to calculate the air toxic emissions.

Item A is added to clarify that the pounds of air toxic emissions per calendar year equal gallons of air toxic-containing material purchased or used in a calendar year multiplied by the pounds of air toxic per gallon for calculating emissions for CIA. This method may be used when material usage records are in gallons, and the air toxics content is in pounds per gallon. It is reasonable to provide the calculation methodology as it is consistent with those in part 7008.4100 to minimize the additional calculation methods the owner or operator must use, and thus minimize the work needed for completing and reviewing the calculations. It is reasonable to provide an option for a method of calculation in rule to reduce confusion.

Item B is added to clarify that the pounds of air toxic emissions per calendar year equal pounds of air toxic-containing material purchased or used in a calendar year multiplied by weight percent of air toxics for calculating emissions for CIA. This method may be used when the material usage records are in pounds per year and the air toxic content is in units of weight percent. It is reasonable to provide the calculation methodology as it is consistent with those in part 7008.4100 to minimize the additional calculation methods the owner or operator must use, and thus minimize the work needed for completing and reviewing the calculations. It is reasonable to provide an option for a method of calculation in rule to reduce confusion.

Subpart 4. **Environmental justice area status.**

Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(b)(3) requires the MPCA to establish requirements, including record keeping and inspection requirements, for facilities that reflect any exposure of residents of an environmental justice area to the facilities air toxics emissions. Subpart 4 is added to clarify that the owner or operator of an air toxics facility must keep records of the census block status for its location, as defined in Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 1(5). Census block status must be checked every two years at a minimum and records updated if the status changes. It

is reasonable to require air toxics facilities to keep records as to whether their facility is in an environmental justice area or not. Environmental justice areas are determined based on census tract data. More than likely, if the definition of an environmental justice area does not change, the environmental justice areas will not change until census tracts are updated. Keeping records of a facility's census block status for its location helps a facility understand if it is located in an environmental justice area and what that means; the demographics of the residents near a facility; and at the very least, regulated parties will understand why they may be prioritized in agency actions or why additional conversations with the MPCA may be necessary. This recordkeeping requirement helps ensure facilities are aware when there are changes to census data; this will help prevent any surprises around any actions that may be taken because of changes to surrounding demographics (testing, monitoring, reporting, record-keeping, and inspection requirements; conversations, prioritization, future rules, etc.). In many situations, MPCA prioritizes work with facilities in environmental justice areas.

Additionally, the owner or operator of an air toxics facility understanding the demographics of what makes their location an area of environmental justice concern or not, provides them insight into what types of communication methods they could and should use, as well as who they will hopefully hear from when concerns arise. Requiring that the census block status is checked every two years is reasonable because the census map data is expected to be updated every two years using the American Community Survey demographic information.

Subpart 5. **Inventory of emission points.**

Subpart 5 and items A to C are added to clarify that the air toxics facility must maintain information under items A to C at the air toxics facility for all emission units. If the commissioner requests any of the information, the air toxics facility must provide the information within 45 calendar days of the request in a format specified by the commissioner. The emission points inventory data in items A to C is required for an owner or operator to complete the screening threshold analysis and air emissions risk analysis for an air toxics facility. In order to determine that these parameters are up to date and correct during review of a screening threshold analysis or air emissions risk analysis, it is reasonable for MPCA to request this information from an owner or operator of an air toxics facility for verification of completeness and to check for any changes since the screening threshold analysis or air emissions risk analysis was completed.

Establishing a limit on the response period will assist in ensuring timely responses. Requiring the data be submitted in a format specified by the commissioner will aid in collecting the correct information on a form usable by the MPCA and may limit the effort of the air toxics facility needed to respond to the request by providing the correct information. Allowing 45 calendar days to submit information is reasonable because it is consistent with part 7007.1130, subpart 8, which relates to inventory of emission points for registration option D permit holders, maintaining similar information, and submitting it when requested.

Items A to C are added to clarify the information that must be maintained by the air toxics facility and the information that the commissioner can request from the facility.

Item A is added to clarify that the air toxics facility must provide the location of the emissions units. It is reasonable to require an owner or operator to provide information on the location of emissions units used in the screening threshold analysis and air emissions risk analysis to verify the completeness and accuracy of the screening threshold analysis or air emissions risk analysis, and any changes since the analysis was completed. It is reasonable to provide clarity for facilities as to the specific information that may be requested.

Item B is added to clarify that the air toxics facility must provide the annual operating hours as defined in part 7012.0400, subpart 3, or potential emissions, as defined in part 7007.0150, subpart 4, in pounds per hour,. It is reasonable to require an owner or operator to provide information on hourly emissions or annual operating hours to verify completeness of the screening threshold analysis or air emissions risk analysis, and any changes

since the analysis was completed. It is reasonable to provide clarity for facilities as to the specific information that may be requested.

Item C is added to clarify that the air toxics facility must provide the stack height and shortest horizontal distance to property line. It is reasonable to require an owner or operator to provide stack information used in the screening threshold analysis or air emissions risk analysis to verify completeness of the submittal and any changes since the analysis was completed. It is also reasonable to provide clarity for facilities on the specific information that may be requested.

Subpart 6. **Facility inspections.**

Subpart 6 is added to clarify that the commissioner or commissioner's authorized representative will conduct an inspection at least once for each facility with one or more air toxic(s) above the screening threshold value(s), to review the facility's most current screening threshold analysis and supporting documentation, records, equipment, practices, or operations. This subpart is also added to clarify that any air toxics reporting facility must submit screening threshold analysis records, including actual emission calculations, upon request by the commissioner. It is reasonable to specify that the MPCA will inspect facilities, at least once, that have one or more air toxic(s) above the screening threshold value(s) because the MPCA was directed under Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(a)(7) to address frequency of facility inspections and inspection activities that provide information about air toxics emissions. It is also reasonable to target facilities above screening threshold values because these facilities have the potential to pose greater risk to human health and the environment. Additionally, by reviewing a facility's most recent screening threshold analysis, documentation, records, equipment, practices, or operations, the MPCA can ensure that the facility's calculations are correct and that its air toxics emissions are adequately accounted for in the screening threshold analysis. It is reasonable to require an air toxics facility to submit screening threshold analysis records, including actual emission calculations, upon request by the commissioner because the environmental protection statute (section 116.07) and other parts of the rule (parts 7001.0150; 7001.4230; 7001.4350; 7007.0502; 7007.0800; 7007.1110; 7007.1143; 7008.0200; 7008.2600; 7009.1040; 7011.1275; 7011.1284; 7020.0250; 7020.2120; 7020.2125; 7035.3500; 7035.3600; 7045.0294; 7049.0163; 7090.1040; 7090.2040; 7090.3040; 7150.0450; and 9220.0520) also require that records relevant to compliance with the rules be provided upon request. By including emissions calculations in the submittal, the MPCA can review the calculations to verify that emissions were calculated correctly. By requiring any air toxics facility to submit screening threshold analysis records to the MPCA upon request, the MPCA is able to ensure compliance with the rule and better track potential exposure of residents to an air toxics facility's air toxics emissions.

Part 7012.0650 – AMBIENT AIR MONITORING REQUIREMENTS.

Subpart 1 to 4 are added to clarify the requirements for ambient air monitoring. Ambient air monitoring is a way to confirm whether air pollution around a facility is below a certain value. Minnesota Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, section 5, subd. 4(a)(4) requires the MPCA to address, at a minimum, required monitoring of air emissions. Additionally, Minn. Session Law – 2023, H.F. No. 2310, Chapter 60 article 8, sec. 5, subd. 4(b)(1) and (b)(2) requires the MPCA to develop rules that must establish testing, monitoring, reporting, recordkeeping, and inspection requirements that reflect different risks to human health and the environment posed by specific air toxics, and the air toxics facility's record of compliance with air toxics limits and other permit conditions. To comply with the Session Law, this rule part addresses ambient air monitoring requirements for facilities that are continuing to pose a greater risk over a longer period of time and that cannot comply with applicable requirements. To show compliance with the rule, most of the rule parts use air dispersion modeling. Modeling usually errs on the side of being more protective or conservative. Therefore, it is possible that a facility cannot demonstrate compliance through modeling but is able to show compliance in other ways. Where feasible, monitoring is a tool that can help confirm whether the air around a facility is below an inhalation health

benchmark (IHB). IHBs are concentrations in ambient air at or below which an air toxic is unlikely to cause an adverse health effect in a population over a prescribed duration. IHBs are also one component to determining compliance with the acceptable risk levels. While AERAs use acceptable risk levels to determine if a facility is in compliance, the same levels cannot be used for monitoring. However, the results from monitoring are compared to IHBs to determine if the facility is in compliance.

It is not reasonable to base the whole rule on monitoring because it is resource intensive for the agency and the facilities. Also, methods do not exist to monitor all air toxics subject to this proposed rule. Modeling provides a consistent and protective way of determining risks to human health and the environment, while monitoring can be used as a limited backstop. Monitoring shows the impacts of actual facility operations at the location of ambient air monitors. It is reasonable to provide an air toxics facility the option to conduct ambient air monitoring if it meets all the requirements in subpart 1. This option allows the air toxics facility to prove that actual operations do not exceed levels that could cause potential adverse effects to human health and the environment.

Air monitoring is one alternative to other enforceable actions, up to and including ceasing operations, if a facility cannot demonstrate the limits, restrictions, or controls required by the ATRP once implemented will lower emissions to or below acceptable risk levels, or if the facility cannot meet timelines set in the ATRP.

It is reasonable to limit the circumstances under which a facility can monitor because it is not feasible to monitor unless certain conditions are met, and MPCA resources needed to support industrial monitoring are limited. It is reasonable to limit the circumstances when industrial air monitoring is an option under chapter 7012 to ensure that facilities exhaust other compliance options first and efficiently use agency resources to enforce compliance.

Subpart 1. **Ambient air monitoring eligibility criteria**.

Subpart 1 and items A to E are added to clarify the applicability of an air toxics facility to this part. The air toxics facility may conduct ambient air monitoring to show compliance with chapter 7012 only when items A to E are applicable to the air toxics facility. It is reasonable to define the circumstances when a facility may monitor for air toxics so there is no confusion and there is consistent application of requirements across all facilities.

Item A and subitems (1) through (3) are added to clarify that the owner or operator of an air toxics facility may conduct air monitoring only when the facility can show that under subpart 4 that the ATRP required under part 7012.0570, subpart 2, item C can no longer be implemented (subitem(1)), or the implemented ATRP did not lower emissions to be at or below acceptable risk levels (subitem (2)), or the owner or operator cannot comply with the deadlines of the ATRP in part 7012.0570, subpart 2, item C; and the timelines set in part 7012.0570, subpart 2, item C, subitem (4) (subitem (3)). It is reasonable to limit when the facility can monitor for air toxics to when the facility cannot lower emission rates to be at or below acceptable risk levels or meet established timelines, because the facility has exhausted all other options. This is reasonable because monitoring is not feasible for all air toxics, is compared to IHBs rather than acceptable risk levels, can be resource intensive, and only shows results for the location of the monitor, as opposed to a broad area around the facility. In order to protect human health and the environment, the best option is for the facility to continue to take action to reduce risk in as timely a manner as possible. But if feasible, monitoring is a reasonable option while the facility continues to operate while working towards reducing risk.

Additionally, industrial air monitoring involves MPCA resources to approve monitoring plans, regularly audit equipment, and review monitoring data. The MPCA is receiving a limited number of staff for the rulemaking efforts and there are currently limited MPCA monitoring staff that would not be able to oversee monitoring for all the facilities in the seven metropolitan counties. Even with the increase in funding for this rulemaking the availability to approve these monitoring plans would be limited. It is reasonable to limit the circumstances when industrial air monitoring is an option under chapter 7012 to ensure that facilities exhaust other compliance options first and efficiently use agency resources to enforce compliance.

Item B is added to clarify that the air toxics facility may conduct air monitoring only when the facility's AERA report demonstrates that the predicted maximum ambient impact exceeds acceptable risk levels under part 7012.0560, subpart 3. It is reasonable to limit when the facility can monitor for air toxics to when it exceeds acceptable risk levels because it offers an alternative to requiring reductions in operations or revoking a facility's permit and ensures that facilities exhaust other compliance options first, to efficiently use agency resources to enforce compliance. Instead of requiring reductions in operations or revoking a facility's permit because it cannot show compliance, air monitoring, if feasible, is a reasonable option to allow a facility to prove its emissions are at or below inhalation health benchmarks and therefore unlikely to cause an adverse health effect. Industrial air monitoring involves MPCA resources to approve monitoring plans, regularly audit equipment, and review monitoring data. It is reasonable to limit the circumstances when industrial air monitoring is an option to show compliance with chapter 7012 to efficiently use MPCA resources. Monitoring does not have the ability to show direct compliance with the acceptable risk levels at all locations around the facility. While modeling and the AERA process offer a higher level of assurance of the expected impacts over a broad geographic area for all air toxics, monitoring is limited to assuring results only at the monitor's location and only for the air toxics monitored for. Therefore, it is reasonable to limit monitoring to the last option available.

Item C is added to clarify that the air toxics facility may conduct air monitoring only when there are ambient air monitoring methods developed by the USEPA or other entity for the air toxics that contribute to the exceedance of acceptable risk levels. It is reasonable to allow air toxic monitoring only when there are approved air monitoring methods available for the air toxics that contribute to the exceedance of acceptable risk levels because if there are no approved methods available, monitoring cannot be completed. EPA has approved monitoring methods for some, but not all air toxics. Other alternative approved methods could possibly include National Institute for Occupational Safety and Health (NIOSH) or Department of Defense (DOD) methods. Not all air toxics that contribute to the exceedance of acceptable risk levels need to have approved methods if these air toxics are not targeted for reduction. Only air toxics that are monitored for and targeted for reduction need to have approved air monitoring methods in order for monitoring to be practicable.

Currently MPCA ambient air monitors can only monitor approximately 74 air toxics out of approximately 338 air toxics that have inhalation health benchmarks or are part of a compound that has an inhalation health benchmark, and is included as part of the proposed rules' screening threshold analysis. This leaves a gap of approximately 268 air toxics (78%). Private laboratories are able to process samples from monitors for more than 190 air toxics, but this still leaves a sizeable gap. It is therefore not possible to use monitoring to characterize the amount of all air toxics in the ambient air.

Item D is added to clarify that the air toxics facility may conduct air monitoring only when the proposed monitored air toxic(s) have a reporting limit at or below all applicable IHBs. The reporting limit is the smallest concentration of an analyte (in this case, an air toxic of interest) that a lab can reliably report. It is reasonable to require the air toxics reporting limit be at or below all applicable IHBs. If the reporting limit is above the applicable IHB then monitoring data will not be able to show compliance with the IHB because a lab will not be able to reliably report the concentration of the air toxic. To ensure that the data collected is usable it is reasonable to require the reporting limit to be at or below all applicable IHBs.

Item E is added to clarify that the air toxics facility may conduct air monitoring only when the owner or operator has an approved ambient air monitoring plan under subpart 2. It is reasonable to require monitoring only when there is an approved air monitoring plan to ensure that the MPCA and the facility owner or operator agree to the scope of work conducted through air monitoring. It is reasonable to require that an air monitoring plan must be approved by the MPCA so that the agency can ensure that the plan meets all requirements for monitoring before monitoring begins. This helps create consistency in requirements for all air monitoring plans, as well as sets expectations for required workload and costs for all parties involved.

Subpart 2. **Ambient air monitoring plan**.

Subpart 2 and items A and B are added to clarify the submittal timeline and content required for an ambient air monitoring plan. It is reasonable to establish requirements for submittal timelines and content because it creates consistent regulation across all submittals and helps reduce uneven economic and regulatory burden. Consistency for submittals helps minimize the work needed for reviewing submittals and thus expedites MPCA review time.

Item A is added to clarify that the owner or operator complying with subpart 1 of this part must submit to the commissioner an air monitoring plan 180 calendar days prior to the ATRP compliance date specified in part 7012.0570, subpart 2, item C, subitem (2). It is reasonable to require an air monitoring plan submittal 180 calendar days prior as this is consistent with typical permitting timelines for submittals. Enforcement actions have required 15 days to three months to provide a monitoring plan. Air toxics are likely to be more complex to determine the specifics of the monitoring methods. Due to the potential complexity in data, providing more than three months is reasonable to allow for determining the content of the monitoring plan.

Item B and subitems (1) to (10) are added to clarify that the ambient air monitoring plan must be in a format specified by the commissioner and must include, at a minimum, the content in subitems (1) to (10). It is reasonable to require the monitoring plan to be in a format specified by the commissioner because it helps ensure accurate and consistent review of the submittal. This creates consistency and helps expedite MPCA's review of air monitoring report submittals.

Subitem B(1) is added to clarify that the air monitoring plan must include air toxics that contribute to the exceedance of acceptable risk levels. It is reasonable to require that the monitoring plan includes air toxics that contribute to the exceedance of acceptable risk levels to ensure that the monitoring data is relevant to chapter 7012 and will help determine if monitoring data will evaluate compliance with acceptable risk levels. Monitoring does not have to include all air toxics that contribute to the exceedance of acceptable risk levels. It is possible that facilities could show emission rates are at or below acceptable risk levels with monitoring data of one pollutant. Even if there are several air toxics that contribute to exceeding the acceptable risk levels, there are air toxics that may be identified as risk drivers. This is typically because these air toxics have a higher impact either due to amount emitted or the toxicity of the pollutant. If these risk-driver pollutants are monitored, other pollutants contributing to the increased risk at lower amounts may not need to be monitored.

Showing that a more toxic pollutant is not as high of a concentration as assumed in the model or showing that the actual emissions of a less toxic pollutant assumed as large quantities are not as high as in the model, could possibly show that the facility is below acceptable risk levels without having to check all pollutants contributing to an exceedance of risk levels. It is also possible that more than one pollutant will need to be monitored for to have confidence in the results, but any pollutant monitored for must contribute to the exceedance of acceptable risk levels to ensure that the monitoring data will help determine compliance with chapter 7012.

Subitem B(2) is added to clarify that the ambient air monitoring plan must include operational procedures for activities that best meet requirements described in 40 CFR Appendix A, section 2 to Part 58, unless other operational procedures are approved as equivalent by the commissioner under subpart 3. It is reasonable to require that the ambient air monitoring plan includes operation procedures because this is consistent with quality assurance requirements required for ambient air quality standards comparison of criteria pollutants. There will not be perfect overlap of monitoring activities, but aligning with these requirements as much as possible provides a robust data quality structure. This is also consistent with the requirements in part 7009.0060, which relates to monitoring measurement methodology for hydrogen sulfide (H2S), and requires a quality assurance plan that provides operational procedures for each of the activities described in Code of Federal Regulations, as amended, title 40, part 58, appendix A.2.2, Quality Assurance Requirements for State and Local Air Monitoring Stations. It is reasonable to provide consistency across rules and regulations to help maintain

consistent application of regulatory requirements and help maintain a standard level of quality for the monitoring results.

Subitem B(3) is added to clarify that the ambient air monitoring plan must include the quantity of monitors, with a minimum of two monitors, with at least one monitor upwind of the air toxics facility and at least one monitor downwind of the air toxics facility. It is reasonable to require multiple monitors to help account for potential background concentrations of the pollutant(s) monitored. Two monitors are needed at a minimum to differentiate between emissions from the facility, which are measured downwind, and pollutants that are in the ambient air from other sources, which are measured upwind. Depending on wind direction and other parameters such as facility location and terrain, more than two monitors may be required to accurately monitor the air toxics from the facility.

Subitem B(4) is added to clarify that the air monitoring plan must include monitor locations based on dispersion modeling results in areas of greatest potential air toxic concentration and that best meet siting criteria listed in Code of Federal Regulations, title 40, part 58, Appendix E. It is reasonable to require locations based on dispersion modeling results as air quality dispersion modeling is required to determine locations of expected highest concentrations, following the MPCA air dispersion modeling practices manual.[52] It is also reasonable to require the results based on air dispersion modeling as that is a component of the AERA, which the facility will have completed prior to completing an air monitoring plan. It is reasonable to require monitor siting be approved by the commissioner to confirm that the locations meet the criteria needed to ensure accurate results.

Subitem B(5) is added to clarify that the air monitoring plan must include sampling durations that correspond with exposure durations of the IHBs for monitored air toxics. It is reasonable to require sampling durations that correspond with exposure durations of the IHBs to ensure that the monitoring data can be compared to the IHBs for the air toxics and therefore used to determine compliance with IHBs. This is mostly an issue when a sampling duration is longer than the exposure duration of the IHB because the sampling duration may average out higher emission concentrations occurring over shorter periods of time. This averaging of samples creates complications and inaccuracies in any assumed impacts over shorter durations of time. For example, if an IHB indicates an increased risk over a 1-hour period but the sample duration is only once per 24 hours, the amount of the air toxic and therefore the risk it poses over a 1-hour period cannot be determined from the monitoring data. The monitoring data provides the result for one hour and lacks the data needed for the remaining 23 hours. The monitoring data is not sufficient to determine compliance with the IHB. Therefore, the sampling durations of monitoring methods must correspond to the exposure durations of the air toxics' IHBs.

Subitem B(6) is added to clarify that the air monitoring plan must include the laboratory analysis completed at a laboratory accredited through the Minnesota Department of Health Environmental Laboratory Accreditation Program (MNELAP). It is reasonable to require laboratory analysis completed at a laboratory accredited through the MNELAP because utilizing accredited laboratories provides reliable and consistent data across various facilities and labs.

Subitem B(7) is added to clarify that the air monitoring plan must include data completeness of 75% of all data possible for each sampling for each calendar quarter. It is reasonable to require data completeness of 75% of all data possible because if there is not enough data collected in a calendar quarter then it does not represent a full calendar quarter of facility operations and potential exceedances. Without a full calendar quarter of facility operations, the monitoring data does not accurately represent facility emissions.

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[52] *MPCA Air Dispersion Modeling Practices. Retrieved from https://www.pca.state.mn.us/sites/default/files/aq2-58.pdf.*

Subitem B(8) is added to clarify that the air monitoring plan must include data submittals in a format specified by the commissioner. It is reasonable to require submittals in a format specified by the commissioner to help ensure consistency and that all required information is provided. By requiring the same format for all submittals, the MPCA will be able to spot errors or missing information more efficiently, helping to expedite the review process for MPCA.

Subitem B(9) is added to clarify that the air monitoring plan must include a signed acknowledgement providing MPCA access to monitors for audits at the discretion of the MPCA. The MPCA is given authority to access the premises of a facility to obtain information under Minnesota statute 116.091, subdivision 3. It is reasonable to require a signed acknowledgement for access to monitors for MPCA audits as this outlines clear expectations that fall within MPCA's existing authority. It is also reasonable to audit monitoring equipment to ensure that the equipment is operating appropriately and to help determine the accuracy of the monitoring data. If a monitor is not operating appropriately, the monitoring data may not be reliable to show compliance.

Subitem B(10) is added to clarify that the air monitoring plan must include the statistical method(s) used to determine compliance with the IHBs for monitored air toxics. Where feasible, monitoring measures concentrations of air toxics in air samples. IHBs are concentrations in ambient air at or below which an air toxic is unlikely to cause an adverse health effect in a population over a prescribed duration. In monitoring, IHBs are used to determine if the ambient air around a facility is not posing a risk to human health. It is reasonable to require statistical methods used to determine compliance with IHBs to ensure that data quality is accounted for in determining the results, and whether the monitoring data show that the samples are above or below IHBs. Including the statistical methods in the monitoring plan ensures that information is clear to both the facility and the MPCA. This information must be approved as part of the monitoring plan. Meaning, the commissioner must agree that the statistical method is appropriate for the IHBs, and air toxics being monitored.

Subpart 3. **Air monitoring plan approval**.

Subpart 3 and items A and B are added to clarify the approval of an air monitoring plan. Item A is added to clarify that the commissioner must approve an air monitoring plan and require air monitoring only when the owner or operator clearly demonstrates that the air monitoring plan is complete and at a minimum contains subitems (1) to (10), in subpart 2, item B of this part. It is reasonable to require approval by the commissioner to confirm that the monitoring plan contains all required information, the information is justified and defensible, and the air monitoring results in data needed to determine compliance. The Session Law directs the MPCA to address required monitoring of air emissions and for requirements to reflect the air toxics facility's record of compliance with air toxics limits and other permit conditions. Requiring approval from the commissioner only when the air monitoring plan is complete and contains all listed in subpart 2, item B helps ensure that the Session Law is met; there are monitoring requirements included but monitoring is conducted only when feasible and the requirements reflect the air toxics facility's record of compliance.

Item B is added to clarify that if the commissioner does not approve the air monitoring plan under item A, the commissioner must identify any deficiencies, notify the owner or operator of the deficiencies, and specify a timeline for resubmitting the air monitoring plan under item A. A monitoring plan must be approved for an air toxics facility to conduct ambient air monitoring. It is reasonable to clarify that if a commissioner does not approve the monitoring plan, that additional information will need to be provided by the facility for approval. Additionally, it is reasonable to clarify the steps and information necessary to approve a monitoring plan that was previously not approved. This allows the facility to understand what information the commissioner needs to provide when a monitoring plan is not approved. This information allows for a facility to understand their deficiencies in the plan and how to remedy the deficiencies to result in an approved monitoring plan.

The commissioner must identify any deficiencies in the monitoring plan. If a monitoring plan is not approved, it is reasonable to require the commissioner to identify the deficiencies in the monitoring plan. This information

allows an air toxics facility to understand what information is lacking from their monitoring plan. Furthermore, this allows the facility to understand what information needs to be added to the monitoring plan to result in an approval.

The commissioner must notify the owner or operator of the deficiencies in the monitoring plan. If a monitoring plan is not approved, it is reasonable for the commissioner to notify the air toxics facility that their monitoring plan has deficiencies. By alerting the facility to these deficiencies, this allows the facility to make the needed adjustments to result in an approved monitoring plan. It is needed and reasonable to require the commissioner to notify the owner or operator of any deficiencies in the request because it helps the owner or operator to comply with the rule. By notifying the facility, this allows the facility to continue to move through the process to the approval of a monitoring plan.

The commissioner must specify a timeline for resubmitting a monitoring plan under item A to remedy any deficiencies. It is reasonable to require a timeline for the deficiencies' remedies to be provided so there is a shared understanding between the owners and operators and the MPCA of how the review process will progress.

Subpart 4. **Submitting air monitoring; eligibility**.

Subpart 4 and items A and B are added to clarify that the owner or operator of an air toxics facility must demonstrate that it meets the criteria of subpart 1, item A by providing either an explanation why the facility cannot comply with the ATRP or why the actions identified in the ATRP will not result in the facility's compliance with acceptable risk levels by the date(s) specified in the ATRP, and the sequence of actions or operations completed and attempted by the facility to comply with acceptable risk levels, and an explanation why these actions or operations did not result in compliance with acceptable risk levels. It is reasonable to clarify that the facility must submit information demonstrating that it cannot comply with the ATRP because a facility is not eligible to conduct ambient air monitoring unless it can prove that all actions were taken in accordance with the ATRP but did not achieve compliance with acceptable risk levels by the required deadlines.

Item A and subitems (1) and (2) are added to clarify the choices an air toxics facility has to explain why they would need to conduct ambient air monitoring. Subitem A(1)is added to clarify that the owner or operator of an air toxics facility must demonstrate that it meets criteria under subpart 1, item A by providing an explanation as to why the facility cannot comply with the ATRP. It is reasonable to require the facility to provide an explanation demonstrating why the limits, restrictions, or controls detailed in the ATRP cannot be complied with because the facility is not eligible to conduct ambient air monitoring without providing this information. Requiring the facility to provide this information allows MPCA staff to verify that the facility made all reasonable attempts to comply with the ATRP, to understand why the facility cannot reasonably comply with the limits, restrictions, controls, or any other element identified in the ATRP, and determine whether the facility is eligible to conduct ambient air monitoring to demonstrate monitoring data is below IHBs.

Subitem A(2) is added to clarify that the owner or operator of an air toxics facility must demonstrate that it meets criteria under subpart 1, item A by providing an explanation why the limits, restrictions, or controls identified in the ATRP did not result in compliance with acceptable risk levels by the dates specified in the ATRP. It is reasonable to require the facility to provide an explanation demonstrating why the limits, restrictions, or controls detailed in the ATRP did not result in compliance with acceptable risk levels by the timelines specified in the ATRP because the facility is not eligible to conduct ambient air monitoring without providing this information. Requiring the facility to provide this information allows MPCA staff to verify that the facility implemented the limits, restrictions, or controls outlined in the ATRP, to understand why these actions did not result in compliance with acceptable risk levels by the timelines identified in the ATRP, and determine whether the facility is eligible to conduct ambient air monitoring to demonstrate monitoring data is below IHBs.

Item B is added to clarify that the owner or operator of an air toxics facility must demonstrate that it meets criteria under subpart 1, item A by providing the sequence of actions or operations completed and attempted to comply with acceptable risk levels, and an explanation why these actions or operations did not result in compliance with acceptable risk levels. It is reasonable to require the facility to demonstrate what steps were taken to comply with acceptable risk levels and provide reasoning why compliance with acceptable risk levels could not be achieved because MPCA staff need this information to determine whether the facility is eligible to conduct ambient air monitoring to demonstrate monitoring data is below IHBs. This information helps MPCA staff determine whether the facility has made all reasonable attempts to implement the ATRP and comply with acceptable risk levels.

Regulatory analysis

Minn. Stat. § 14.131 sets out eight factors for a regulatory analysis that must be included in the SONAR. The sections below quote these factors and provide the MPCA's response.

Classes affected

A description of the classes of persons who probably will be affected by the proposed rule, including classes that will bear the costs of the proposed rule and classes that will benefit from the proposed rule.

A variety of classes of persons may be affected by the proposed rule. Classes that may bear direct costs are the permitted facilities in the seven metropolitan counties that emit air toxics, who may bear costs to comply with the rule, and the Minnesota state agencies and departments that will have the responsibility of implementing, administering, and enforcing the proposed rule. The primary classes that may directly benefit from the proposed rule are residents of the seven metropolitan counties whose health and environment would potentially be more protected. Furthermore, having more awareness and information of health risks from air toxics emitted from a facility could empower residents to better understand the potential risks in their area and to take steps to reduce their possible exposure. Communities in the seven metropolitan counties that bear disproportionate burdens of air pollution may particularly benefit from the health and environmental benefits and from the increased health risk awareness that this rule could effectuate.

There are other classes of persons that may be more indirectly affected, either with costs or benefits, of the proposed rule. Classes that could see indirect benefits resulting from the proposed rule include workers and employees of regulated facilities in the seven metropolitan counties who may experience safer and healthier outdoor air near their workplace locations; permitted facilities in Minnesota outside of the seven metropolitan counties may gain some competitive advantage from not having to comply with the rule; Minnesota communities and residents outside of the seven metropolitan counties that could experience economic development incentivized by businesses choosing to relocate or establish outside of the seven metropolitan counties to avoid the costs of complying with the proposed rule; and environmental consultants that may gain business from the steps that regulated facilities may need to take to comply with the proposed rule. Classes that could see indirect costs resulting from the proposed rule include employees of regulated facilities in the seven metropolitan counties if the rule leads to any loss of jobs in these facilities due to increased compliance costs or from facilities relocating their operations to outside of the seven metropolitan counties.

The remainder of this section presents further detail on the classes of persons that may be affected by the proposed rule, either directly or indirectly, and either bearing costs or receiving benefits.

Air toxics facilities in the seven metropolitan counties that emit toxic air pollutants

Air toxics facilities in the seven metropolitan counties are the only group directly regulated by this proposed rule. Those regulated facilities would bear the direct costs of complying with this proposed rule. Minnesota Session

Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 2 directed the MPCA to adopt rules that apply to "facilities that emit air toxics and are located in the counties of Anoka, Carver, Dakota, Ramsey, Scott, and Washington". The main purpose of this rule is to implement and govern regulation of air toxics facilities that emit air toxics in the seven metropolitan counties. To achieve this, facilities with an air permit (excluding air toxics facilities listed in part 7012.0060) located in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, or Washington counties may have to take actions that could incur costs to comply with the proposed rule. Facilities with option B registration permits are not included in this rulemaking because they are excluded in the Session Law The 2023 Session Law under subd. 4, item (2) states that "... types of facilities to be regulated, including, at a minimum, facilities that have been issued an air quality permit by the commissioner, other than an option B registration permit under Minnesota Rules, part 7007.1120".[53]

Based on MPCA air permit data, there are as many as 667 permitted facilities in the seven metropolitan counties. These permitted facilities could be required to take actions to monitor, model, or reduce air toxics emissions, and thus bear costs to comply with the proposed rule. However, there are likely fewer than 667 facilities that would be subject to this rule based on allowable exemptions, which, in addition to option B permits, include option A permits, some option C permits, and nonmetallic general permits. The MPCA estimates that as of September 2025 there are 523 facilities that would not be exempted by Session Law or proposed as exempt in the proposed rule, as listed by permit type in Table 8 below. The compliance actions that facilities subject to the proposed rule may need to take are further detailed in the "Costs to Comply" section below.

Table 8. Number of permits by permit type in the seven metropolitan counties

Permit type	Permit count in seven metropolitan counties*
Individual state and federal permits	120
Capped permits	21
General manufacturing permits	2
Registration option C, reporting VOC-containing material use	18
Registration option D	362
Total	523

*Existing permit holders as of September 2025.

Minnesota state agencies

The MPCA will be the primary Minnesota government agency responsible for implementing, administering, and enforcing the proposed rule. This will require additional MPCA staff time from different programs within the Agency but no other significant agency resources. The specific MPCA and other state agency responsibilities related to the proposed rule as well as the programs in each agency that will require additional staff and the anticipated costs for these staff are detailed below in the "Department/Agency Costs" section.

[53] *Minnesota Session Law - 2023, Chapter 60, article 8, section 5 (H.F. No. 2310). Retrieved from https://www.revisor.mn.gov/laws/2023/0/Session+Law/Chapter/60/#laws.8.5.0.*

Residents of the seven metropolitan counties, especially those in communities overburdened by air pollution

Exposure to air toxic pollutants have been shown to have numerous impacts on human health. Examples of associated health effects include increased risks for various cancers, harm to body organs (heart, brain, liver, kidneys) and systems (respiratory, immune, nervous, endocrine, cardiovascular, reproductive), as well as developmental effects, such as lowered birth weight and birth defects.[54] Thus, the 3,222,455 Minnesotans living in the seven metropolitan counties,[55] representing 56% of Minnesota's total population, could benefit from reduced emissions of air toxic pollutants. Data from MNRISKS, presented in Figure 1 (in the Statement of general need section), indicate that 77.7% of census block groups in the seven metropolitan counties exceed one or more health benchmarks for air toxics pollution from permitted facilities. The proposed rule will require facilities in the seven metropolitan counties that emit air toxics to comply with screening threshold values and acceptable risk levels determined by the MPCA. These screening threshold values and acceptable risk levels were determined to limit the potential risk of air toxics on human health and the environment. In addition to direct health benefits from reductions of toxic air pollutants that this rule may lead to, there are indirect and secondary benefits from the MPCA and MDH having more timely and accurate information about air toxics emissions. This information could enable the MPCA and MDH to respond more quickly and effectively to emission increases or new health-based data from pollution. Furthermore, there is a benefit to the communities that are experiencing those emissions of having more information to generally better understand the potential health risks from exposure to air toxics emissions.

In particular, as discussed above and depicted in Figure 1, many of the communities in the seven metropolitan counties that tend to bear the heaviest burdens of air toxics pollution tend to be communities of concern for environmental justice due to having higher proportions of lower-income residents and/or higher proportions of Black, Indigenous, and people of color (BIPOC) residents. An estimated 30% of the facilities that would be affected by the proposed rule are located in areas of concern for environmental justice. Additionally, an estimated 31% of facilities that would be affected by the proposed rule are within one mile of areas of concern for environmental justice. Of the census block groups that exceed health benchmarks for air toxics pollution shown in Figure 1, 25% are in areas of concern for environmental justice. This rule will enable the MPCA to identify where there is potentially unacceptable risk and will require permitted facilities to reduce those risks to acceptable risk levels. The communities in the seven metropolitan counties that would see the highest benefit are communities currently overburdened by air pollution, which tend to be in lower-income and higher BIPOC concentration areas. Reducing risks to metropolitan area communities, especially those overburdened by air pollution, would align with MPCA's mission to protect human health. See the "Equity Analysis" section below for a more thorough equity analysis of the proposed rule.

Other classes of persons receiving indirect benefits or bearing indirect costs

Any environmental policy or rulemaking will likely have effects outside the directly intended impacts of the policy or rulemaking, so various other classes may receive indirect benefits or incur indirect costs as a result of the proposed rule. As noted above, the proposed rules may benefit businesses outside of the seven metropolitan counties, as well as workers near regulated facilities within the seven metropolitan counties. Additionally, consultants and other third parties not directly regulated by the proposed rule may see increased business or

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[54] *Air Guidance Values from Minnesota Department of Health. Retrieved from https://www.health.state.mn.us/communities/environment/risk/guidance/air/table.html.*

[55] *PopFinder for Minnesota, Counties, & Regions. Retrieved from: https://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/pop-finder1.jsp.*

activity through engagement with permitted facilities that will be directly required to comply with the proposed rule. In addition to environmental consultants, this could also include industry associations and labor unions. If facilities choose to relocate, communities and residents outside of the seven metropolitan counties may experience additional air pollution along with any economic benefit of facility relocation.

Department/Agency costs

The probable costs to the Agency and to any other agency of the implementation and enforcement of the proposed rule, and any anticipated effect on state revenues.

The primary state agency that will be tasked to implement, administer, and enforce the proposed rule is the MPCA. Specifically, the MPCA has the responsibility to implement the rule; to conduct modeling of reported air toxic emissions (*i.e.* MNRISKS); to review health risks and health benchmarks to inform the review of screening threshold values; to engage with regulated facilities to determine and carry out compliance plans; and to enforce the rule. Various programs within the MPCA will be involved, including air permitting, compliance and enforcement, small business assistance, and risk assessment. Each of these MPCA programs will require added staff time to fulfill their responsibilities related to the proposed rule. The State Legislature provided funding from the environmental fund to cover staffing for this proposed rule and the air toxics reporting rule. The MPCA estimates $175,000 per FTE. Based on this FTE estimate and the funding provided by the State Legislature, the MPCA will have 6.3 FTE to implement these two rules. There will be some overlapping responsibilities for staff implementing both of these rules. However, MPCA estimates approximately 5.2 FTE to implement this proposed rule, costing $910,000. The MPCA anticipates adding staff to air permitting, compliance and enforcement, risk assessment, environmental justice, emissions inventory, and small business assistance programs to implement these proposed rules.

MDH already has two FTEs funded by MPCA to add and update acceptable health risk values based on new science, requests from MPCA's risk assessors, and expert knowledge about the health impacts of air toxics. These FTEs will continue to do this work, which will support implementation of the proposed rule, but implementing the proposed rule will not increase work or associated FTEs for MDH.

The proposed rule is expected to have little to no impact on state revenues. The MPCA will only collect fees from permit holders if permit actions are required as part of incorporating new requirements necessary to ensure compliance with chapter 7012; these fees are existing permitting fees with no additional fees, from points or otherwise, as a result of these rules. Otherwise, the MPCA will not be collecting fees from permit holders as part of its compliance obligations in this proposed rule, and there are no other additional elements of the proposed rule that are expected to lead to any inflows into or outflows out of the state's coffers.

To the extent that this proposed rule could incentivize regulated businesses to either move their facilities out of the seven metropolitan counties or not establish their operations in the seven metropolitan counties to begin with in order to avoid compliance costs, the proposed rule could redistribute counties' sources of tax revenues. To the extent that counties outside the seven metropolitan counties may have lower business tax rates than the more urban metro area, this could result in a marginal overall reduction in tax revenues. Moreover, if businesses are incentivized by the proposed rule to relocate or establish their operations outside of Minnesota, then there could be a further reduction in state tax revenues. However, the expectation of relocation or initial establishment of air toxics emitting facilities outside of the seven metropolitan counties is highly speculative. There are numerous economic factors that incentivize where the businesses that are regulated by the proposed rule establish and conduct their operations and the costs of compliance with the proposed rule is not expected to play that big a role amidst the myriad of other factors that motivate and incentivize the decisions of these businesses. Thus, it is not expected that the proposed rule will have a meaningful impact on state revenues.

Less costly or intrusive methods

A determination of whether there are less costly methods or less intrusive methods for achieving the purpose of the proposed rule.

Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 2, directed the MPCA commissioner to adopt rules to implement and govern regulation of facilities in the seven metropolitan counties that emit air toxics. The Session Law sets minimum content that must be addressed in the rules, including testing, monitoring, reporting, record-keeping, and inspection requirements for facilities. This limited the MPCA from exploring options that would not address the minimums listed in the Session Law, and prevented the MPCA from only relying on voluntary programs.

The primary alternative to the proposed rule that would be less costly is to continue with voluntary programs, namely the Facility Focus program, which the MPCA already has in place. However, this voluntary program has had limited success in achieving reductions in air toxics emissions and would not meet the minimum requirements of the Session Law. As described in the Alternative Methods section below, this program uses data from MPCA's MNRISKS tool to identify health risk scores for any air toxics facility and thus determine which facilities pose a higher risk to potentially cause adverse human health impacts. The MPCA may request higher-risk facilities to produce an air toxic(s) reduction plan if the facility could not demonstrate that updates to its air toxics emissions would not result in risk levels at or below acceptable risk levels. However, participation in the Facility Focus program is voluntary, as are producing an air toxics reduction plan and any air toxics emissions reductions. As a voluntary program, many facilities opt out of the process. Due to the voluntary nature, Facility Focus, and other voluntary programs do not achieve the purposes of the proposed rule, which are to reduce air toxics emissions in the seven metropolitan counties and improve human health and environment. Due to the unpredictable nature of the Facility Focus program, a rule is needed to compel the facilities to make changes to remain at or below screening threshold values or acceptable risk levels.

The MPCA included in the proposed rules several ways to limit costs for facilities. These include the following exemptions.

- Exempting from the screening threshold analysis facilities with nonmetallic mineral processing general permits, existing option A registration permits, and option C registration permit holders that only have emissions from indirect heating units, such as boilers, or reciprocating internal combustion engines. The MPCA determined existing facilities with these permit types likely pose a lower risk, so requiring them to comply with this rule would be financially burdensome to the facility and may not provide any useful risk information to the MPCA or result in any appreciable risk reduction.
- Exempting HAPs from sources subject to NESHAPs from the screening threshold analysis, reducing costs by not duplicating effort where federal rules are in place. Without this exemption, a facility that is above screening threshold values based solely on emissions of a HAP, and then completes an AERA as a next step, may find the risk already adequately addressed by complying with a NESHAP standard. Thus, avoiding unnecessary and extra work for MPCA and facilities.

Additional methods are included in the Performance-Based Rules section of this SONAR. That section outlines ways the rules allow maximum flexibility to regulated parties, providing options for facilities to comply with the proposed rules. These options allow facilities to consider what methods of compliance are less costly to them.

Alternative methods

A description of any alternative methods for achieving the purpose of the proposed rule that were seriously considered by the Agency and the reasons why they were rejected in favor of the proposed rule.

Under Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd.2, directed the MPCA commissioner to adopt rules to implement and govern regulation of facilities in the seven metropolitan counties that emit air toxics. The MPCA has examined the alternatives to this rule and has relied on them for many years with few results that meet the needs of regulating air toxics emissions. The four alternatives identified by the MPCA are voluntary programs to assess and reduce air toxics emissions and the facility's health risks, air toxics emissions monitoring, a technology-based approach, and area-wide monitoring using MNRISKS. Each of these four alternatives is explained below, including why each is insufficient to achieve the purpose of the proposed rule.

Voluntary programs to assess and reduce air toxics emissions and their health risks

As discussed above, voluntary programs such as the existing Facility Focus program or any future voluntary program to assess, model, or reduce air toxics emissions allow for non-participation and thus the inability to achieve objectives that a more mandatory mechanism could achieve. Based on the MPCA's experience with the Facility Focus program, many facilities have chosen to not participate at all or to not reduce air toxics emissions if they exceed acceptable risk levels. Even if the voluntary assessment has revealed that air toxics emissions are over acceptable risk levels, the MPCA lacks the authority to require emissions reductions or make changes at the facility to reduce risks. Even after continuous improvements to the Facility Focus program, voluntary efforts are lacking in effectiveness at reducing air toxics emissions. Some facilities have indicated to the MPCA that if the process was mandated, they would complete it, but since it is not required, they opt to not complete the process.

Furthermore, Facility Focus uses data from MPCA's MNRISKS air toxics risk screening tool to identify facilities that could potentially pose a risk to human health. MNRISKS models risks from air toxics at census block group levels. Similarly, the EPA's air toxics screening tool AirToxScreen, which depicts cancer risks and chronic noncancer hazards for some pollutants across the United States, also models and presents information at the block group level. MNRISKS also estimates the cumulative risk by census block group. The risks in any particular block group may be caused by multiple emissions sources, and a single emitting facility may cause risks in multiple block groups. Because neither of these modeling tools can model at the facility level, the proposed rule is needed both to assess emissions from each emitting facility, identify health risks caused by the facility's emissions and, if needed, compel the facilities to develop and implement plans to reduce those emissions and comply with screening threshold values or acceptable risk levels.

Air toxics emissions monitoring

Air quality monitoring is one method for understanding air pollution levels in a community. However, the costs of monitoring at the scale needed to cover all air toxics facilities in the seven metropolitan counties, as well as technology limitations, makes it not viable to rely on air monitoring to accomplish regulating facilities that emit air toxics in the seven metropolitan counties

The Session Law focuses on air toxics facilities in the seven metropolitan counties. To understand air toxics from a specific facility, an air monitor must be located on the fenceline or very near to the facility in question for accuracy as many air toxics volatilize or change chemical composition rapidly after exiting the facility. In order to effectively assess these emissions, monitors would be needed near each air toxic emitting facility, and ultimately each stack at a facility. Even with a monitor located near a facility, it can often be difficult to associate a measured ambient level of a pollutant with a specific facility. Ideally to understand pollutants coming from a facility, two or more monitors would be placed on the fenceline of the facility itself, with one upwind and one

downwind to help differentiate what pollutants are in the ambient air from the facility versus other sources. Additionally, air toxics monitoring is limited in the number of pollutants it can accurately detect. Current MPCA air toxics monitoring sites can only monitor for 74 pollutants.

The MPCA currently has 24 air toxics ambient air monitoring sites in the seven metropolitan counties, and there are air monitors currently at some facilities. The proposed rule covers approximately 523 facilities in the seven metropolitan counties. To cover all of these facilities, the MPCA would need to drastically increase its monitoring network. The annual cost for operating each ambient air monitoring site is approximately $20,000 per year. In addition to operating costs, these sites also require lab testing for different analytes using EPA-approved methods like Toxic Organics – 15 (TO-15) analysis method. At the current rate of about 3,000 samples per year at an average cost of $130 per sample, these costs are currently close to $400,000 per year. Cumulatively, with approximately 523 facilities in the seven metropolitan counties, and a cost of $20,000 per year to operate an air toxic monitoring site at each facility, this would cost $10.46 million per year, either to MPCA or the regulated facilities. Given the drastic costs to monitoring air toxics, this option is not feasible for all facilities to prove their air toxics emissions do not pose risks unacceptable risks.

At a cost of $10 million to maintain over 500 sites, that only measure 74 pollutants, plus additional lab costs (likely an additional $12 million annually), monitoring is not a viable alternative, and certainly not a cost-effective alternative to this rulemaking effort. In addition, monitoring does not in itself result in reduced risks from air toxics. The MPCA would still need to develop a regulatory program that requires reductions in risks from air toxics. The cost of monitoring to achieve the purpose of the proposed rule would, in addition to being very costly to each permitted facility, would be prohibitive to the MPCA to achieve the purpose of the proposed rule.

Technology-based approach

A technology-based approach to regulating air pollutants would involve setting limits based on data concerning the emissions performance and cost of available technologies for specific source categories (industry types or specific equipment that emit air toxics). For instance, if data showed that a regenerative thermal oxidizer was the most cost-effective and widely available technology for a specific industry or emission source to control an individual volatile air toxic, then emission limits for that pollutant would be set based on emissions data from using regenerative thermal oxidizers at those specific types of facilities. This approach is used by EPA in NESHAP standards under 40 CFR Part 63 that regulate a list of 188 HAPs across industries. The MPCA opted against a technology-based approach because this would require obtaining and evaluating data for all industry types and equipment, as well as costs and performance of related controls available and used today for all air toxics. The amount of data needed to be collected and evaluated across many industries for a wide range of air toxics that are much broader than the list of 188 HAPs typically requires years for each industry. This method is not feasible as it requires more time than allowed by the Session Law.

Area-wide modeling (MNRISKS)

Like Facility Focus, MNRISKS data can be used to determine not only facilities that may be causing potential risks, but also areas that may have higher risks. MNRISKS looks at the cumulative risk by each block group. The cumulative risks include sources such as permitted facilities, traffic, wood burning, lawn & garden, etc. Most of these categories that contribute to risk cannot be regulated by the MPCA. However, permitted facilities can be regulated. If the risk from permitted facilities can be reduced, this will reduce the cumulative risk for a given block group overall. Current voluntary programs such as Facility Focus have been somewhat successful in the mission to reduce risks from permitted facilities, but a mandatory process that requires action when needed will more effectively reduce risks. MNRISKS data is based on reported emissions inventory data. Because this information has historically been voluntary and does not include hourly emissions data to assess acute risks, the MPCA did not use MNRISKS as a basis for the rule because emissions inventory data is not complete data. Because this data is incomplete, MNRISKS is limited in its effectiveness at reducing air toxics emissions.

Costs to comply

The probable costs of complying with the proposed rule, including the portion of the total costs that will be borne by identifiable categories of affected parties, such as separate classes of governmental units, businesses, or individuals.

As detailed in the "Classes Affected" section above, the primary parties that will be affected and will bear the costs associated with the proposed rule will be permitted facilities (excluding facilities with registration option B permits that have been exempted by Session Law and facilities with other permit types that are proposed as exempt such as option A, some option C, and nonmetallic mineral processing general) in the seven metropolitan counties. As of September 2025, there are an estimated 523 facilities that would be subject to this rule.

The MPCA has two sources of information from which to estimate potential compliance costs for these facilities. First, the Agency conducted its own analysis of the expected costs of all the potential actions that regulated facilities may have to do to comply with the proposed rule, including performing a screening threshold analysis of all air toxic(s) emitted by the facility, researching and implementing pollution prevention, developing a compliance determination protocol (CDP), performing an air emissions risk analysis (AERA), and developing an air toxics reduction plan (ATRP).

Second, to glean further information and insight into how much the proposed rule will cost these facilities, the MPCA sought comments during an informal comment period using an anonymous survey tool. Thirty facilities responded to the survey with comments, which included a variety of permit types, including registration option D, capped, general manufacturing, and others. Table 9 indicates the number of respondents to the survey by permit type, most of the respondents of the survey were from registration permit types.

Table 9. Number of responses to the survey

Permit type	Number of respondents
Registration permit (Option D)	22 (19)
Capped and General permits	6
Other (multiple permits, consultant)	2
Total	30

Of the thirty respondents, all but one provided their estimates of how much time and financial cost would be required to complete a screening analysis, thirteen provided their estimates of how much time and cost it would require to remain at or below screening threshold values, and four provided estimates of time and cost to complete an AERA. The MPCA can make some general inferences of probable compliance costs with the proposed rule from these comment responses, but the sample size of respondents was not large enough to extrapolate an estimate of the average compliance costs for the entire population of 523 facilities that could be affected by the proposed rule with a high degree of confidence and statistical significance.

These two sources – MPCA's analysis of likely costs to permitted facilities and the facilities' own comments on expected compliance costs – have been combined to estimate a range of likely compliance costs that regulated facilities may face. To account for cost of staff or consultant time spent on compliance actions, MPCA uses an estimated annual cost of an employee of $175,000, divided by the total number of working hours in a year (2,080) equates to an hourly cost for an average employee of $84.13.

There are multiple actions that regulated facilities may have to take to comply with the proposed rule, each of which will have a cost. However, few if any facilities will need to undertake all of the compliance actions.

The compliance action that will be required of the most facilities is a screening threshold analysis of the air toxics being emitted by the facility. Due to exemptions, this action will not be required for all of the estimated 523

facilities that fall under the regulatory umbrella of the proposed rule. For any facility, the specific elements of the screening threshold analysis will depend on the processes of the facility and the air toxics it emits. The time and costs to complete a screening threshold analysis will vary by permit type due to permit requirements for recordkeeping and reporting air emissions. It is expected that individual state or individual federal facilities time and costs to complete a screening analysis would be lowest as the facility's permit requirements for emissions data are similar to the data needed to complete the screening threshold analysis. In contrast, registration facilities report consolidated emissions by source classification code and may require a greater amount of time to organize and identify emissions to complete the screening threshold analysis. Some facilities may refine emission factors and/or throughput which have otherwise been reported on a worst-case basis. Understanding the variability among the permit types, the MPCA estimates that the screening threshold analysis could take between five and fifty hours of staff or consulting time. The MPCA expects that some regulated facilities will need to hire consultants to conduct a screening threshold analysis, in addition to the use of staff time. Five to fifty hours of staff or consulting time at an estimated hourly rate of $84.13 equates to a range of $421 to $4,206 total cost to complete a screening threshold analysis. Table 10 shows the survey responses for the screening threshold analysis requirement. The survey responses include information about how long it would take to complete a screening threshold analysis and the cost to complete the analysis.

Table 10. Estimates and survey responses for screening threshold analysis requirements

Question asked	MPCA estimates	Survey range	Respondents	Median*
How many hours do you expect would be required to complete the screening analysis?	5 to 50 hours	1-80+ hours	27	30 hours
What financial cost would you expect to complete the screening analysis?	$421 – $4,206	Less than $1,000 to $50,000+	29	$7,500

*Based on the midpoint of the range from the survey options.

Based on Table 10, the cost estimates from the facilities are considerably higher than MPCA's estimated cost of completing a screening threshold analysis. Additionally, since only 29 facilities out of the several hundred facilities that could be affected by the proposed rules responded to the survey, it is difficult to determine if the results are representative for all potentially impacted facilities..

Of the 29 regulated facilities that provided estimates of screening threshold analysis costs, most identified that it would involve administrative time for employees, training and education for employees, and consultant or engineering fees. Table 11 displays the results from the survey where facilities expect the most costs would occur for completing a screening threshold analysis.

Table 11. Costs foreseen by survey responses for screening analysis requirements

Survey response options	Respondents
Administrative time for employees, training and education for employees, consultant or engineering fees	17
Consultant or engineering fees	4
Administrative time for employees and training and education for employees	4
Administrative time for employees and consultant or engineering fees	3
Administrative time for employees	1

The second potential compliance action that the MPCA analyzed is the potential costs for research and implementation of pollution prevention options. Based on MPCA's review of currently regulated facilities in the seven metropolitan counties, the MPCA estimates that between 131-178 of these facilities would be above screening threshold values and would either need to develop a CDP or complete an AERA. There may be assistance available to regulated facilities to complete these actions from Minnesota Technical Assistance Program (MnTAP), which helps businesses and organizations to improve public health and the environment. Nonetheless, the MPCA estimates that there will be staff and consultant time associated with completing this task of between ten to twenty-five hours, in addition to the other costs associated with completing this action. Based on the average hourly staff or consulting cost of $84.13 explained above, this equates to $841 to $2,103 cost for completing this compliance action.

The third potential compliance action that the MPCA analyzed is to develop a compliance determination protocol (CDP). Using the findings from research and implementation of pollution prevention, the facility would complete the screening threshold analysis again to assess whether those actions will reduce the facility's actual emissions to be at or below screening threshold values. If reduced to be at or below screening threshold values, the facility will develop the CDP to demonstrate the activities that are sufficient to reduce and maintain air toxics emissions at or below screening threshold values.

Table 12. Estimates and survey responses of financial costs to stay below screening threshold values

Question asked	MPCA estimates	Survey range	Respondents	Median*
What financial cost would you expect to stay below screening thresholds?	10 to 45 hours; $841 - $3,786	Less than $1,000 to $50,000+; Other	17	$17,500

*Based on the midpoint of the range from the survey options.

In the survey, MPCA asked facilities how much the facility estimates it would need to stay below screening threshold values. Table 12 displays the results to this question. Since the MPCA did not ask the facilities the cost for each facility to comply with a CDP, the MPCA assumes the results to the survey question would approximately the same if asked about complying with a CDP. Given the unbounded nature of the most popular response and the significant variability in actions that need to be taken to demonstrate that a CDP will reduce a facility's actual emissions to meet and maintain compliance with the screening threshold values, it is not feasible to use these responses to estimate an average overall expected cost to comply with screening threshold values. However, based on the responses of these facilities, it is clearly far higher than the MPCA's estimates for staff and consultant time needed for researching and implementing pollution prevention practices and developing a CDP. This may indicate the costs associated with training and education of employees, altering workflow or operational processes, and installation of new or modified equipment. Again, the very small sample size of

respondents to these questions may not be representative of the overall population of facilities that may be required to modify operations to comply with the rules.

Based on the screening threshold analysis, a facility may choose to do an air emission risk assessment (AERA) rather than develop a CDP. It is unclear how many facilities may need to perform an AERA. The cost of an AERA can vary significantly depending on the complexity of the facility, its location, the level of detail required, and the consulting firm performing the analysis, but generally ranges from a few thousand dollars for a small, simple facility to tens of thousands of dollars for large, complex industrial sites. These estimates include the cost of data collection, modeling, analysis, and report preparation.

Of 30 respondents, a majority of respondents indicated that there was not enough information to decide potential actions or that the facility would not make changes to the facility and would choose to complete an AERA instead. From the results, registration permit holders comprised 10 of the 12 respondents that would complete an AERA and 7 of the 10 that were unclear or unknown. Table 13 displays the survey responses to what costs a facility would foresee to stay below screening threshold values.

Table 13. Costs foreseen by survey responses to stay below screening threshold values

Survey response options	Respondent selections
No changes, the facility would choose to complete an AERA	12
Unclear or unknown	9
Other (move out of state)	1
Make operational changes	4
Move or changes stacks	3

Assessing emissions of air toxics may require specialized analysis and additional costs. Generally, the MPCA believes that facilities will need to hire consultants to conduct an AERA. If the facility does not propose to limit the emission rates used in the AERA (beyond what is currently permitted) and the results are at or below acceptable risk levels, a permit application does not need to be submitted. If the facility does propose limits on emission rates used in the AERA to be at or below acceptable risk levels, the facility would have to obtain or submit an amendment to an individual permit.

Permit fees are determined based on points assigned to each permit action in two categories: application points and additional points. Application points are based on the permit action and the work necessary to complete it. Additional points are based on additional reviews needed. The fee for including modeling review in a permit application is 15 points. The modeling review may be incorporated into a major amendment, state individual permit, or individual Part 70 permit which are assessed points of 25, 50, and 75, respectively. At the current cost of $285 per point, the application fees associated with a permit action incorporating an AERA with limits could be up to $25,650. Table 14 shows the survey results for how much time and money completing an AERA would cost a facility.

Table 14. Estimates and survey responses for completing an AERA

Question asked	MPCA estimates	Survey range	Respondents	Median*
How many hours do you expect would be required to complete the AERA?	10 to 20 hours	10 to 80+ hours	4	45 hours
How much did it cost to complete the AERA (for facilities that have previously done an AERA)?	$841 to $1,683 Up to $25,650 for permit application modeling review	Less than $5,000 to $50,000+	4	$20,250

*Based on the midpoint of the range from the survey options.

The final potential compliance action for which the MPCA estimated costs is the development of an air toxics reduction plan (ATRP). This is a contingency plan for facilities that cannot reduce emission rates to be at or below acceptable risk levels in the AERA and thus need to find alternatives in order to do so. The facilities that may take this compliance action will be a small subset of those completing an AERA; the precise number is hard to speculate. The MPCA believes that this will also involve hiring consultants and the MPCA estimates the total cost of this action will be between $15,000 and $45,000 in consulting costs.

While very few facilities will need to conduct all of the compliance actions described here (screening analysis, researching and implementing pollution prevention practices, developing a CDP, conducting an AERA, and developing an ATRP), if a facility needed to do all of these compliance actions. The overall cumulative cost could be $2,103 to $80,325 based on MPCA's analysis, not including costs for training and education of employees, altering workflow or operational processes, installation of new or modified equipment, or permit application fees, with the greatest of costs applying to few of the facilities. Altering workflow or operational processes, or installation of new or modified equipment could add up to hundreds of thousands of dollars but is extremely variable and impossible for MPCA to estimate as it will be facility specific.

To the extent that regulated facilities will bear costs in complying with the proposed rule, it is possible that some of those costs will be passed on to consumers in the form of higher prices for the products of these facilities. Whether costs can be passed on to consumers, however, is highly dependent on the specific products and facilities' markets. To the extent that these facilities produce products also offered by competitors that are not subject to the proposed rule, it is unlikely they will be able to raise prices and be able to remain competitive in the open market. Only regulated facilities that produce products that do not face competition from unregulated facilities will likely be able to pass on the costs of rule compliance to consumers. This is likely to be a small portion of the overall compliance costs with the proposed rule. It is more likely that regulated facilities will absorb the compliance costs themselves or will make other business decisions, such as choosing to relocate to outside the seven metropolitan counties. As touched on above, however, it is unlikely that the cost of relocating will be less than the cost of complying with the proposed rule, but it is not impossible. If such a relocation were to happen (or if a business was incentivized not to establish operations in the seven metropolitan counties to begin with), then there would be a cost to the local economy of decreased economic activity in the community as well as the potential loss of jobs in the community and a reduction in the local tax base. However, if such relocations happened there would not be an overall cost to the state in terms of decreased economic activity, jobs, or tax base, as these would just be shifted to areas outside the seven metropolitan counties, unless the proposed rule motivated businesses to move their operations outside of Minnesota.

There are other possible indirect costs resulting from the proposed rule that are not possible to quantify but nevertheless bear mentioning. An additional action that regulated facilities could take to defray compliance costs besides absorbing them or passing them on to consumers would be to reduce their labor costs by cutting jobs. Any job loss would be a cost to the local community. It seems unlikely that this would occur, however, because presumably these businesses are already operating as efficiently as possible and thus could not reasonably reduce their labor forces and be able to maintain the same levels of production and operations.

While a key benefit of the proposed rule is reduction of air toxics pollution in the seven metropolitan counties (see "Costs of Non-Adoption" section below) this could be a cost to communities outside the seven metropolitan counties if any facilities move their operations outside of the seven metropolitan counties to avoid compliance costs, and thus that air toxics pollution is displaced to outside of the seven metropolitan counties. Again, as mentioned above, it is not possible to predict what, if any, relocation of operations to jurisdictions not subject to the proposed rule might occur, but given all the economic factors that motivate business decisions, it is expected these changes would be minimal.

Costs of non-adoption

The probable costs or consequences of not adopting the proposed rule, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals.

The alternative to not adopting the proposed rule would result in a “business-as-usual" continuation of the current lack of reliable controls of air toxics emissions in the seven metropolitan counties, with only voluntary programs for air toxics facilities to evaluate their emissions and the potential health risks, with only voluntary reductions of air toxics emissions to reduce these risks. As noted above, many facilities emitting air toxics opt not to participate in voluntary programs (notably the Facility Focus program), and even those that participate at the initial stages of the process many chose not to produce an air toxics reduction plan or take actions to reduce air toxics emissions if potential harmful health risks are identified. The MPCA currently lacks the specific authority to require emissions reductions to reduce the risks to at or below acceptable risk levels. Simply put, the cost of not adopting the proposed rule would be foregoing the benefits that the proposed rule is expected to result in.

The primary benefit of the proposed rule will be reduced potential risks to human health, primarily in the seven metropolitan counties where the rule applies. This will be achieved through a reduction of air toxics emissions from air toxics facilities in the seven metropolitan counties. Thus, the 3,222,455 Minnesotans living in the seven metropolitan counties (as of 2023 according to the Minnesota State Demographic Center’s PopFinder), representing 56% of Minnesota’s total population, could benefit from the proposed rule.

The health risks of air toxics have been well documented. As noted above, examples of associated health effects include increased risks for various cancers, harm to body organs (heart, brain, liver, kidneys) and systems (respiratory, immune, nervous, endocrine, cardiovascular, reproductive), as well as developmental effects, such as lowered birth weight and birth defects. Thus, 56% of Minnesota’s total population, could benefit from reduced emissions of air toxic pollutants. Many of these health risks have been captured in the air toxics risk-screening tools that the MPCA uses, notably MNRISKS. Data from MNRISKS[56], presented in Figure 1 (in the Statement for general need section), indicate that 77.7% of census block groups in the seven metropolitan counties exceed one or more health benchmarks for air toxics pollution from all emissions reported by air toxics facilities.

Though it is not possible to quantify precise reductions in air toxics emissions as a result of the proposed rule, it will undoubtedly decrease air toxics emissions. The MPCA is unable to quantify precise reductions using MNRISKS due to the timing of the updates to chapter 7019. Given the updates to reporting air toxics emissions in the seven metropolitan counties, emissions may initially increase as voluntary reporting is now mandatory. Additionally, there are several options in the proposed rules facilities may take to show they comply. Not all options guarantee a facility will have to reduce air toxics emissions. What a facility does will depend on each facility’s unique operations. If a facility’s air toxics screening analysis, which the proposed rule requires, reveals an air toxics facility is exceeding screening threshold values, then the facility will be required to take action to possibly reduce emissions and thus reduce the potential risks it poses to human health in its community from emitting these air toxics. As described above, such a facility would either need to develop a compliance determination protocol (CDP) or an air emissions risk analysis (AERA), either of which will likely result in reducing the facility’s emissions to be at or below screening threshold values or will demonstrate that the facility is at or below acceptable risk levels. For a facility that is found to be above acceptable risk levels, the proposed rule will

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[56] Ellickson, K., Kvale, D., Vadali, M., Freeburg, E.W., Sienko, A. (March 2023). MNRISKS: Minnesota statewide screening of health risks from air pollution. Retrieved from: https://www.pca.state.mn.us/sites/default/files/aq9-29.pdf

require an air toxics reduction plan (ATRP) to reduce a facility's emissions to be at or below acceptable risk levels. Any pathway to comply with the proposed rule will at worst leave the facility's air toxics emissions at its current levels and in cases when those emissions pose a potential threat to public health, compliance will reduce these emissions.

Beyond health benefits of reduced emissions, an additional benefit of the proposed rule is increased transparency of facility air toxics emissions data and thus increased information, awareness, and decision making related to air toxics emissions in the seven metropolitan counties. This is of value to both the MPCA, as an air regulatory agency, and to the general public in understanding the risks the public may face. This information could enable the MPCA to not only identify where the risks are greatest and thus actions needed to reduce air toxics but could also enable the MPCA to better identify and solve air quality and exposure problems, empowering the agency to better achieve its mission of safeguarding and improving public health in Minnesota. More specifically, the additional information on air toxics emissions in the seven metropolitan counties will inform MPCA's MNRISKS modeling and better equip the agency to understand and address the potential health risks posed by air toxics emissions in the seven metropolitan counties.

There are likely to be additional synergistic reductions of other harmful air pollutants besides air toxics. Notably, criteria pollutants such as particulate matter (PM), sulfur dioxide (SO_2), and nitrogen oxides (NOx), as well as volatile organic compounds (VOCs) tend to be co-emitted with air toxics. Actions to reduce air toxics such as scaling back emitting processes and using different chemicals in manufacturing processes will likely lead to related reductions in PM and VOCs since many air toxics are either particulates or volatile organic compounds. These pollutants act as precursors to the formation of airborne fine particulate matter ($PM_{2.5}$) and ground-level ozone, which have well documented health impacts, including in the Twin Cities metro area.[57] $PM_{2.5}$ and ozone have been found to be associated with hundreds of premature deaths, and an even greater number of less severe respiratory and cardiovascular health outcomes in the seven metropolitan counties every year. Even modest reductions of these pollutants can save lives and reduce hospitalizations and emergency room visits for Minnesotans living in the seven metropolitan counties. Furthermore, these pollutants have been shown to not affect all Twin Cities residents and communities equally. Lower-income communities and areas with higher proportions of Black, Indigenous, and people of color (BIPOC) residents in the Twin Cities metro area have been shown to bear disproportionate burdens of health risks from these pollutants due to systemic disenfranchisement; so the pollution reducing benefits of the proposed rule will likely have positive equity implications.[58] [59] Moreover, as is further described in the Equity Analysis below, facilities that emit air toxics tend to be in closer proximity to environmentally overburdened communities, including environmental justice areas of concern. Thus, the residents of the seven metropolitan counties that have been most burdened by air pollution will likely see the largest benefits from the proposed rule, both from reduced exposure to air toxics as well as to $PM_{2.5}$ and ozone from emitted co-pollutants.

In addition to health benefits of the proposed rule, there are other less direct benefits to the seven metropolitan counties' communities, particularly for neighborhoods in close proximity to air toxics facilities that have tended to bear disproportionately heavy pollution burdens. When air quality becomes better in neighborhoods, these

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[57] Minnesota Pollution Control Agency and Minnesota Department of Health. Life and breath – How air pollution affects public health in the Twin Cities. Retrieved from: https://www.pca.state.mn.us/sites/default/files/aq1-64.pdf.

[58] Pratt, G. C., Vadali, M. L., Kvale, D. L., & Ellickson, K. M. (2015). Traffic, Air Pollution, Minority and Socio-Economic Status: Addressing Inequities in Exposure and Risk. International Journal of Environmental Research and Public Health, 12(5), 5355-5372. Retrieved from https://doi.org/10.3390/ijerph120505355.

[59] Taylor, D. E. (2014). Toxic Communities: Environmental Racism, Industrial Pollution, and Residential Mobility. NYU Press. Retrieved from http://www.jstor.org/stable/j.ctt9qg1v9.

neighborhoods become more desirable places to live with rising property values. The relationship between environmental quality and property values has long been understood in environmental economics literature.[60] While there has been debate among researchers as to the causal nature of this relationship, there is general agreement that decreases in environmental quality bring about lower property values in areas surrounding facilities producing pollution. Conversely, it has been repeatedly found that reducing emissions increases property values and also leads to rising incomes in impacted communities. While rising property values have raised some concerns of "environmental gentrification", where cleaning up pollution may lead to higher demand for housing and therefore higher bids and prices for local housing, researchers have found that this can be mitigated through increased community participation.[61] Moreover, by improving conditions in overburdened communities, the proposed rule may incentivize and create opportunities for development of affordable housing, retail, and commercial enterprises in lieu of construction or expansion of additional facilities.

Differences from federal regulations

An assessment of any differences between the proposed rule and existing federal regulations, and a specific analysis of the need for and reasonableness of each difference.

Minn. Stat. § 14.131 requires that the MPCA consider the proposed amendments in relation to the corresponding federal requirements. In addition to this requirement to benchmark with the federal program, there is an additional requirement in *Minn. Stat.* § 116.07, subd. 2, (f), that requires the MPCA to benchmark with the federal program and also with other states bordering Minnesota and with other states within US Environmental Protection Agency (EPA) Region 5. These assessments are detailed in the "Differences with Federal and Other State Standards" section of this SONAR.

Current federal regulations relating to air toxics are limited to 40 CFR pt. 61, and 40 CFR pt. 63 NESHAP standards. The Part 63 standards are written to regulate a list of 188 HAPs from stationary sources, or facilities, based on the industry sector of the source, or the type of equipment at the source. These standards are written based on technology available, with the best existing technology used to establish a minimum level of emissions control. These standards are then later revised to take into account residual risk of HAP emissions from the affected sources. Some standards, known as Maximum Achievable Control Technology (MACT) standards, only apply to facilities considered a major source of HAPs under Section 112(a) of the Clean Air Act (those stationary sources with PTE > 25 tons per year (tpy) of all HAPs or 10 tpy of a single HAP).

Part 61 standards are specific to individual HAPs and regulate emissions based on activities performed at a facility. For example, 40 CFR part 61, subpart E – National Emission Standard for Mercury regulates both chlorine gas production via mercury chlor-alkali cells, and incineration of wastewater treatment plant sludge, two activities that are not likely to occur at the same facility. Under the 1970 Clean Air Act Amendments, the U.S. EPA was directed to promulgate standards for each HAP that were protective of human health with an ample margin of safety. Generally this meant "protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately 1 in 1 million and (2) limiting to no higher than approximately 1 in 10 thousand the estimated risk that a person living near a plant would have if he or she were exposed to the

[60] Lambert, T. and Boerner, C., Environmental Inequity: Economic Causes, Economic Solutions, Yale J. on Reg., 14, 195 (1997) and Palmquist, R.B., Measuring Environmental Effects on Property Values Without Hedonic Regressions, Journal of Urban Economics, 11(3), 333-347 (1982) for early discussions.

[61] Banzhaf et al. (2012). Environmental Justice: The Economics of Race, Place, and Pollution, Journal of Economic Perspectives, Perspectives, 33(1), 185-208).

maximum pollutant concentrations for 70 years "[62] This approach resulted in Part 61 standards for only eight HAPs before the creation of Part 63 standards with the 1990 clean air act amendments.

The proposed air toxics rule regulates pollutants beyond the 188 HAPs. There are other air toxics that are not HAPs but still pose a risk to human health and the environment. It is reasonable to regulate emissions of additional air toxics of concern beyond HAPs to reduce risk that these additional air toxics pose to human health and the environment.

The proposed air toxics rule regulates facilities based on the risks they are posing to the surrounding communities instead of based on available technology. It is reasonable to regulate air toxics based on potential risks because it allows for additional methods to comply beyond using control technology. It is reasonable to not require a facility to meet a technology-based limit if the facility can demonstrate that it poses an acceptable level of risk to the general public through completing an AERA.

The first step of the proposed air toxics rule relies on actual emissions, instead of PTE, to screen facilities from complying with additional parts of the rule. PTE is the basis of applicability for most federal air rules, including 40 CFR pt 52, pt. 63, and pt. 70. It is reasonable to assess facilities based on actual emissions of air toxics because actual emissions represent the more immediate and present risks from exposure. Using potential to emit for the screening threshold analysis could result in an unnecessarily large amount of facilities becoming subject to the more burdensome parts of the rule, especially when many facilities operate well below their PTE. Additionally, the MPCA currently allows facilities to qualify for permits with reduced compliance requirements (*e.g*. registration and capped permits) so it is reasonable to allow for a conservative screening option to comply with the air toxics rule to accommodate these types of facilities.

Cumulative effect

An assessment of the cumulative effect of the rule with other federal and state regulations related to the specific purpose of the rule.

Minn. Stat. § 14.131 defines "cumulative effect" as "the impact that results from incremental impact of the proposed rule in addition to the other rules, regardless of what state or federal agency has adopted the other rules. Cumulative effects can result from individually minor but collectively significant rules adopted over a period of time."

The MPCA does not expect the cumulative effect of this rule to be significant because Minnesota does not currently have state-level air toxics regulations. Facilities and stacks subject to federal NESHAPs may have the most impact, although the proposed rules take steps to reduce this impact. Air toxics facilities that have stacks that are subject to NESHAPs will not need to conduct a screening analysis for HAPs covered by those NESHAPs. However, NESHAPs focus usually on specific processes or HAPs but do not encompass all the air toxics that are emitted from a stack or facility. If an air toxics facility is above screening threshold values for air toxics beyond the HAPs emitted from stacks covered by a NESHAP, the facility may need to do a CDP or an AERA. Air toxics facilities and/or stacks subject to NESHAPs will have to adhere to guidelines listed in the NESHAP but will also have to evaluate the facility and/or stack in the AERA process, if applicable. This ensures that all air toxics are evaluated for potential risk, even if the facility and/or stack is subject to a NESHAP.

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[62] *54 FR 38044: National Emission Standards for Hazardous Air Pollutants; Benzene Emissions From Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, Benzene Storage Vessels, Benzene Equipment Leaks, and Coke By-Product Recovery Plants. Retrieved from: https://www.epa.gov/stationary-sources-air-pollution/54-fr-38044-national-emission-standards-hazardous-air-pollutants*

Air toxics facilities subject to this rule may make operational changes to stay at or below screening threshold values or acceptable risk levels. These changes could reduce the air toxics emitted by a facility. As the air toxics emissions of a given stack or process decrease, criteria pollutants from the same stack or process are more likely to decrease as well. This reduction in criteria pollutant emissions could reduce the facility's likelihood of contributing to potential exceedances of one or more NAAQS. Additionally, reductions in air toxics at a facility could lead to a reduction of the facility's PTE of HAPs. If an air toxics facility were a major source of HAPs under 40 CFR Part 63 and reduced PTE to become a minor source, the facility would not be subject to major source standards under Part 63 and may no longer be required to obtain a federal permit.

The recently adopted amendments to chapter 7019, also known as the Air Toxics Reporting Rule, may lower the cumulative burden of the two air toxics rules. Facilities in the seven metropolitan counties will need to report their previous year's air toxics emissions annually beginning in 2027. Much of this reported information will be needed to conduct the initial assessment and facilities will be better prepared to comply with these proposed rules.

The MPCA has simultaneously proposed Cumulative Impacts rules that apply to certain facilities within environmental justice areas in the seven metropolitan counties, as well as Duluth and Rochester. Based on agency records, around 73 facilities may be subject to both Air Toxics Regulations and Cumulative Impacts rules. The two rules have similar structures in that many facilities will only complete the first screening analysis and not face additional costs. Some facilities may have higher burdens under the two rules that lead to higher costs and additional permit requirements. The Legislature mandated the scope and timelines of these two rulemakings. The MPCA tried to minimize the cumulative burden of the two proposed rules for facilities subject to both rules by offering an option for facilities to request using an AERA complete for other reasons, such as the cumulative impacts rules, to meet the requirements of these proposed rules. Thus, not requiring facilities to duplicate analyses.

Performance-based rules

Minn. Stat. § 14.002, requires state agencies, whenever feasible, to develop rules that are not overly prescriptive and inflexible, and rules that emphasize achievement of the MPCA's regulatory objectives while allowing maximum flexibility to regulated parties and to the Agency in meeting those objectives.

The MPCA seeks to comply with Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5 to develop rules that are not overly prescriptive or inflexible. Rules must also be clear and defined so as best to help facilities comply. MPCA complies with this rule through:

- Providing facilities with numerous ways to calculate air toxics emissions found in parts 7019.3020 to 7019.3100, including providing alternate methods for determining hourly emission rates for air toxics facilities that have not previously determined hourly potential to emit (PTE) rates in part 7012.0400, subpart 3.
- Assistance by the SBEAP to aid with calculating air toxics emissions and completing the air toxics screening threshold analysis for small businesses (*Minn. Stat.* § 116.96, subd. 6).
- Continuing to calculate air toxics emissions for combustion processes using the most current EPA and state emission factors and fuel usage or activity data reported by facilities. This will reduce time facilities need to spend on calculations.
- Exempting from the screening threshold analysis facilities with nonmetallic mineral processing general permits, existing option A registration permits, and option C registration permit holders that only have emissions from indirect heating units, such as boilers, or reciprocating internal combustion engines. The existing facilities with these permit types were determined to likely pose a lower risk, so requiring them

to comply with this rule could be burdensome to the facility without providing any useful risk information to the MPCA or reduction in risks.

- Exempting emission units from the screening threshold analysis that only combust natural gas and are used for comfort heating and cooling and are not considered process equipment.
- Providing a spreadsheet (STRATA) for facilities to determine if they exceed screening threshold values.
- Providing options for facilities, if they exceed screening threshold values, to either complete a CDP or AERA. This allows some facilities to maintain their current permit type if they have emissions above screening threshold values. Changing permit types requires the facility to prepare and submit a new application and pay a fee. Federal permits and some state permits that the MPCA issues also require the permit to be reissued, which also requires a permit application. Therefore, a facility's ability to maintain its existing permit type is advantageous because it will be able to avoid additional fees and application preparation.
- Providing exemptions to the screening threshold analysis and air emissions risk assessments for some emissions units that matches current AERA guidance but also eliminates the need to assess these emissions units that may pose little risk.
- Allowing submittal of previously completed AERAs by facilities for MPCA to consider if they have completed a risk analysis that meets the criteria of the proposed rules for potential exemption from completing further work, thus not requiring facilities to duplicate analyses.
- Providing a spreadsheet (RASS) to determine if a facility exceeds acceptable risk levels.
- Providing forms with the required AERA information for facilities to easily fill out for the AERA protocol and report.
- Providing different options in a CDP or ATRP to comply with either screening threshold values or acceptable risk levels. In a CDP or ATRP, the air toxics facility is able to determine what changes it can make to comply with the threshold values or acceptable risk levels. This gives the facility flexibility to determine which option works best for the facility's operations, while ensuring protection to the public.
- Providing permitting forms so facilities that need permit amendments can easily complete the amendment.
- Detailing the deadlines in rule so an air toxics facility knows when the screening threshold analysis is due; and if subsequent items (*e.g*. CDP, AERA, ATRP) are needed, facilities know when those items are due.
- Providing reasonable timelines for compliance in rule for risks that have longer durations, to reduce economic burden when risks and impacts are less imminent.
- Providing timelines for the resubmittal of items (*e.g*. screening threshold analysis, AERA, ATRP). The timelines ensure that the facility is completing the items in a timely manner but also allowing the facility to resubmit if the item was deemed incomplete.
- Providing PTE calculation spreadsheets for emission units like engines, boilers, tanks, coatings, *etc*. This allows air toxics facilities to easily calculate their PTE.
- Providing ambient air monitoring as a possible limited alternative to reducing operations or revoking a permit when an owner or operator is unable to comply with an ATRP within established deadlines.

Consideration of MPCA-specific statutory requirements

The law also requires state agencies to analyze several other factors as part of their rulemaking process. This section addresses the other statutory requirements beyond those outlined in the APA, specific to the MPCA.

Consideration of economic factors

In exercising its powers, the MPCA is required by identical provisions in *Minn. Stat.* § 116.07, subd. 6, and *Minn. Stat.* § 115.43, subd. 1 to give due consideration to:

> *…the establishment, maintenance, operation and expansion of business, commerce, trade, industry, traffic, and other economic factors and other material matters affecting the feasibility and practicability of any proposed action, including, but not limited to, the burden on a municipality of any tax which may result there from, and shall take or provide for such action as may be reasonable, feasible, and practical under the circumstances…*

The MPCA has met the requirements of this statute by the discussions provided in the Regulatory Analysis section regarding the possible economic effects of the proposed rule.

Differences from federal and other state standards

Minnesota Statute section 116.07, subdivision 2 requires that for proposed rules adopting air quality, solid waste, hazardous waste, or water quality standards, the SONAR must include an assessment of any differences between the proposed rule and existing federal standards adopted under the Clean Air Act, title 42, section 7412(b)(2); Clean Water Act, *United States Code*, title 33, sections 1312(a) and 1313(c)(4); and the Resource Conservation and Recovery Act, *United States Code*, title 42, section 6921(b)(1); similar standards in states bordering Minnesota; and similar standards in states within the US Environmental Protection Agency (EPA) Region 5; and a specific analysis of the need and reasonableness of each difference.

Differences with federal standards

EPA has established regulations for HAPs, called NESHAPs. The Part 63 standards (NESHAPs) are written to regulate a list of 188 HAPs from stationary sources based on the industry sector of the source, or the type of equipment at the source. These standards are written based on technology available, with the best existing technology used to establish a minimum level of emissions control. These standards are then later revised to consider residual risk of HAP emissions from the affected sources. Some standards, known as MACT standards, only apply to facilities considered a major source of HAPs under Section 112(a) of the Clean Air Act (those stationary sources with PTE > 25 tpy of all HAPs or 10 tpy of a single HAP). Broadly speaking, there are three main differences between the federal NESHAPs program and the proposed air toxics rules: the pollutants regulated, the applicability of rules based on PTE, and the method of regulation.

The first primary difference between the proposed chapter 7012 and the overall NESHAP program is the pollutants regulated. The proposed rule regulates air toxics, including but not limited to the 188 HAPs, whereas the part 61 and part 63 Federal standards are only designed to regulate emissions of the 188 HAPs. Apart from HAPs, Minnesota Statute 162.062 define air toxics as:

- Chemicals reported as released into the atmosphere by a facility located in the state for the Toxic Release Inventory under the federal Emergency Planning and Community Right-to-Know Act, United States Code, title 42, section 11023, as amended;
- Chemicals for which the Department of Health has developed health-based values or risk assessment advice;
- Chemicals for which the risk to human health has been assessed by either the federal Environmental Protection Agency's Integrated Risk Information System; or
- Chemicals reported by facilities in the agency's most recent triennial emissions inventory.

Therefore, the MPCA must regulate more than the HAPs to comply with Minnesota law. The proposed rules use the existing chapter 7005 definition for air toxics (which includes ammonia) and regulate any pollutant that is

known or suspected to cause cancer or other serious health effects or adverse environmental and ecological effects and has an IHB. Of the air toxics included in the proposed rules' screening analysis, the proposed rules regulate approximately 338 air toxics that have inhalation health benchmarks or are part of a compound group that has an inhalation health benchmark.

It is reasonable to regulate air toxics beyond only HAPs because exposure to non-HAP-designated air pollutants pose health risks. Additionally, under Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, subd. 4(a)(1) the MPCA was directed to include the air toxics to be regulated and did not specify that the MPCA must only evaluate HAPs.

The second primary difference between the federal NESHAP standards and the proposed air toxics rules is the applicability of rules based on potential emissions. The most restrictive NESHAP standards apply only to those stationary sources with PTE greater than 25 tpy of all HAPs or 10 tpy of a single HAP. These are the Maximum Achievable Control Technology (MACT) Standards. Area sources with PTE below the 25 or 10 tpy thresholds are subject to less restrictive and less protective Generally Available Control Technology (GACT) standards, or in many cases no standard at all. In contrast, the proposed air toxics rules will apply to all permitted facilities, except those exempted based on the Session Law or other justification. It is reasonable for all non-exempt air toxics facilities to be subject to the same rule requirements because even low emissions of an air toxic can pose risk to public health if the facility has poor dispersion characteristics or is in close proximity to its neighbors. The 25 and 10 tpy thresholds are not necessarily protective of human health.

The third primary difference between NESHAPs and the proposed air toxics rules is the method of regulation of the targeted pollutants (be it HAPs or all air toxics). The Part 63 Federal standards were created based on existing control equipment technology at the time of promulgation and may be updated later by EPA based on risk and changes to control technology. However, since the standards are based on technology and applicable to source categories (*e.g*. refineries, fiberglass manufacturers, halogenated solvent cleaning, *etc*.), the regulation of HAPs (or stand-in pollutants, *e.g.* particulate matter) is done through emission limits or work practice standards that apply broadly across the source category. For example, in 40 CFR pt. 63, subp. RRRRR, a PM limit of 0.008 gr/dscf applies to all existing ore crushing and handling units. The EPA created limits such as this based on available control technology at the time of promulgation but may not have considered the risk posed by the HAP emissions from each ore crushing unit at a facility.

In contrast to the federal technology-based regulations, the proposed air toxics rules regulate air toxics based on facility-specific modeled risk. This risk is quantified by using screening or refined modeling based on actual emissions data, or PTE, respectively. In rare instances, a facility may also conduct ambient air modeling to demonstrate monitored air toxics are below IHBs. Based on modeled risk exceeding acceptable risk levels, an air toxics facility may choose to detail how it plans to reduce actual emissions in a CDP or may detail how it plans to reduce potential emission rates to remain at or below acceptable risk levels in an ATRP. A reduction in potential emissions may require site-specific limits in that air toxics facility's permit.

The overall regulatory approach of the proposed air toxics rules is site-specific based on risk, compared to the technology-based on sector specific approach of Part 63 Federal standards. It is reasonable to use a site-specific approach based on risk because it is likely more protective of public health than a technology-based approach. By having each facility do an analysis based on its total facility emissions of air toxics, the MPCA can have better assurance that the nearby public is not exposed to excessive risk.

Where applicable, the new and revised rules will be submitted to the United States Environmental Protection Agency (EPA) for inclusion in the Minnesota State Implementation Plan (SIP). The SIP is the vehicle for states to demonstrate compliance with the air quality standards of the Clean Air Act. The SIP contains state rules and statutes, as well as site- and area-specific plans, permits, and orders that ensure that Minnesota has the needed authorities to maintain its attainment with the National Ambient Air Quality Standards as required in the Clean

Air Act. Any revisions to these rules or statutes must be submitted to EPA to be approved and incorporated into the SIP. All the contents of Minnesota's SIP can be found in 40 CFR Part 52, Subpart Y, and are federally enforceable.

Difference with other states' standards

The MPCA has reviewed air toxics regulation requirements in neighboring states (North Dakota, Wisconsin, and Iowa) and those in EPA's Region 5, a geographical region spanning Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

Wisconsin's Air Toxics regulation rule (Ch. NR 445, Wis. Adm. Code) was first promulgated in 1988 and revised in 2004. The rule states that the PTE from a facility must be less than thresholds dictated in rule for each Wisconsin-defined hazardous air pollutant (HAP), which is a different list of air toxics than EPA's list of HAPs. There are four different threshold values for each HAP, and the threshold values are dependent on the stack height. The higher the stack height, the higher the threshold value. This is similar to MPCA's screening threshold analysis portion of the rule. An air toxics facility would need to compare its hourly and annual actual emissions for a given stack height and distance to property line to see if the facility is above or below screening threshold values. Unlike Wisconsin's rule, MPCA's proposed rule includes more air toxics. Wisconsin's rule also has an alternative to complying with the threshold values. A facility can calculate the cumulative inhalation impact by taking the annual average air concentration of an air toxic multiplied by the unit risk factor. This cumulative inhalation impact cannot exceed 1×10^{-5}. This is similar to language proposed in MPCA's rule for the cancer risk acceptable risk level. MPCA has set the cancer risk acceptable risk level to 1 in 100,000 (or 1×10^{-5}). Wisconsin also includes time periods of 1-hour, 24-hour, and annual averages for pollutants based on duration of the pollutant's impact. MPCA's proposed rule contains only hourly and annual screening threshold values to simplify the screening process. Additionally, Wisconsin's regulations contain a provision in which, if a facility has to reduce emissions of certain HAPs under EPA's rules, that business does not have to apply the WI DNR's regulations to those same HAPs. Because Wisconsin regulates more forms of HAPs than EPA regulates (dusts, mists, vapors, etc.), the facility must compare the form of the HAPs regulated by the EPA to the emissions it emits to see whether Wisconsin's rules still apply. Similarly, MPCA's rules exempt HAP emissions from sources subject to NESHAPs from the screening threshold analysis. However, the sources may not have had to reduce emissions because of the applicable NESHAPs. Those NESHAP sources will need to be included in an AERA.

Lastly, Wisconsin lists some pollutants multiple times in different forms, including dusts, mists, and vapors. MPCA does not make this differentiation though it acknowledges that there are different forms an air toxic can take depending on how it is emitted. No matter how the pollutant is emitted and the physical form, MPCA uses the same screening threshold values to simplify the screening process.

Michigan's air toxics rules were first promulgated in 1992 (Rules 230, 231, and 232) and revised in 1998 and 2016, and now the air toxics rules include Rules 224 through 233. Michigan's rules state that each source must apply the best available control technology for toxics (T-BACT). After this application of T-BACT, the emissions of the toxic air contaminant (TAC) must not exceed the applicable health-based screening level. These health-based screening levels are values determined by Michigan Department of Environment, Great Lakes, and Energy (EGLE). There are two values for the carcinogen and noncarcinogen, when applicable, for each TAC. There are an initial risk screening level (IRSL) and a secondary risk screening level (SRSL). The SRSL for a carcinogen is the upper-bound lifetime cancer risk of 1 in 100,000. This is similar to language proposed in this rule for the cancer risk acceptable risk level. MPCA has set the cancer risk acceptable risk level to 1 in 100,000 (or 1×10^{-5}). Sources subject to Michigan's air toxic rule are any new or modified process for which an application for a permit to install is required which emits a TAC. This is different than MPCA's proposed rule, as the proposed rule investigates all air toxics facilities and processes that are new and existing. However, Michigan's rule was first promulgated in 1992, so Michigan has been able to assess new processes added to facilities for over 30 years and make sure that these processes do not emit TACs above screening levels. MPCA has not been able to

compare new or existing processes to any threshold value for air toxics because there were no state regulations requiring air toxics information nor required state level threshold or risk values, but MPCA will have this authority to regulate air toxics in the proposed rule.

Ohio's air toxics regulation rule came into effect in August 2006 through an amendment to Ohio Revised Code (ORC) 3704.03(F). The newly amended statute identifies the requirements for reviewing new and modified air contaminant sources with air toxics emissions. One portion of Ohio's rule states that the maximum ground level concentration of an air contaminant (MAGLC) beyond the facility's boundary must not be exceeded. The MAGLC is calculated using threshold limit values (TLV) and data from the facility including hours per day and days per week that the facility is operating. These TLVs come from a list produced by the American Conference of Governmental Industrial Hygienists (ACGIH). The MPCA's proposed rules take this process of calculating the maximum ground level concentration of air toxics one step further to look at cumulative risk posed by those emissions. MPCA proposes that if a facility decides to or must complete an AERA, the facility must model to show that the risk level at the facility is at or below acceptable risk levels rather than just considering emissions concentrations from individual air toxics. The goal for both rules, Ohio's rule and MPCA's proposed rule, is to assess the risk of air toxics through inhalation or other routes of exposure that may be a threat of adverse human health effects. In December 2006, Ohio EPA's list of toxic air contaminants became effective in Ohio Administrative Code (OAC) 3745-114-01. Ohio's list of toxic air contaminants contains more air toxics than the air toxic screening threshold values that MPCA is proposing. Ohio's rule states that the director can add or delete air contaminants from the list, but a public notice must be provided. This is different than MPCA's proposed rule. If MPCA wants to modify or add an additional screening threshold value, then the rule would have to go through the rulemaking administrative process to add or modify these screening threshold values. MPCA may not simply provide a public notice period to change the screening threshold values.

Illinois does not have an air toxics regulatory program but does require the reporting of HAP emissions. Indiana has air toxics regulation rules under Title 326 of the Indiana Administrative Code (326 IAC). These rules include requirements specifically for the control of HAPs. A lot of Indiana's rules for HAPs often refer to and regulate specific industries or industrial process based on NESHAPs. MPCA's rules exempt HAP emissions from sources subject to NESHAPs from the screening threshold analysis. However, the sources may not have had to reduce emissions because of the applicable NESHAPs. Those NESHAP sources will need to be included in an AERA. In addition to rules that regulate emissions, Indiana Department of Environmental Management (IDEM) has authority to require sources to provide additional information about their emissions. This is similar to the recordkeeping portion in MPCA's rules, that the facility must keep records and if the MPCA asks for these records the facility must provide them.

Other states that are not in Region 5, but border Minnesota include Iowa and North Dakota. Iowa does not have a regulations rule but does have a reporting rule for HAPs. North Dakota's air toxics regulations (ND Admin Code 33.1-15-13 and 33.1-15-22) incorporate federal emission standards for HAPs. Under North Dakota Air Pollution Control Rules, Subsection 33.1-15-02-04.3 authorizes the North Dakota Environmental Quality Department to establish, on a case-by-case basis, specific limits of concentrations for other air containments (*e.g*. HAPs). The language in Subsection 33.1-15-02-04.3 states that concentrations can be established to protect human health or wellbeing. This is similar to language throughout MPCA's proposed rule. The purpose of this proposed rule is to help protect human health and the environment.

Consultation with MMB on local government impact

As required by *Minnesota Statute* section 14.131, the MPCA consulted with Minnesota Management and Budget (MMB). The MPCA sent MMB copies of the documents that MPCA sends to the Governor's office for review and approval on the same day that the documents were sent to the Governor's office, before publishing the Notice

of Intent to Adopt. The documents will include: the Governor's Office Proposed Rule and SONAR Form; the proposed rules; and the SONAR. The MPCA will submit a copy of the cover correspondence, and any response received from MMB to the Court of Administrative Hearings (CAH) at the hearing as an exhibit.

Impact on local government ordinances and rules

As required by *Minn. Stat.* § 14.128, subdivision 1, the Agency has considered whether these proposed rules will require a local government to adopt or amend any ordinance or other regulation in order to comply with these rules.

The MPCA has determined that the proposed amendments will not have any effect on local ordinances or regulations. Local governments do not oversee any air permitting or reporting in their ordinances, so there will be no additional burden or effect on them.

Costs of complying for small business or city

Agency determination of cost

As required by *Minnesota Statute* section 14.127, the Agency has determined that the cost of complying with the proposed rules will not exceed $25,000 for any small business or small city during the first year the rules take effect. This determination is based on the timelines and requirements set forth in the proposed rule, an analysis of cost to comply detailed in the "Regulatory Analysis" section of this SONAR, and an assessment of facilities that may meet the definition of a small business or small city.

During the first year after the rule takes effect, two main requirements must be met for some of the facilities: completing an air toxics screening threshold analysis, and submitting the certification, as proposed in part 7012.0200, subpart, item 1, subitem (A). These activities are mandatory during the first year for owners and operators of an existing air toxics facility operating under an individual state permit, under part 7007.0200, or individual federal permit, under part 7007.0250.

Individual state and individual federal facilities possess the most readily available and complete data for the screening threshold analysis spreadsheet. These facilities report actual annual air emissions based on stack or fugitive emission sources and operating hours or throughput, as part of the annual air emissions inventory reporting. This process is very similar to the inputs required for the Screening Threshold for Regulated Air Toxics Analysis (STRATA) spreadsheet. Additionally, in compliance with the Air Toxics Reporting Rule (*Minnesota Rules* chapter 7019), these facilities will have previously completed a comprehensive emissions assessment to include all air toxics emitted. Because much of the information needed will already be readily available to these facilities, the cost of converting existing emissions data into the STRATA and submitting the screening threshold analysis certification would include 5-50 hours of staff time and would not exceed $25,000. Responses from informal comment periods provided a range of estimated hours and costs for facilities completing the screening threshold analysis; "negligible" to "less than 50" hours were estimated by respondents and $5-$10k for smaller facilities to $20k for larger facilities was estimated by respondents to complete the analysis. The respondents who represented regulated parties appeared to primarily work with larger facilities.

A facility may choose to complete the STRATA and submit the screening threshold analysis certification prior to the one-year deadline. If the screening threshold analysis identifies one or more air toxics above screening threshold values, the facility must complete either a compliance demonstration protocol (CDP) or an air emissions risk analysis (AERA). Submitting the screening threshold analysis certification will start the timeline for a CDP or AERA process. A CDP or complete AERA protocol is due within one year of the submittal date of an air toxics screening threshold analysis certification for existing air toxics facilities. A facility may voluntarily submit

toxics screening threshold analysis certification for existing air toxics facilities. A facility may voluntarily submit the certification prior to the one-year deadline and begin the CDP or AERA process during the first year after the rule takes effect, which can increase overall costs to more than $25,000.

The Agency conducted a general analysis of the facilities that have individual state and individual federal permits to identify if any may meet the definition of a small business or small city under *Minnesota Statute* section 14.127. According to this statute, a small business has less than 50 full-time employees and is an entity organized for profit or as a nonprofit, and includes an individual, partnership, corporation, joint venture, association, or cooperative, whereas a small city is defined as any one statutory or home rule charter city that has less than ten full-time employees. Any small business or small city under this definition would qualify for assistance with MPCA's Small Business Environmental Assistance Program (SBEAP). SBEAP helps facilities comply with regulatory obligations and this assistance would also help reduce costs for air toxics facilities that have fewer than 100 employees.

Most facilities with individual state and individual federal permits are not a small business or small city. Based on publicly available data, while some of these facilities appear to have fewer than 50 employees, many are either subsidiaries of larger corporations, own multiple businesses, or have multiple locations that, when combined, exceed the 50-employee threshold. A small number of facilities with individual state and individual federal permits may be a small business per *Minesota Statute* section 14.127. These facilities will have one year to complete the STRATA and submit the screening threshold analysis certification before starting the timelines for a CDP or AERA, if required, keeping costs at or below $25,000 within the first year the rules take effect. No small cities with an individual state or individual federal air permit were identified.

Environmental justice policy

Black, Indigenous, and people of color as well as individuals with a low income living in Minnesota are exposed to higher levels of air pollution relative to other populations. According to the Air We Breathe report published by the MPCA in 2025, these populations face a disproportionate exposure to air pollution due to an increased likelihood of busy roadways, industrial facilities, and other sources of air pollution in their neighborhoods.[63] As described in the *Life and Breath: Twin Cities Metro* report created by the Minnesota Department of Health and MPCA, "[t]he highest estimated rates of air pollution-related death and disease are found in neighborhoods with the largest percentage of Black, Indigenous and People of Color (BIPOC), low-income and uninsured residents, and people who live with a disability".[64] The disproportionate burdens these communities face are a product of Minnesota's history.

The promulgation of federal, state, and local policies, zoning decisions, and permitting practices expanded and reinforced systemic racism.[65] Examples of the practices and actions that debased communities most affected by pollution include, but are not limited to, racial covenants, redlining, and the destruction of Black communities to build Interstates 94 and 35.[66] These actions had cascading effects on the structure of the seven metropolitan counties that continue to persist. People of color lost autonomy and wealth during displacement while finding themselves closer to sources of pollution. The MPCA recognizes that the disproportionate exposure to pollution

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[63] The air we breathe report. Retrieved from: https://www.pca.state.mn.us/sites/default/files/lraq-1sy25.pdf
[64] Minnesota Pollution Control Agency and Minnesota Department of Health. Life and breath – How air pollution affects public health in the Twin Cities. Available at: https://www.lrl.mn.gov/docs/2015/other/150687.pdf.
[65] Mapping Prejudice. Retrieved from https://mappingprejudice.umn.edu/
[66] The Minnesota Paradox by Professor Samual L. Myers Jr. Retrieved from: https://www.hhh.umn.edu/research-centers/roy-wilkins-center-human-relations-and-social-justice/minnesota-paradox.

is a prominent externality of systemic racism and classism, so the MPCA shapes its policy and practices around addressing the effects of the historic inequality. The pollution in these communities is felt by Minnesota residents.

Understanding Minnesota and the United States' history, the MPCA focuses on incorporating environmental justice in the development of policy to reduce pollution and health disparities in communities most at risk. Every Minnesotan—regardless of income, race, ethnicity, color, or national origin—has the right to healthy air, sustainable lands, clean water, and a better climate. Low-income communities, people of color, and Indigenous people, bear the disproportionate impact of pollution and climate change. As these identity markers intersect, the disproportionate impact is often more profound. The air toxics regulations rule attempts to improve the living conditions for people in the seven metropolitan counties, which holds great significance due to the area's population density and varied living conditions.

When undertaking rulemaking, the MPCA considers how the effects of a proposed rule are distributed across Minnesota and works to actively engage all Minnesotans in rule development. The Agency provides a review of the impact and meaningful involvement in this section of the SONAR. These analyses are not required under the APA (*Minn. Stat.* § 14), but are included here for ease of review with the rest of the Regulatory Analysis.

Equity analysis

To further implement the Agency's environmental justice policy, the MPCA evaluated how the proposed rules affect lower-income Minnesotans, people of color, and Tribal communities. This analysis included:

- Evaluating the MPCA's ability to create or incorporate concepts meant to reduce environmental justice area residents' exposure to pollution while staying within the bounds of our statutory authority.
- Evaluating the rule language proposals' ability to fulfill the mandate to establish testing, monitoring, reporting, record-keeping, and inspection requirements for facilities that reflects any exposure of residents of an environmental justice area to the facility's air toxics emissions.
- Discussions with environmental justice area residents affected by the rule to hear how the MPCA can better serve the public's needs. Feedback includes but is not limited to:
  - Eliminating air toxic pollution in the public's neighborhoods.
  - Building trust.
  - Notifying community members of facilities' actions.
  - Repairing past harm.
  - Having more points of involvement.
  - Conversations with other state agencies about how their approach to air toxics and community engagement leads to fair treatment.

The MPCA does not expect the proposed rules to have any negative environmental consequences on the general population or environmental justice communities of concern; in fact, it is expected to have a positive impact on environmental justice communities by reducing air toxics emissions from facilities in the seven metropolitan counties. As stated previously, the intent of the rules is to:

- Regulate air toxics, reducing risk and burden to human health and the environment,
- Improve transparency and accountability,
- Improve air quality in population centers,
- Ensure ambient air quality is better than air quality standards and health benchmarks, and
- Reduce or prevent disproportionate negative impacts from pollution in the seven metropolitan counties.

Considerations for applicability to environmental justice concerns include:

- Approximately 70% of Black, Native, and other people of color in Minnesota live in the seven metropolitan counties.[67]
- Approximately 50% of people at or below 200% the federal poverty level in Minnesota live in the seven metropolitan counties.[68]
- The percentage of Minnesota's communities who live with air pollution over risk guidelines are as follows:
  - 53% of people classified as being low-income.
  - 78% of indigenous people and people of color.
  - 36% of all Minnesotans[69].

Scott County contains the Shakopee Mdewakanton Sioux Indian reservation (Mdewakanton) and Dakota County overlaps with the Prairie Island Indian reservation (Tinta Wita). In addition to these areas, all Tribes in Minnesota have members who live in the seven metropolitan counties. And many Tribes have urban offices to support their members in the area.

The disproportionate burden of air pollution on people of color and people in poverty is a national trend. Locales with a high percentage of people in lower socioeconomic statuses face greater exposure to ambient criteria air pollutants.[70] The injustice of the disproportionate exposure is deepened by lower contributions to air pollution on behalf of communities of color despite their increased exposure.[71] The increased exposure has negative health effects on these communities and decreases their quality of life.[72] [73]

Environmental conditions contribute to the exposure of harmful air pollutants like ground level ozone. Hotter conditions lead to the formation of more ground level ozone. These considerations are especially prevalent in densely populated areas of the Twin Cities where high percentages of low-income, Indigenous, Southeast Asian, African diasporic, and Latinx people live, and the urban heat island effect is pronounced.[74] [75] These conditions with greater exposure to pollution contribute to the fatal and non-fatal impacts people of color and people in poverty face in the Twin Cities as described in MPCA and MDH's Life and Breath Report. [76] Pursuing methods to

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[67] *2020 Census Data. Retrieved from https://data.census.gov/.*
[68] *Minnesota Public Health Data Access. Poverty & income; population characteristics query. Retrieved from: https://data.web.health.state.mn.us/population_query*
[69] *The air we breathe report. Retrieved from: https://www.pca.state.mn.us/sites/default/files/lraq-1sy25.pdf.*
[70] *Hajat, A., Hsia, C., and M. O'Neill. (December 2016). Socioeconomic Disparities and Air Pollution Exposure: A Global Review. Retrieved from https://pmc.ncbi.nlm.nih.gov/articles/PMC4626327/.*
[71] *Tessum, C., Apte, J., Goodkind, A., and J. Hill (November 2018). Inequity in consumption of goods and services adds to racial-ethnic disparities in air pollution exposure. Retrieved from https://www.pnas.org/doi/10.1073/pnas.1818859116*
[72] *Cook, Q., Argenio, K., and S. Lovinsky-Desir. (November 2021). The impact of environmental injustice and social determinants of health on the role of air pollution in asthma and allergic disease in the United States. Retrieved from https://www.jacionline.org/article/S0091-6749(21)01448-2/fulltext*
[73] *Air Quality, Climate and Health. Retrieved from https://www.health.state.mn.us/communities/environment/climate/air.html*
[74] *Reducing Urban Heat Islands: Compendium of Strategies. Retrieved from https://www.epa.gov/sites/default/files/2017-05/documents/reducing_urban_heat_islands_ch_1.pdf*
[75] *Urban Heat Islands in the Twin Cities by Clare Focht. Retrieved from https://storymaps.arcgis.com/stories/515914dfef5743ebb4a853046c1597be*
[76] *Life and Breath: Twin Cities Metro Area Data. Retrieved from https://data.web.health.state.mn.us/documents/20147/0/LIFE+and+BREATH+III+METRO+BRIEF-FINAL.pdf/708c1326-4d48-d2a0-64e6-6ae7f6e2995f*

make residents aware of these impacts and reducing the burden these residents face is essential to improving public health.

The equity analysis indicated that communities that are disproportionately burdened with air pollution are anticipated to benefit from the proposed rule, although their air pollution exposure will likely remain higher than the statewide average. The air toxics regulations rule may decrease pollution and increase awareness of facility operations in the environmental justice areas in the seven metropolitan counties. These positive externalities on environmental residents' health stem from the proposed Air Toxics Reduction Plan (ATRP), notification process, and record keeping of the composition of the neighborhood if they are in an environmental justice area. The reduced pollution and increased transparency will begin to close the gap in air pollution exposure between communities of concern for environmental justice and the rest of the state but is only one step among many that needed to achieve equitable air quality.

Meaningful involvement

In order to meet the directive to strive for meaningful involvement, the MPCA works to seek and facilitate the involvement of those potentially affected by the proposed rule, particularly those populations that have historically not been as engaged in the public process.

As described in the Public Participation and Stakeholder Involvement section, the rulemaking process provided many opportunities for stakeholder involvement throughout the development of the proposed rules. The Public Participation and Stakeholder Involvement section of the SONAR displays these instances.

The MPCA made a concerted effort to engage individuals experiencing the disproportionate impact of pollution in the seven metropolitan counties. We believe our stakeholder outreach has ensured that many affected communities are aware of the rulemaking. Additionally, during the formal public comment period, all interested and affected parties may submit comments on the proposed rules.

Part of the MPCA's outreach focused on trying to hear from communities that are potentially impacted by the rule. The community engagement team conducted one-on-one conversations with residents of the seven metropolitan counties. MPCA staff also tabled and attended events within MPCA-defined environmental justice areas in the seven metropolitan counties to hear from stakeholders about how the rule may impact them. In addition to outreach conducted in environmental justice areas, the MPCA made virtual informational sessions accessible through posting the recorded webinars on YouTube as well as on MPCA's rulemaking webpage.

Tribal policy

This section discusses how the Agency's policies regarding Tribal engagement and consultation were considered in this rulemaking. This analysis is not required under the APA (*Minn. Stat.* § 14), but is included here for ease of review with the rest of the Regulatory Analysis.

The MPCA has a policy to coordinate and consult with Tribal governments and offer opportunities for early input on actions taken by the MPCA. MPCA staff briefed local Tribal environmental professionals at their quarterly Minnesota Tribal Environmental Council meeting February 22, 2024 on this proposed rule and sought input from them. MPCA provided them with information on the Session Law and provided emails on the rulemaking process and next steps. The Tribal Environmental Professionals and Tribal leaders identified by each Tribe as their contacts for rulemaking or air permitting were sent emails October 30, 2023 and October 2, 2024.

The October 30, 2023 email contained an invitation to ask questions about the rulemaking, the rulemaking webpage, list of counties where the rules apply, and contact information for the MPCA Project Coordinator and Rule Coordinator.

The October 2, 2024 email contained the following:

- An invitation to provide informal feedback on the rulemaking.
- Web address to the informal comment period.
- Web address to the most recent webinar.
- Web address for the MPCA rulemaking webpage.
- List of counties where the rules apply.
- Contact information for the MPCA Project Coordinator and Rule Coordinator.

Consultation was not requested by any of the Tribes nor the MPCA commissioners' office on this rulemaking.

Climate action

Addressing climate change and working to mitigate its effects presents us with an opportunity to strengthen our economy, improve our health, and create a more equitable Minnesota for everyone in response to the coming challenges. To guide this work, the State of Minnesota has developed a Climate Action Framework[77] that sets a vision for how our state will address and prepare for climate change. It identifies immediate actions we must take to achieve our long-term goal of a carbon-neutral, resilient, and equitable future for Minnesota.

This section provides an analysis of how this rulemaking will help the MPCA address that goal, which is not required under the APA (*Minn. Stat.* § 14), but is included here for ease of review with the rest of the Regulatory Analysis.

In the Minnesota Climate Action Framework, goal number 6 focuses on a clean economy. The goal is to build a thriving carbon-neutral economy that produces goods and services with environmental benefit and equitably provides family-sustaining job opportunities. In the challenges listed for this goal, the framework stated that "Minnesota's economic activity produces GHG emissions and other air pollutants". These "other air pollutants" would be the air toxics emitted by facilities. One of the priority actions for this goal is to assist businesses in moving towards sustainability and part of the vision for this goal is to have Minnesota companies sell sustainable products made with green processes. If an air toxics facility is above screening threshold values, it will either have to complete a CDP or an AERA. By completing either one of these, the facility may pursue operational changes. These changes could include using different materials or using more green processes to decrease the facility's air toxic emissions. These changes to the facility could aid in the goal of building a clean economy.

Notice plan

Minn. Stat. § 14.131, requires that an agency include in its SONAR a description of its efforts to provide additional notification to people or classes of persons who may be affected by the proposed rule or must explain why these efforts were not made.

The MPCA uses GovDelivery, a self-subscription service for interested and affected parties to register to receive rule related notices and other information. Request for notification by US Mail is also available. Rule projects are listed on the Agency's public rulemaking docket. Once projects are active, a self-subscription GovDelivery list for that specific rule is established and an electronic notice is sent to all subscribers of the MPCA's New Rulemaking list, encouraging everyone interested in the topic of the new project to subscribe to its list. The webpage for each rulemaking project also includes a link to subscribe to the rule-specific GovDelivery list.

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[77] *Climate Action Framework. Retrieved from https://climate.state.mn.us/minnesotas-climate-action-framework.*

In addition, the Agency purchases email lists from the Association of Minnesota Counties and the League of Minnesota Cities to reach out to new government officials who may not be familiar with the MPCA's GovDelivery service. Examples of these officials include Commissioners, County Board Chairs, Planning and Zoning Administrators, Solid Waste Officers, City Managers, Administrators, Assistant Administrators, Clerks, Deputy Clerks, and other chief appointed city officials. The MPCA periodically sends an email inviting these individuals to subscribe to topics that interest them. The most recent copy of this message was sent to the listed government officials on June 3, 2025.

Required notice

Request for comments

For rulemaking, the first notice required by *Minn. Stat.* § 14.101 is the Request for Comments (RFC). On July 24, 2023, the MPCA published a notice requesting comments on planned new rules governing air toxics regulations, *Minnesota Rules*, chapter 7012, with possible amendments to chapters 7002, 7005, 7007, 7017, and 7019. To inform the public of the RFC, the MPCA notified interested parties who are subscribed to the "Rulemaking: Air Toxics Regulations Rule" Rulemaking GovDelivery list the same day it was published. The GovDelivery notice was sent to a combined 113 subscribers to these lists.

The MPCA maintains a list of the 11 federally recognized Tribes in Minnesota and edits the list quarterly. The MPCA provided specific notice of the RFC to the designated Tribal contacts for the 11 federally recognized Tribes in Minnesota. This electronic notice contained the same information about the RFC in the GovDelivery notice and was sent on the same day.

The MPCA posted the RFC, the same day it was published in the *State Register*, on the MPCA's Public Notices webpage. (NOTE: The MPCA site has been reconfigured in the time since that RFC publication, so rulemaking notices are now posted to the Proposed Rules section of our Get Engaged page at https://www.pca.state.mn.us/get-engaged/proposed-rules; the original Public Notices webpage now redirects here.)

The MPCA posted information about these proposed rules and amendments [and technical support documents], the same day the RFC was published in the *State Register*, on the MPCA's rule-specific webpage at https://www.pca.state.mn.us/get-engaged/air-toxics-regulations.

Notice of intent to adopt and other required notifications

On May 18, 2026, the MPCA is publishing a Notice of Intent to Adopt Rules requesting comments on planned rule amendments to *Minn. R.* chapters 7007 and 7012, in the *State Register*. The same day, the Notice and SONAR will be posted with the proposed rule text on the MPCA's rule-specific webpage at https://www.pca.state.mn.us/get-engaged/air-toxics-regulations; the MPCA will also update its Proposed Rules page at https://www.pca.state.mn.us/get-engaged/proposed-rules to include a link to the CAH's eComments listing for this rule.

The Agency is required under *Minn. Stat. § 14* to identify and send notice to several groups. The steps the MPCA has taken or will take to meet those statutory requirements are laid out in detail below.

- The MPCA intends to send an electronic notice with a hyperlink to electronic copies of the Notice, SONAR and the proposed rule amendments to all parties who have registered with the MPCA for the purpose of receiving notice of rule proceedings, as required by *Minn. Stat*. § 14.14, subd. 1a, on the date the Notice is published in the *State Register*. Any parties within this group that have requested non-electronic notice will receive copies of the Notice and the proposed rule amendments in hard copy via US Mail at least 33 days before the end of the comment period.

- The MPCA intends to send a cover letter with a hyperlink to electronic copies of the Notice, SONAR and the proposed rule amendments to the chairs and ranking minority party members of the legislative policy and budget committees with jurisdiction over the subject matter of the proposed rule amendments, and to the Legislative Coordinating Commission, as required by *Minn. Stat.* § 14.116 (or paper copies of the same documents if a legislator prefers to receive them that way). The timing of this notice will occur at least 33 days before the end of the comment period to account for the required 30 days plus an extra three days for delivery via US Mail to any legislators who prefer paper copies. This statute also states that if the mailing of the notice is within two years of the effective date of the law granting the Agency authority to adopt the proposed rules, the Agency must make reasonable efforts to send a copy of the Notice and SONAR to all sitting legislators who were chief House and Senate authors of the bill granting the rulemaking authority. Because the Legislature directed the MPCA to conduct this rulemaking in 2023 under Minn. Session Law - 2023, H.F. No. 2310, Chapter 60, article 8, section 5, which falls outside of this two-year requirement, the Agency will also send these documents by email or US Mail to any such sitting legislators at least 33 days before the end of the comment period.
- Consistent with *Minn. Stat.* § 14.131, the Agency will send a copy of the SONAR to the Legislative Reference Library when the Dual Notice and Notice of Intent to Adopt Rules is published.
- *Minn. Stat.* § 14.111 requires the Agency to provide the Commissioner of Agriculture with a copy of the proposed rule changes no later than 30 days before publication of the proposed rule in the *State Register*, if the rule will affect farming operations. This requirement does not apply because the proposed amendments will not have any effect on farming operations in Minnesota. Because this rule is expected to not affect farming operations, the MPCA will not notify the Commissioner of Agriculture.
- *Minn. Stat*. § 115.44, subd. 7 requires the MPCA to send notice to the governing body of each municipality touching the waters for which standards (authorized under *Minn. Stat.* § 115.44) are sought to be adopted. The proposed amendments do not involve standards authorized under *Minn. Stat.* § 115.44.
- *Minn. Stat.* § 116.07, subd. 7(j) requires the MPCA to send notice to the members of legislative policy and finance committees with jurisdiction over agriculture and the environment before final adoption of any new rules or amendments authorized under *Minn. Stat*. § 116.07, subd. 7. The proposed amendments do not involve new rules or amendments authorized under *Minn. Stat*. § 116.07, subd. 7.

Additional notice plan

Minn. Stat. § 14.14 requires that in addition to its required notices:

"each agency shall make reasonable efforts to notify persons or classes of persons who may be significantly affected by the rule being proposed by giving notice of its intention in newsletters, newspapers, or other publications, or through other means of communication."

The MPCA considered these statutory requirements governing additional notification and as detailed in this section, intends to fully comply with them. In addition, as described in the Public Participation section within this SONAR, the MPCA has made reasonable efforts thus far to notify and involve the public and stakeholders in the rule process, including various meetings and publishing the RFC.

The MPCA intends to request that the Court of Administrative Hearings review and approve the Additional Notice Plan, pursuant to Minn. R. 1400.2060. The MPCA's plan to notify additional parties includes the following:

1. Publish its Notice of Intent to Adopt Rules in the *State Register* and on the MPCA's rule webpage at: https://www.pca.state.mn.us/get-engaged/air-toxics-regulations.

2. Provide an extended comment period. The MPCA will provide at least a 60-day comment period on the proposed rule amendments. Extending the comment period beyond the 30-day minimum provides additional opportunity for potentially interested parties to learn about the proposed rule amendments and submit comments or hearing requests.
3. Provide specific notice to Tribal authorities. The MPCA maintains a list of the 11 federally recognized Tribes in Minnesota and edits the list quarterly. The MPCA will send specific electronic notice to each of the designated air quality Tribal contact persons for Minnesota Tribal Nations. The notice will be sent on or before the day the proposed rule amendments are published in the *State Register*, and it will have a hyperlink to the webpage where electronic copies of the Notice, proposed rule amendments, and SONAR can be viewed. Note: some Tribal contacts may already subscribe to receive GovDelivery notices about this rulemaking.
4. Provide specific notice to permittees potentially affected by the proposed rules. The notice will be sent to the permittees on or near the day that the proposed rule amendments are published in the *State Register*. The MPCA will send notice electronically to each permittee that includes a hyperlink to the webpage where the Notice, proposed rule amendments, and SONAR can be viewed.
5. Provide specific notice to the three entities, The Minnesota Chamber of Commerce, the Metropolitan Council, and the American Petroleum Institute, that submitted comments during the RFC public comment period.
6. Provide specific notice to associations and environmental groups. The notice will be sent electronically to the following associations and environmental groups on or before the day the proposed rule amendments are published in the *State Register*, and it will have a hyperlink to the webpage where electronic copies of the Notice, proposed rule amendments, and SONAR can be viewed. Note: some members of these entities may already subscribe to receive GovDelivery notices about this rulemaking.
    - Aggregate & Ready-Mix Association of Minnesota;
    - Alliance of Automotive Service Providers;
    - America Coatings Association;
    - American Forest and Paper Association;
    - American Lung Association;
    - Association of Metropolitan Municipalities;
    - Association of Minnesota Counties;
    - Association of Woodworking and Furnishing Suppliers;
    - Bottineau Neighborhood Association;
    - Center for Earth, Energy, & Democracy;
    - Chemical Coaters Association;
    - Clean Air Minnesota;
    - Clean Up the River Environment;
    - Clean Water Action;
    - Clean Water Legacy;
    - Clean Water Minnesota Isaak Walton League Minnesota Chapter;
    - Coalition of Greater Minnesota Cities;
    - Complete Health Environmental and Safety Services;
    - Conservation Minnesota;

- East Philips Neighborhood Institute;
- Environmental Initiative;
- Food & Water Watch;
- Hamline Midway Coalition;
- Iron Mining Association;
- Land Stewardship Project;
- League of Minnesota Cities;
- Metro Blooms;
- Metropolitan Airport Commission;
- Metropolitan Council;
- Minnesota Asphalt Pavement Association;
- Minnesota Association of Metal Finishers;
- Minnesota Association of Small Cities;
- Minnesota Association of Townships;
- Minnesota Bio-fuels Association;
- Minnesota Association of Soil and Water Conservation Districts;
- Minnesota Association of Watershed Districts;
- Minnesota Center for Environmental Advocacy;
- Minnesota Chamber of Commerce;
- Minnesota City/County Management Association;
- Minnesota Corn Growers Association;
- Minnesota Department of Employment and Economic Development Small Business Development Centers;
- Minnesota Environmental Partnership;
- Minnesota Environmental Science and Economic Review Board;
- Minnesota Farm Bureau;
- Minnesota Milk Producers Association;
- Minnesota Propane Association;
- Minnesota Turkey Growers Association;
- Printing Industry Midwest;
- Sierra Club North Star Chapter;
- Voyageurs Conservancy; and
- All facilities in Minnesota with an air permit

Note that some members of these entities may already subscribe to receive GovDelivery notices.

7. Provide specific notice to EPA Region 5. The notice will be sent to EPA Region 5 on or before the day the proposed amendments are published in the *State Register*, and will have a hyperlink to the webpage where electronic copies of the Notice of Intent to Adopt Rules, proposed rule amendments, and SONAR can be viewed.
8. Provide notice in the MPCA *Air Mail* electronic newsletter. The MPCA uses an electronic newsletter to provide updates and information about air-related rulemakings. The MPCA will provide notice in its *Air Mail*

newsletter providing a hyperlink to the webpage where electronic copies of the Notice of Intent to Adopt Rules, proposed rule amendments, and SONAR can be viewed.

9. Continue to post rulemaking updates and documents including the proposed rule amendments and SONAR on the Air Toxics Regulations webpage at: https://www.pca.state.mn.us/get-engaged/air-toxics-regulations with schedules for hearings and any other public meetings, new documents including timely responses to comments received during this Notice's public comment period, and other relevant documents and information.

The MPCA believes that by following the steps of this Additional Notice Plan, and its regular means of public notice, including early development of the GovDelivery mail list for this rulemaking, publication in the *State Register*, and posting on the MPCA's webpages, the MPCA will adequately provide additional notice pursuant to Minn. Stat. 14.14, subd. 1a.

On [date], the Agency received confirmation from the Court of Administrative Hearings (CAH) that these steps meet the notice requirements for parties or classes of people who may be affected by the proposed amendments to these rules under *Minn. Stat.* § 14.14, subd. 1a.

Authors, witnesses, and exhibits

Authors

The primary authors of this SONAR are as follows:

- Cassandra Meyer, Program Lead, Engineering Specialist Senior, Environmental Analysis and Outcomes Division, MPCA
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- Derek Nelson, Engineer, Industrial Division, MPCA
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- Bennett Olupo, Senior Community Engagement Specialist, Operations Division, MPCA

Witnesses

1. The Agency anticipates having the following listed authors testify as hearing witnesses in support of the need for and reasonableness of the rules.
2. Kayla Billett is an MPCA Staff Attorney and will introduce the required jurisdictional documents into the record.
3. Cassandra Meyer is the MPCA Air program lead for this rule and will provide the Agency's summary presentation.
4. Erica Backstrom is the MPCA Rule Coordinator and will testify on any Minnesota Administrative Procedures Act process questions related to this rulemaking project.
5. Annastasia Sienko is the MPCA air toxics risk assessment lead for this rule and will testify on any risk assessment and modeling questions related to this rulemaking project.
6. Brenda Vaness is the MPCA air quality compliance and enforcement lead for this rule and will testify on any compliance and enforcement questions related to this rulemaking project.
7. Derek Nelson is the MPCA air quality permitting lead for this rule and will testify on any air permitting questions related to this rulemaking project.

Exhibits

In support of the need for and reasonableness of the proposed rules, the Agency anticipates that it will enter the following exhibits into the hearing record:

- S-1: Other states' air toxics regulations.
- S-2: Screening Threshold Development.
- S-3: Inhalation Health Benchmarks (IHBs).
- S-4: Screening Threshold for Regulated Air Toxics Analysis (STRATA) Spreadsheet

Conclusion

In this SONAR, the MPCA has established the need for and the reasonableness of each of the proposed amendments to *Minnesota Rules*, chapter 7007, and for the proposed new rules, chapter 7012. The Agency has provided the necessary notifications and documented its compliance with all applicable administrative rulemaking requirements of Minnesota statute and rules.

Based on the foregoing, the proposed rule amendments and proposed new rules are both needed and reasonable.

Katrina Kessler

Katrina Kessler, P.E.
Commissioner
Minnesota Pollution Control Agency

April 30, 2026
Date

S-1. Other states' air toxics regulations

The MPCA's goal is to develop rules and guidance to create an air toxics regulatory program and issue air quality permits that are health protective for air toxics. Air Toxics regulations of some type are included in the rules and statutes of most other states.

States' air toxics programs have a number of common features, identified below in Table 1. Most rely on air toxics evaluation during permitting actions, because it allows a facility and the state to tailor compliance requirements and ensure adequate emission reductions. Minnesota can develop an air toxics regulatory program to achieve significant emission and risk reductions based on successful programs in other states.

Table 1. Common Components of an Air Toxics Rule

Component	Description	Example States
Air toxics emissions reporting	Air toxics emissions are required to be reported to the agency at a specific frequency	NJ - through community right to know, IA, ND, CA, NY, IL, MI, IN, OR, TX, WI
Risk thresholds	State statute or agency rule identifies health thresholds facilities must meet for all pollutants (*e.g*. 1 in 1,000,000 facility wide)	OR, CA, MI, WI, WA, NH, MA, TX, GA, WA, SC, NC, CT, NY, RI, OH, NM
Rule-based state specific air levels	Health benchmarks are in rule and are similar to ambient air quality standards	CA, MI, WI, OR, WA, NH, MA, GA, WA, SC, NC, CT, NY, RI, OH, NM
Rule-based air toxics analysis	A modeling or monitoring analysis is required to determine if air levels are above rule-based health benchmarks	CA, OR, GA, MD, MI, NJ, TX, NH, MA, SC, NC, CT, NY, RI, NM
Mandatory communication with fenceline communities	At certain air levels, specific communication or engagement is required	CA, CT, OR

States have different scopes for including facilities in air toxics programs:

- Tiered levels of analysis and future action based on facility emissions.
- Exempt facilities below set emission thresholds.
- Exempt emission sources with Maximum Achievable Control Technology (MACT) or National Emissions Standards for Hazardous Air Pollutants (NESHAPs) control standards.
- Exempt pollutants regulated by another state government agency (*e.g*. Department of Agriculture for pesticides).
- Use of occupational health values to identify risks.
- State standards of performance to control emissions of high-risk emission source categories not regulated by NESHAPs.
- Requirement of toxics best available control technology (t-BACT).
- Multi-pathway air toxics assessment for pollutants with deposition and food chain risks.

S-1. Other states' air toxics regulations

Table 2. Neighbor states and EPA Region 5 states air toxics rules details

State	EPA region	Neighbor state (y/n)	Air toxics reporting (y/n)	Risk thresholds (y/n)	Rule-based state specific air levels (y/n)	Rule-based air toxics analysis (y/n)	Mandatory communication with fenceline communities (y/n)	Multi-pathway assessment (y/n)	tBACT requirements (y/n)	Tiered approach (y/n)	Other notes on format of rules (technology- or risk-based standards, *etc*.)
WI	5	y	y	y	y	n		y	y	y	WI divides emitters into 2 groups, regular and intermittent. The differences are defined by SIC code. Facilities with applicable MACT standards, that were not avoided with permit limits, do not have to review applicability of state air toxics rules. Rule lists 3 tables based on type of facility. Each table has threshold rates for pollutants, with averaging rates and stack heights. Some pollutants are listed multiple times in different forms (dusts, mists, vapor).The table also includes common names for chemicals. If potential emissions are over emission thresholds in rule table: • Choose compliance options • Certify compliance • Keep records • Determine whether a permit is needed (NR 406/NR 407) • Determine whether air toxics emissions need to be reported to the Air Emissions Inventory (NR 438) If potential emissions are equal to or under the table thresholds: • Keep records If the facility has an operation permit and reportable emissions, it will be subject to the annual emission fee (NR 410). Any emissions exceeding any applicable threshold in rule must be controlled. Must meet standard or use controls. Can also – • Substitute product • Implement operational controls • Model o Risk less than 1 in 1,000,000 for each carcinogen o Risk less than 1 in 100,000 for ALL carcinogens (includes exempt emissions) Hazardous air contaminants from agricultural waste are exempt. There are specific rules for compression ignition engines and coal handling. Related to corrective actions – require notice for "air spills" Safe Harbor provision - If facility exercised due diligence to ID emissions and later found emissions over thresholds, would not be penalized. Permitting related – If they do not need to comply with control requirements for carcinogens, they can self-certify rather than amend operation permit or obtain construction permit. Requirements for agency to consult with the Dept. of Health Services - For alternative emission limits in permits - For periodic report for listing, de-listing, and setting regulatory thresholds, standards, and control requirements - Establishing limit for any hazardous air contaminant not listed in tables

S-1. Other states' air toxics regulations

State	EPA region	Neighbor state (y/n)	Air toxics reporting (y/n)	Risk thresholds (y/n)	Rule-based state specific air levels (y/n)	Rule-based air toxics analysis (y/n)	Mandatory communication with fenceline communities (y/n)	Multi-pathway assessment (y/n)	tBACT requirements (y/n)	Tiered approach (y/n)	Other notes on format of rules (technology- or risk-based standards, *etc.*)
MI	5	n	y	y	y	y	n	y?	y		Michigan's air toxics rules only apply to "permits to install" or construction permits. There are two ways in which air toxics are limited. The first is individual emissions units can be subject to t-BACT. This functions similar to the PSD BACT program and results in emissions unit-specific limits in the permit. There are exemptions for non-carcinogen pollutants below certain thresholds, emissions units that are already subject to BACT/LAER, emissions units subject to a NESHAP standard, small engines and turbines, and small natural gas equipment The second, besides t-BACT at the emissions unit level, the project as a whole needs to comply with health screening levels for each toxic air contaminant (TAC). There are three options to demonstrate compliance with health screening levels: one is the use of only emissions data with no other site-specific data, another option is the use of emissions data with some site-specific data, and the least conservative option is ambient air modeling. There are again exceptions to the screening requirement, similar to those for t-BACT There are rules specifying how the screening levels for each pollutant are to be developed and all screening levels are on EGLE's website. Values can be modified/pollutants added at any time, effective immediately. But subject to public comment after effective
OH	5	n	n	y	y	y	n	n	n	y	Operating permits do not trigger this rule, any unit subject to a federal NESHAP does not trigger the rule, anything subject to a permit-by-rule does not trigger the rule, anything subject to BACT or LAER is exempt for that pollutant. Long list of exempt processes (fuel combustion, grain, storage tanks, *etc.*), many with emission thresholds (*e.g.*, 25 tpy of VOC for printers) that look similar to our registration permit rules in terms of thresholds, records, *etc*. are in the rule. Specifics on how to do the analysis (TLVs, modeling requirements, *etc*.) is in a guidance document, but the guidance is incorporated by reference, so they would need to do rulemaking to change it.
IN	5	n	y	n	n	n					Much of IN rules incorporate federal standards (Pt 61 & 63). Requirements are focused on given industry types and at times specific facilities. If numeric limits were included, did not compare to see if federal limit was used or if state adopted something more stringent.
IL	5	n	y	n	n	n		n	n	n	Requires reporting of HAPs but does not have an air toxics regulatory program.
IA	7	y	y	n	n	n	n/a	n/a	n/a		This is about the reporting of air toxics: Aside from HAPs, Iowa requests a few air toxics to be reported, but this is not required unless emitted in amounts above 10 tons (at both minor and major facilities): hydrogen cyanide, hydrogen sulfide, reduced sulfur compounds, fluoride, and sulfuric acid mist --For minor facilities, Iowa requires reporting of CAPs and HAPs for one-third of the state every three years and only for the most recent year --For Title V facilities, Iowa requires CAPs and HAPs to be reported every year.
ND	8	y	y	y	n	n	n	n	n		Policy has been in place since 1989, pre-Part 63. State is looking to do away with due on liability concerns if not applying as required. Used NIOSH worker safety standards as basis and divided to further account for general public and sensitive populations. Policy was required for all permitted sites. If new facility over the threshold, they would do modeling and then either need to complete a further health assessment or make alterations such as raise stack, take operating limitations, *etc*. Requirements and restrictions were site specific and incorporated into each air permit. Pollutants are stated in policy which reference NIOSH. All assessments were made based on nearest off-site affected location at the time which did not account for future development. Was once in, always in approach which meant future projects carry greater burden.

S-1. Other states' air toxics regulations

Table 3. Other states' air toxics rules reviewed

State	EPA Region	Neighbor state (y/n)	Air toxics reporting (y/n)	Risk thresholds (y/n)	Rule-based state specific air levels (y/n)	Rule-based air toxics analysis (y/n)	Mandatory communication with fenceline communities (y/n)	Multi-pathway assessment (y/n)	tBACT requirements (y/n)	Tiered approach (y/n)	Other notes on format of rules (technology- or risk-based standards, etc.)
CT	1	n		y	y	y	y	n	y		Hazard Limiting Values (HLV)'s for HAPs for 8-hr and 30-minute averaging times listed in Tables 29-1, 29-2, and 29-3. Can not emit HAPs listed in Table 29-1 from a stationary source at a concentration at the discharge point in excess of the maximum allowable stack concentration. Unless the stationary source is operating in accordance with terms or a permit that the Commissioner specifically allowed. If a stationary source emits or may emit HAPs in compliance with the Maximum Allowable Stack Concentration (MASC), but the Commissioner determines through ambient monitoring that the HLV is exceeded, then the Commissioner may require that the concentration of HAPs be further reduced. Testing may be required by the Commissioner if the source may exceed any applicable HLV or AAQS. Different equations to calculate the MASC based on stack height. If a commissioner deems emissions from a HAP are likely to result in a severe and imminent health hazard, the owner must submit emissions no later than 48 hrs after a written notice form the Commissioner.
NH	1	n		y	y	y	n	n	n	y	Risk based approach. Applies to all facilities that emit a regulated air toxic. All facilities emitting air toxics are required to obtain a permit. Some facilities with PTEs/actual emissions below certain levels are exempt from needing a permit. Some industry sources are exempt (*i.e*. auto body shops, warehouses, *etc*.) Exempts natural gas/fuel oil sources. Facilities required to comply with ambient air levels via modeling, de minimis approach, or in-stack concentrations.
MA	1	n		y	y	y					
RI	1	n	y	y	y	y	n	n	n	n	All permits that are to construct, install or modify should follow this rule. Cannot issue a permit if the emissions from the proposed facility cause an impact at or beyond the property boundary which exceeds Acceptable Ambient Levels found in Table I. Also, the proposed facilities are designed to achieve the lowest achievable emission rate (LAER), and is not to exceed the Acceptable Ambient Levels with LAER. Owner or operator of a stationary source which emits a listed air toxic in an amount greater than the Minimum Quantity must apply for registrations. For each listed toxic air contaminant greater than the Minimum Quantity, the facility must submit: the name of the substance, the process that emits it, the amount of substance used at the facility during the previous calendar year, the amount of the substance emitted by the facility during the previous calendar year, and the method used to calculate emissions from the facility. If substance is in a mixture, provide SDS. Able to issue an operating permit if the emissions from a chemical are above Acceptable Ambient Levels and exceeds the Acceptable Ambient Levels with LAER. Director is able to exempt facilities where the impacts from the facility are not accessible to the public, to allow adjusted annual or 24-hr average Acceptable Ambient Level to determine acceptability, and require 1-hr and 24-hr average impacts in an area where the public has unrestricted access.

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State	EPA Region	Neighbor state (y/n)	Air toxics reporting (y/n)	Risk thresholds (y/n)	Rule-based state specific air levels (y/n)	Rule-based air toxics analysis (y/n)	Mandatory communication with fenceline communities (y/n)	Multi-pathway assessment (y/n)	tBACT requirements (y/n)	Tiered approach (y/n)	Other notes on format of rules (technology- or risk-based standards, etc.)
NY	2	n	y	y	y	y	n	n	y	y	Required for any registration or permit application: for contaminants on the High Toxicity Air Contaminants (HTAC) list identified in Table 2 of NY's rules, the applicant must submit hourly emission rate potential (ERP). For non-HTAC for which the actual emissions are greater than 100 lbs per year facility-wide, will need to submit hourly ERP. Actual annual emissions rates less than 100 lbs per year after a control device follow a different provision. Other information in the submittal must include the chemical name and CAS number, SDSs, a list and description of process emissions sources, a description of all processes and their emission sources and products, a list of Emission points with parameter information, and any other items to support the application (AERMOD, T-BACT, BACT, etc.) Contaminants were given an Environmental Rating (A,B,C, or D) depending on their toxicity. So high toxicity would give an A Rating. Then based on the rating the degree of air cleaning required would be determined based on the lbs/hr of the contaminant and the ER. So, a higher toxicity contaminant that emits a lot per year would need to have a higher degree of air cleaning (around 99%). Air dispersion modeling can be used to determine the predicted maximum annual and short-term off-site air concentrations.
NJ	2	n	y	y	y	y	y	y	y	y	– The state's first air toxics program included 11 toxic volatile organic substances (TVOS) and required that sources emitting TVOS register with the NJDEP and demonstrate they were using state of the art controls. Since then, NJDEP has expanded the program to include risk assessment, federal regulations, and other NJDEP programs, all of which contribute to the continued reduction of air toxic emissions. NJ air toxic regulation program is divided into the following categories: 1. Permit review: combination of control technology and risk assessment requirements evaluated in the air permitting process; 2. Voluntary reductions: encourage facilities to reduce air toxic through pollution prevention; 3. Other air pollution control programs: reductions that result from direct regulation or as an added benefit of control programs that address ozone precursors, particulate matter, and criteria pollutants; 4. Air Toxics Initiatives: special projects and ongoing programs. When a facility applies for a permit for a new or modified source of emissions it is required to use state-of-the-art (SOTA) control techniques. These techniques generally include performance limits that are based on air pollution control technology, pollution prevention methods, and process modifications or substitutions that will provide the greatest emission reductions that are technologically and economically feasible. These technology requirements have been a part of the program for over thirty years and initially addressed emissions of criteria pollutants. NJ combines control technology requirements and risk assessment to address emissions of air toxics from stationary sources. Many MACT standards have been incorporated into the NJ program, and in some cases NJ requirements are more stringent than MACT standards. Some specific types of sources that have upgraded technology in recent years include hospital incinerators, dry cleaners, and gas stations. The programs require most large sources of air toxic emission to provide a document including the risk assessment to the public. The state requires NJDEP permit reviewers to use a screening process worksheet to evaluate the risk of small air toxics sources. Links: https://dep.nj.gov/airplanning/airtoxics/njdep-air-toxics-program/, https://dep.nj.gov/airplanning/airtoxics/njdep-air-toxics-program/#1611784695732-125bc446-05ab
MD	3	n	y	y		y			y		
GA	4	n	n	y	y	y		y		y	
SC	4	n	Y	y	y	n	n	n	n		https://scdhec.gov/sites/default/files/media/document/R.61-62.5_Std.8.pdf

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State	EPA Region	Neighbor state (y/n)	Air toxics reporting (y/n)	Risk thresholds (y/n)	Rule-based state specific air levels (y/n)	Rule-based air toxics analysis (y/n)	Mandatory communication with fenceline communities (y/n)	Multi-pathway assessment (y/n)	tBACT requirements (y/n)	Tiered approach (y/n)	Other notes on format of rules (technology- or risk-based standards, etc.)
NC	4	n	Y	Y	Y	Y	n	n	n		North Carolina has a health-based toxic air pollutant control program that regulates 91 Toxic Air Pollutants (TAPs). The program focuses on chemicals emitted by stationary sources. Modeled levels of TAPs at the source property boundary must not exceed established health-based acceptable ambient levels (AALs). AALs are recommended by the Secretary Science Advisory Board on Toxic Air Pollutants (SAB) to the North Carolina Division of Air Quality (DAQ) and are used exclusively in air permitting, and for calculating acceptable toxic pollution emission rates (TPERS) for permits. Industrial stationary sources must not emit concentrations of TAPs that exceed the AAL at or beyond the source property boundary. Dispersion models are used to confirm adherence to AALs beyond property boundary. The air toxic program rules only apply to new or modified facilities. Facilities are required to conduct a screening analysis (not modeling). If they exceed a TPER then they are required to do a modeling demonstration. The TPER includes vertical unobstructed stacks or bent stacks. The rules only apply to units/pollutants not already covered by Best Available Control Technology (BACT) and Good Air Control Technology (GACT). The state thinks having the regulatory rules based on health-based and having a Science Advisory Board involved works well. The board consists of university professors, epidemiologists, toxicologists, EPA. The rules do not require communication with fence-line communities, but the state has started having more public meetings when a new facility is being constructed. They work with their EJ team to do outreach. **LINKS** https://www.deq.nc.gov/about/divisions/air-quality/air-quality-outreach/news/air-quality-legislation/air-toxics https://www.deq.nc.gov/about/divisions/air-quality/air-quality-planning/air-quality-rules-regulations/rules/section-1100-control-toxic-air-pollutants https://www.deq.nc.gov/about/divisions/air-quality/air-quality-planning/air-quality-rules-regulations/rules/section-0100-general-provisions https://www.deq.nc.gov/about/divisions/air-quality/air-quality-planning/air-quality-rules-regulations/rules/section-0700-toxic-air-pollutant-procedures

S-1. Other states' air toxics regulations

State	EPA Region	Neighbor state (y/n)	Air toxics reporting (y/n)	Risk thresholds (y/n)	Rule-based state specific air levels (y/n)	Rule-based air toxics analysis (y/n)	Mandatory communication with fenceline communities (y/n)	Multi-pathway assessment (y/n)	tBACT requirements (y/n)	Tiered approach (y/n)	Other notes on format of rules (technology- or risk-based standards, etc.)
TX	6	n	y	y	n	y	n	n	y	y	Texas models based on risk, and this triggers a more in-depth review if the effects screening levels (ESL) are exceeded. This can affect permitting, though these processes and levels are not spelled out in rule. No tech-based standards in rule either. They have "T-BACT" (and this is referenced in rule). Procedures for AT analysis are defined in: https://www.tceq.texas.gov/downloads/toxicology/publications/rg-442.pdf and https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/mera.pdf. Texas has acute and chronic inhalation ESLs to compare to modeled values. Texas also has air monitoring comparison values (AMCVs). Sections 382.0518 and 382.085 of the Texas Health and Safety Code (THSC) specifically mandate the TCEQ to conduct air permit reviews of all new and modified facilities. Air permit reviews typically involve evaluations of best available control technology and predicted air concentrations related to proposed emissions from the new or modified facility. In the review of proposed emissions, chemical-specific ESLs are used for non-criteria pollutants. Because of the comprehensiveness of the language in the THSC, ESLs are developed for as many air contaminants as possible, and more are added every year, even for chemicals with limited toxicity data. Health-based ESLs are calculated from reference value (ReV) and unit risk factor (URF) toxicity factors. Welfare-based ESLs are set based on odor and vegetation effect threshold concentrations. Texas has a "health effects evaluation" procedure for air toxics for new and modified facilities. In a Tier I review, ground-level concentrations are compared to ESLs. In a Tier II review, adds consideration for how the land is used, distinguishing between industrial spaces and daycare centers. In a Tier III review, Texas adds consideration of surrounding land use, magnitude of predicted concentrations, frequency of predicted exceedance, toxic effect caused by the contaminant, *etc*. Texas has a large ambient air toxics monitoring network. Air toxics are defined as including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), carbonyls, and metals. An AMCV is used to evaluate measured air toxics concentrations for their potential to cause health and welfare effects, as well as to help the agency prioritize its resources in the areas of permitting, compliance, and enforcement. Health-based AMCVs are based on ReV and URF toxicity factors, whereas welfare-based AMCVs are equal to welfare-based ESLs. ESLs and AMCVs can be found here: https://www.tceq.texas.gov/toxicology/database. ESLs are used in the air permitting process to assess the protectiveness of substance-specific emission rate limits for facilities undergoing air permit reviews. Evaluations of modeled worst-case ground-level air concentrations are conducted to determine the potential for adverse effects to occur due to the operation of a proposed facility. If predicted airborne levels of a chemical exceed its ESL, adverse health or welfare effects would not necessarily be expected to result, but a more in-depth review would be triggered. This review is described in Modeling and Effects Review Applicability: How to Determine the Scope of Modeling and Effects Review for Air Permits (TCEQ 2009a): https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/mera.pdf.

S-1. Other states' air toxics regulations

State	EPA Region	Neighbor state (y/n)	Air toxics reporting (y/n)	Risk thresholds (y/n)	Rule-based state specific air levels (y/n)	Rule-based air toxics analysis (y/n)	Mandatory communication with fenceline communities (y/n)	Multi-pathway assessment (y/n)	tBACT requirements (y/n)	Tiered approach (y/n)	Other notes on format of rules (technology- or risk-based standards, etc.)
NM	6	n	n	y	y	y	n	n	y	y	Applies to construction permits only (not operating permits); only required if a permit application is otherwise required. List of 10 things that are considered exempted sources (*e.g.* gas stations, oil and gas production facilities, non-process fugitive emissions). Uses "occupational exposure limits" or OELS for screening purposes only and specifically says they do not have the same standing as an ambient air quality standard. But they are directly in the rule. Rule includes lb/hr emission thresholds for air toxics at which a permit and modeling is required (20.2.72.502 NMAC) - very long list. Includes a "stack height release correction factor". If over the lb/hr threshold, they must include modeling for that pollutant in their application. In the modeling, if the predicted concentration is less than 1/100th of the OEL, they are done and the permit must be granted. If over that, then they have to include a health assessment in the application. The permit must be granted if they exceed the 1/100th of the OEL if the permit requires BACT for the pollutant (do not have to model to any kind of risk-based threshold if doing BACT). All of this is done on a compound-by-compound basis.
CA	9	n	y	y	y	y	y			y	Risk-based - Fees assessed (to run the program) based on facility risk (but are now frozen at 2002 levels, and lots of exemptions for low-risk facilities to not pay at all).
CA - Santa Barbara County	9	n	y	y	y	y	n	y	y	y	The PowerPoint link below shows the process for the rule. The first step is for the facility to submit an Air Toxics Emission Inventory Plan. This is to ensure the emission factors, calculation methodology, and all parameters are included in the toxics emissions. The second step is to prepare an Air Toxics Emission Inventory Report. This includes documentation of all process data and detailed emission calculations spreadsheets. The third step is the health risk assessment using CARB's Hotspots Analysis and Reporting Program (HARP) software. If they are below thresholds then the process is complete for the inventory year, if not then the facility moves to the next step. The fourth step, if there is an exceedance, is to issue a public notification and preform a risk reduction audit and develop a plan to implement risk reduction measures. The fifth step, if the facility is not below thresholds, the facility will submit an updated summary every 4 years. The 4-year summary includes a short form discussing changes to the facility operations and other parameters that impact the health risk. PowerPoint Presentation (ourair.org)
CA- San Joaquin Valley	9	n	y	y	y	y	n	y	y	y	Similar to Santa Barbara county, the first 2 steps are submitting a Toxic Emissions Inventory Plan and then a Toxic Emission Inventory Report. After these 2 items are submitted the facility is given a priority number. This will determine if the facility is exempt form AB2588, will need to provide a 4-year summary, or will have to do a Health Risk Assessment. Once a health risk assessment is completed, the next requirement is based on the cancer risk, and the total hazard index. Based on these numbers the facility may be exempt, have to provide a 4-year summary, go through the public notification process, or go through the public notification process AND prepare a risk reduction plan. https://ww2.valleyair.org/permitting/air-toxics-program/resources-for-regulated-facilities/
CA- South Coast AQMD	9	n	y	y	y	y	n	y	Y	y	Tier Approach: Tier 1 is the screening emission levels. If above screening levels, then move to Tier 2, if below, then nothing further needed from the facility. Tier 2 is a screening risk assessment. They provide a spreadsheet for this part. They include some common industries: boiler, crematory, spray booths, *etc*. The receptor location for this portion is any location outside the boundary of the facility where a person can experience repeated, continuous exposure. The spreadsheet provides pass/fail for target organs. If fail, then go to Tier 3. If pass, then stop here. Tier 3 is using a screening dispersion modeling. Using this information, will need to calculate the MICR and the HIC. No spreadsheet provided for this. This is also pass/fail. Tier 4 is a detailed risk assessment using AERMOD (instead of AERSCREEN), which is similar to MPCA's current AERA process.

S-1. Other states' air toxics regulations

State	EPA Region	Neighbor state (y/n)	Air toxics reporting (y/n)	Risk thresholds (y/n)	Rule-based state specific air levels (y/n)	Rule-based air toxics analysis (y/n)	Mandatory communication with fenceline communities (y/n)	Multi-pathway assessment (y/n)	tBACT requirements (y/n)	Tiered approach (y/n)	Other notes on format of rules (technology- or risk-based standards, etc.)
OR	10	n	y	y	y	y	y	y	y	y	Oregon has had an air toxics program since 2003. They added a risk component to the program in 2019, which was adopted early 2020. They clarified and gap filled the risk component in 2021. The Oregon air toxics program includes a risk-based standard review for all new title V permits and certain state operating permits. For existing permits that get "called into" the air toxics review, a permit addendum can be required if certain risk thresholds are met. Oregon is "calling in" the 350 existing facilities in groups of 20, 20, and then 310. The risk assessment can result in permit requirements for emission controls. If risk is above a certain level, a risk reduction plan must be approved and implemented, including different timelines for chronic or acute risk reductions. Oregon also reviews certain geographic areas. "Lane Regional Air Pollution Authority is designated by the Commission at the agency to implement the Geographic Program within its area of jurisdiction." This review addresses emissions from multiple sources in a specific area of concern. Per Oregon Department of Environmental Quality (DEQ), "DEQ, at its discretion, may call in any existing facility to complete a risk assessment. Factors considered in the decision may include understanding potential risks, obtaining new information about facility emissions, permitting needs, or in response to community concerns." Larger new facilities applying for an air permit need to identify potential air toxics emissions and assess associated risks before submitting their permit application. Oregon does not require most new facilities applying for coverage under Basic or General Air Contaminant Discharge Permits to perform assessments. Air toxics benchmarks are numerically equivalent to TRVs (Toxicity Reference Values). "DEQ must review and update the priority contaminant list and toxicity reference values (TRVs) every three years; this is called a 'triennial review.' DEQ and OHA staff do an in-depth review of the contaminants on the priority list and TRVs and identify changes to recommend to the Environmental Quality Commission, which has oversight responsibility for DEQ and has authority to adopt DEQ rules. The Cleaner Air Oregon rules adopted by the EQC also give an option to members of the public to submit petitions to make changes to the list and TRV."
WA	10	n		y	y	y	n	n	y	y	Rule chapter for air toxics applies to new or modified sources only; there is a published listed of de minimis thresholds as well as a small quantity emission rate threshold (SQER), at which no modeling is required. Analysis is done for the new or modified emissions units first - Tier 1 - or else show they are less than the SQER/de minimis. Tier 2 includes background concentrations and can include decreases in actual emissions. Tier 3 seems to be some sort of petition where they say they are over the levels of concern but there is some other greater environmental benefit for the project, and it may include proposed measures to reduce exposures. Tier 3 requires a public meeting/hearing. Permits triggering the WA "new source review" of WAC 173-400-110 are subject to the air toxics rule. The NSR rule includes a list of exempt things that look a lot like MPCA's IAs and ch. 7008 activities, plus it includes emissions thresholds that are exempt (*e.g.*, 2 tpy of NOx, VOC, or SO2).

S-2. Screening Threshold Values Development

The Air Toxics Regulation Rule was developed to implement and govern regulation of facilities that emit air toxics. Facilities within the seven metropolitan counties: Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, or Washington county are subject to the rule.

The first step for an air toxics facility that is subject to this rule is to go through a screening threshold analysis to determine if the facility advances to the next step by either developing a compliance determination protocol (CDP) or completing an air emissions risk analysis (AERA). The screening threshold analysis is the first step of this process. In this screening threshold analysis step, an air toxics facility will compare its hourly and annual emissions against a screening threshold value to determine if the facility exceeds a screening threshold value for a given air toxic. The Minnesota Pollution Control Agency (MPCA) has developed a screening spreadsheet, screening threshold for regulated air toxics analysis (STRATA), for facilities to easily determine if the facility exceeds any screening threshold values for each individual air toxic. If an air toxics facility exceeds any screening threshold value, the facility will advance to the next step. The facility then has the choice to develop a compliance determination protocol (CDP) or complete an air emissions risk analysis (AERA).

The process of developing the screening threshold values by the MPCA is similar to how the New Jersey Department of Environmental Protections has developed their air pollutant reporting thresholds.[1] New Jersey uses their reporting thresholds to determine if a new or modified source operation is subject to a health risk assessment due to the potential for HAP emissions to cause significant health risk. MPCA used this documentation on how the reporting thresholds were created to calculate screening threshold values that would prompt an air toxics facility to either develop a CDP or complete an AERA.

The MPCA developed the screening threshold for regulated air toxics analysis (STRATA) spreadsheet to determine whether a facility exceeds screening threshold values. By creating an electronic spreadsheet with the screening threshold values, it allows the air toxics facility to easily see if they are at or below screening threshold values or above screening threshold values. An air toxics facility would input the stack height, stack distance to property line, and stack emissions in pounds/hour and tons/year. Given this information, the spreadsheet will compare the emissions provided by the facility for a given stack height and distance to property line and compare them to a calculated screening threshold value. The screening threshold value is calculated by taking the inhalation health benchmark (IHB) of an air toxic and dividing by the modeled dispersion value (Equation 1 through 6). Once the spreadsheet has compared the emissions to the screening threshold value it will display either “ABOVE” or “BELOW” for a given air toxics for each stack. Based on the results given in the STRATA spreadsheet, the air toxics facility can easily see if they exceed any screening thresholds values and will have to continue onto the next step in the process.

This technical document focuses on how the MPCA staff developed the screening threshold values and the screening spreadsheet (STRATA) used in the screening threshold analysis. This document explains how the MPCA developed the screening threshold values and details how the MPCA staff developed the modeling methodology, how the MPCA staff processed the modeling results, and how the MPCA staff evaluated the screening threshold values.

[1] *Technical Support Document: Updating Hazardous Air Pollutant Reporting Thresholds by New Jersey Department of Environmental Protection. Retrieved from technical-support-document-hap-reporting-thresholds.pdf*

Modeling methodology

Dispersion modeling

The American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee's (AERMIC) modeling system AERMOD (version 23132) was used for this evaluation. AERMOD is the Environmental Protection Agency's (USEPA) preferred model for regulatory model applications. AERMOD is a steady-state model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including both surface and elevated sources, and both simple and complex terrain[2].

Model inputs

Location

To model the conditions in each of the seven counties that are subject to this rule, one stack was placed in each of the seven counties. The stack was placed by visually estimating the middle of the county, verifying that the stack is not located at a current facility. Additionally, each stack was verified to be placed on land and not on a lake, pond, or any other body of water.

Terrain data

Terrain data from the United States Geological Survey (USGS) 1/3rd arc-second Digital Elevation Models (DEMs) was used. This is a tiled collection of 3D Elevation Program (3DEP) and is 1/3 arc-second (approximately 10 m) resolution. The elevations in DEM represent the topographic bare-earth surface. These data are distributed in geographic coordinates in units of decimal degrees, and in conformance with the North American Datum of 1983 (NAD 83)[3]. Table 1 provides a list of the tile names used for each county, some counties used multiple tiles.

Table 1: List of tile names by county

County	Tile Name
Anoka	N46W094
Carver	N45W094
Dakota	N45W093 and N45W094
Hennepin	N45W094 and N46W094
Ramsey	N45W094 and N46W094
Scott	N45W094
Washington	N46W093

Meteorological data

Meteorological data was taken from the Minnesota Pollution Control Agency's (MPCA) processed meteorological data. This data has already been processed with AERMET (version 22112), which includes the processors AERMINUTE (version 15272) and AERSURFACE (version 13016). The meteorological data used was for a 5-year period between 2020-2024.

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[2] *Air Quality Dispersion Modeling – Preferred and Recommended Models. Retrieved from https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models*

[3] *Spatial Extent of Data. Retrieved from https://data.usgs.gov/datacatalog/data/USGS:3a81321b-c153-416f-98b7-cc8e5f0e17c3*

Surface stations were selected based on the proximity to the stack that was placed in each county. Table 2 is a list of the surface and upper air stations that were used for each county. Given that there are only 18 surface stations across the state of Minnesota, some counties used the same stations.

Table 2: Meteorological data

County	Surface station name	Upper air station name
Anoka	MIC – Crystal, MN	MPX – Chanhassen, MN
Carver	FCM – Flying Cloud Airport, MN	MPX – Chanhassen, MN
Dakota	MSP – Minneapolis/St. Paul International Airport, MN	MPX – Chanhassen, MN
Hennepin	MIC – Crystal, MN	MPX – Chanhassen, MN
Ramsey	STP – St. Paul Downtown Airport, MN	MPX – Chanhassen, MN
Scott	FCM – Flying Cloud Airport, MN	MPX – Chanhassen, MN
Washington	STP – St. Paul Downtown Airport, MN	MPX – Chanhassen, MN

Land use

AERMOD was run in only rural modes for all seven counties. The standard regulatory default for AERMOD is to use the rural option as this is considered the conservative approach. The rural option reduces turbulence assumption and leads to less atmospheric mixing and higher ground-level pollutant concentrations.

Stack parameters and emission rates

MPCA staff used hypothetical emission rates and stack parameters to represent a range of aerodynamic downwash scenarios for stacks. To understand the impact of different stack heights, the only parameter to change was stack height. Other parameters such as emission rate, stack diameter, exit velocity, and exit temperature were kept constant. Table 3 lists the stack parameters and values.

MPCA staff used stack parameters and emission rate to model and generate a modeled air dispersion value (micrograms per cubic meter (µg/m3)/gram per second of air toxics). These modeled dispersion values, along with inhalation health benchmarks IHBs, were used to calculate the screening threshold value for each air toxic.

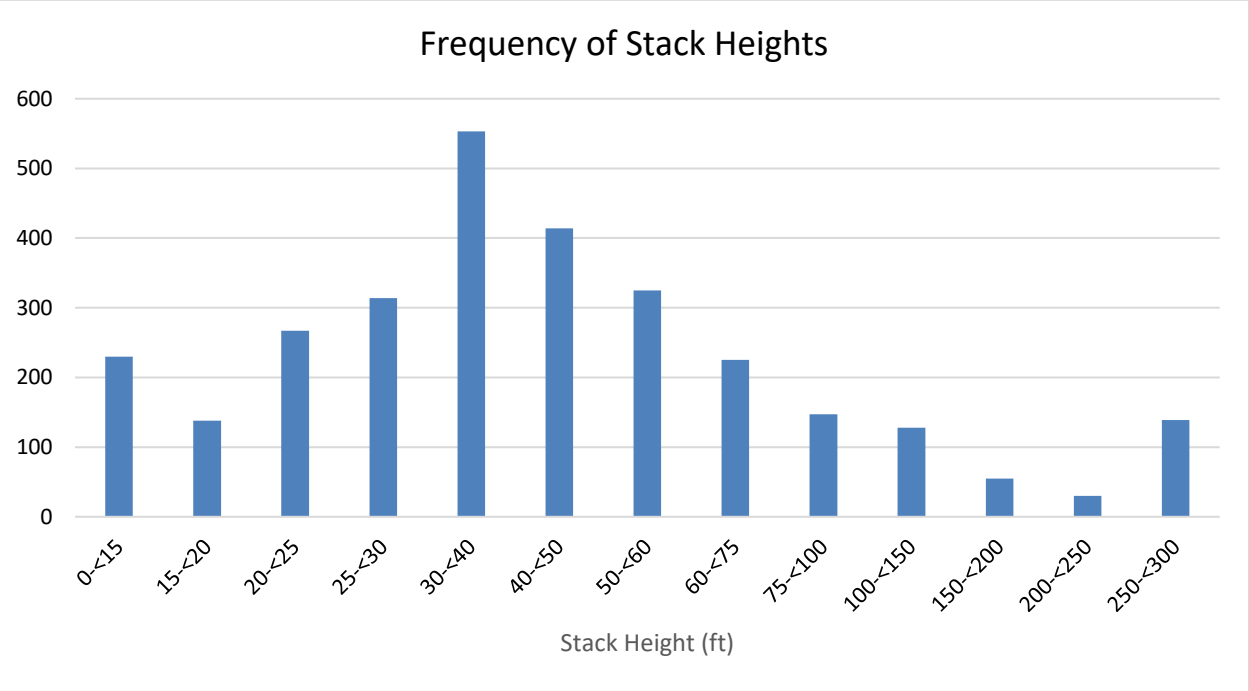
MPCA staff selected stack heights by investigating the stack height information that MPCA has for facilities in the seven metropolitan counties. Figure 1 below shows the frequency of the stack heights. Figure 1 shows that the majority of the stacks range between 30 to 40 feet. For this reason, the MPCA staff split this group (30 to 40 feet) up further into 30 to less than 35 feet and 35 to less than 40 feet.

MPCA staff selected conservative numbers for parameters such as stack diameter, exit velocity, and gas exit temperature. MPCA staff selected these parameters to show the “worst case” for a given stack. MPCA staff used a smaller stack diameter of 0.305 meters (1 foot). The smaller the stack diameter, the less buoyancy and plume rise from a stack. This is a conservative approach as it assumes there is not much buoyancy from the stack. MPCA staff used an exit velocity of 0.001 m/s. The exit velocity promotes plume downwash; a lower velocity pulls the plume towards the ground and results in higher concentrations of pollutants at ground level. MPCA staff used ambient temperature selection in AERMOD which when modeled uses the ambient temperature for each hour. A lower stack temperature minimizes thermal buoyancy and can result in a higher ground-level concentrations. Table 3 displays the stack parameter values used in the modeling.

Table 3: Stack parameters and emission rate

Parameter	Value(s)
Emission Rate (g/s)	1
Stack Diameter (ft)	1
Exit Velocity (m/s)	0.001
Exit Temperature (K)	Ambient Temperature
Stack height (ft)	10, 15, 20, 25, 30, 35, 40, 50, 60, 75, 100, 150, 200

Figure 1: Frequency of stack heights



Building downwash

MPCA staff investigated building downwash in developing the screening threshold values. In general, most, if not all, facilities have at least one building at their site. For the purposes of developing these screening threshold values, MPCA staff placed the stack in the center of the building. This allowed the model to show effects of building downwash from any wind direction.

The building height and dimensions were based on the stack height. Table 4 displays the building height and dimensions by stack height. MPCA staff selected the building heights based on Good Engineering Practice (GEP). For stack heights between 10 and 20 ft, the stack was assumed to be a factor of 1.25 times higher than the building height. For stack heights between 25 and 250 ft, the stack height was assumed to be 1.5 times higher than the building height.

For stack heights between 15 and 50 ft, the building's horizontal dimensions were assumed to be constant at 50 ft. As the stack heights increased above 50 ft, the building's horizontal dimensions also increased.

Table 4: Building height and dimensions

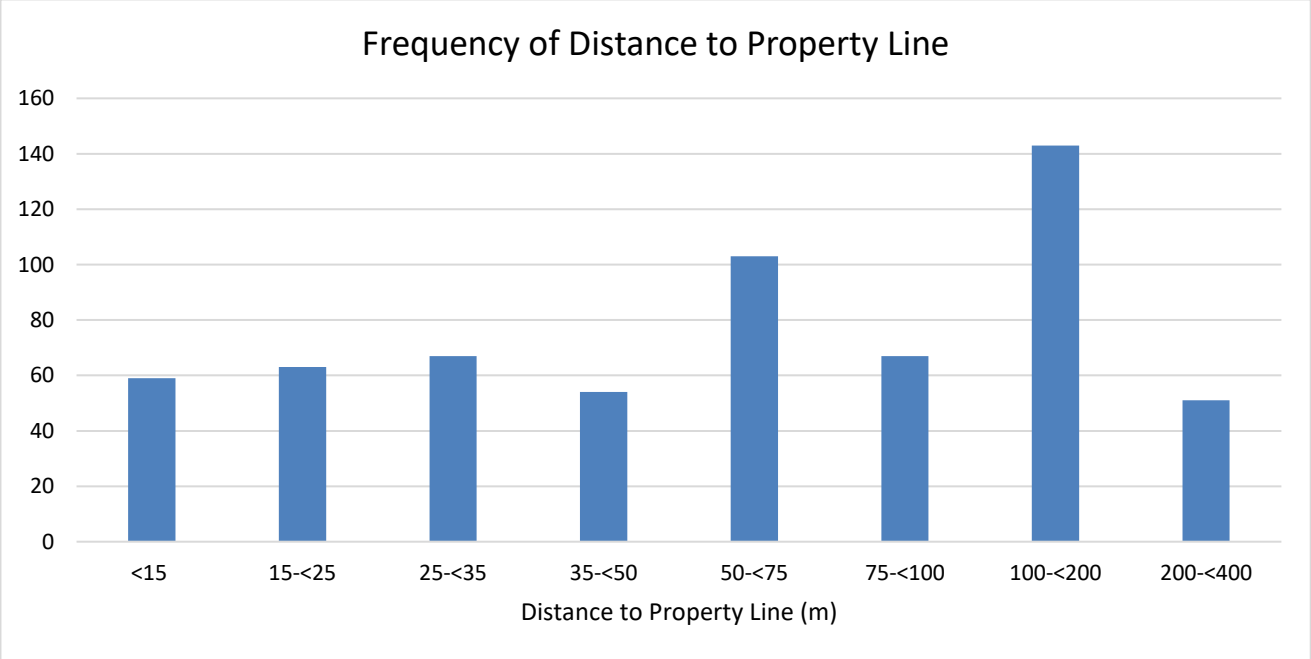
Stack height (ft)	Building height (ft)	Building width and length (ft)
10	8	50 x 50
15	12	50 x 50
20	16	50 x 50
25	16.7	50 x 50
30	20	50 x 50
35	23.3	50 x 50
40	26.7	50 x 50
50	33.4	50 x 50
60	40	60 x 60
75	50	75 x 75
100	66.7	100 x 100
150	100	150 x 150
200	133.4	200 x 200

Receptor grid

MPCA staff used an elevated terrain when modeling. Additionally, MPCA staff used a polar receptor grid of 1332 receptors that were centered on the stack with 36 radials spaced every 10 degrees. The spacing of the receptors along the radials were done every 5 m, 10 m, 15 m, 20 m, 25 m, 35 m, 50 m, 75 m, 100 m, 150 m, 200 m, 250 m, 300 m, 350 m, 400 m, 450 m, 500 m, 550 m, 600 m, 650 m, 700 m, 750 m, 800 m, 850 m, 900 m, 950 m, 1000 m, 1100 m, 1200 m, 1300 m, 1400 m, 1500 m, 1600 m, 1700 m, 1800 m, 1900 m, and 2000 m.

From previous modeling demonstrations, MPCA staff estimated the distance to property line for air toxics facilities in the seven metropolitan counties when this information was available. Figure 2 displays the frequency of the distance to property line. This helped to inform MPCA staff which receptor spacing should be used in the model.

Figure 2: Frequency of distance to property line



Processing modeled results

For each of the seven metropolitan counties, MPCA staff modeled the 13 stack heights for averaging times of 1-hr, 24-hr and annual. This resulted in 91 output (.PLT) files total.

The .PLT (output) files contained calculated pollutant concentrations at different receptor locations. MPCA staff used an R script to convert the .PLT files to a .CSV format. Each receptor distance (5m, 10m, 15m, etc.) had 36 modeled dispersion values associated with a given distance. MPCA staff used the output information to calculate an average for each receptor distance for each stack height. MPCA staff repeated this step for every stack height and averaging time for each of the seven metropolitan counties. Modeled dispersion values were in units of µg/m3 per g/s. MPCA staff had to convert these dispersion values either µg/m3 per lb/hr or µg/m3 per ton/yr. The modeled dispersion value units depended on whether the screening threshold value under investigation was chronic (ton/yr) or acute (lb/hr).

MPCA staff summarized results in an Excel document by county. Table 5 shows an example of the results from Hennepin County. MPCA staff then calculated an average of all seven metropolitan counties for every stack height and distance to receptor.

Since the model was run for three different averaging times; 1-hr, 24-hr, and annually, this resulted in three different dispersion values for each given stack height and distance to receptor (property line). Tables 6 through 8 show the dispersion values (in either µg/m3 per lb/hr or µg/m3 per ton/yr) that MPCA staff averaged over all seven metropolitan counties.

Table 5. 1 Hour dispersion results from Hennepin County (µg/m³ per lb/hr)

Distance to receptor in feet	Distance to receptor in meters	Stack height at 10 ft (3.05 m)	Stack height at 15 ft (4.57 m)	Stack height at 20 ft (6.10 m)	Stack height at 25 ft (7.62 m)	Stack height at 30 ft (9.14 m)	Stack height at 35 ft (10.67 m)	Stack height at 40 ft (12.19 m)	Stack height at 50 ft (15.24 m)	Stack height at 60 ft (18.29 m)	Stack height at 75 ft (22.86 m)	Stack height at 100 ft (30.48 m)	Stack height at 150 ft (45.72 m)	Stack height at 200 ft (60.96 m)
16.40	5	118627.7	60118.4	30942.4	18305.7	10778.4	7624.0	6103.8	4276.2	2846.2	1713.8	904.2	373.2	206.2
32.81	10	125862.1	70646.9	37750.8	22255.9	13241.1	9236.1	7266.4	5072.3	3391.7	2005.9	1029.8	408.6	218.6
49.21	15	112994.9	68513.2	36807.9	21675.9	12848.0	8800.3	6849.2	4726.8	3405.7	2221.1	1147.1	445.0	233.8
65.62	20	62305.8	57314.1	35067.2	20978.1	12526.3	8601.5	6656.7	4531.0	3254.4	2151.8	1240.2	481.5	249.6
82.02	25	42179.3	28072.2	22256.4	15187.3	11224.3	8030.6	6340.6	4433.1	3178.2	2091.5	1217.0	517.5	265.1
114.83	35	32409.1	22954.2	15039.2	10182.5	7143.3	5211.4	3851.4	2188.1	2596.6	1991.6	1160.1	535.7	294.5
164.04	50	23063.8	17202.7	11985.8	8353.1	5999.9	4547.9	3577.5	2176.5	1436.8	986.0	1081.1	497.6	292.1
246.06	75	15484.5	12077.6	8999.3	6425.5	4785.2	3666.1	2930.0	1963.4	1378.9	856.7	479.9	476.4	278.5
328.08	100	10820.9	9249.9	7170.1	5185.2	3992.0	3084.7	2451.7	1677.1	1229.7	803.1	474.6	235.4	269.6
492.13	150	4840.3	5004.8	4539.9	3419.2	2842.0	2297.1	1838.3	1262.7	961.5	679.1	413.0	205.4	113.6
656.17	200	2585.4	2697.4	2771.9	2188.7	1976.6	1698.9	1431.5	1029.7	772.6	564.0	363.5	187.9	107.8
820.21	250	1716.9	1635.6	1691.4	1405.1	1364.1	1249.6	1102.2	838.3	654.6	474.6	319.5	173.9	104.3
984.25	300	1309.7	1155.3	1135.8	975.4	955.2	918.1	849.3	689.6	556.2	409.8	282.5	161.4	99.8
1148.29	350	1060.7	899.2	843.7	743.0	718.1	688.3	660.1	569.7	478.4	365.0	251.7	149.1	95.4
1312.34	400	877.9	735.5	668.1	600.1	568.3	539.4	516.4	466.8	413.7	325.7	225.8	137.1	90.5
1476.38	450	733.9	615.1	552.1	504.2	467.5	436.2	414.1	381.5	358.1	290.0	205.6	125.9	85.0
1640.42	500	629.9	530.7	479.3	444.1	404.8	373.3	347.8	315.2	311.9	260.9	189.9	116.6	80.0
1804.46	550	535.1	452.7	410.7	386.3	354.2	323.2	296.3	261.5	265.6	231.2	172.4	105.8	73.5
1968.50	600	473.7	402.5	363.9	346.6	319.3	289.0	261.6	223.1	232.1	211.1	160.6	98.7	69.2
2132.55	650	435.3	370.9	337.1	323.5	300.7	271.4	243.5	201.0	209.4	198.1	154.4	95.7	67.2
2296.59	700	393.1	335.7	306.9	296.5	278.0	251.4	225.7	180.0	184.7	181.5	144.9	90.9	63.7
2460.63	750	356.4	304.7	279.7	270.9	255.5	232.9	206.8	163.0	162.6	165.4	136.0	86.4	60.4
2624.67	800	308.8	264.4	245.5	237.8	225.3	207.0	184.0	141.5	137.0	143.1	121.4	78.2	54.5
2788.71	850	303.1	260.1	240.4	234.4	223.2	206.7	184.9	141.8	131.2	139.0	121.6	79.3	55.4
2952.76	900	272.7	234.2	215.7	211.1	201.9	188.2	169.3	130.3	115.6	123.1	111.5	74.0	51.8

Distance to receptor in feet	Distance to receptor in meters	Stack height at 10 ft (3.05 m)	Stack height at 15 ft (4.57 m)	Stack height at 20 ft (6.10 m)	Stack height at 25 ft (7.62 m)	Stack height at 30 ft (9.14 m)	Stack height at 35 ft (10.67 m)	Stack height at 40 ft (12.19 m)	Stack height at 50 ft (15.24 m)	Stack height at 60 ft (18.29 m)	Stack height at 75 ft (22.86 m)	Stack height at 100 ft (30.48 m)	Stack height at 150 ft (45.72 m)	Stack height at 200 ft (60.96 m)
3116.80	950	259.6	223.0	205.4	201.5	193.6	181.4	164.1	127.0	106.9	115.1	107.9	72.9	51.3
3280.84	1000	241.6	207.7	191.3	188.1	181.4	170.9	155.6	121.5	99.2	104.7	101.8	70.0	49.5
3608.92	1100	209.5	180.1	165.6	163.2	158.3	150.7	139.1	110.7	88.6	85.3	89.8	64.5	46.0
3937.01	1200	187.1	161.7	148.2	146.2	142.4	136.5	127.0	102.5	82.0	70.6	79.6	60.2	43.2
4265.09	1300	166.3	143.6	133.2	131.9	129.1	124.8	117.4	95.9	77.2	61.8	70.6	56.4	40.8
4593.18	1400	151.7	131.3	121.0	120.0	117.8	114.3	108.4	89.8	72.7	55.7	62.5	53.1	38.7
4921.26	1500	137.5	118.8	109.8	109.0	107.4	104.7	99.9	83.7	68.4	50.6	54.8	49.9	36.8
5249.34	1600	121.7	105.4	97.5	97.2	96.1	94.2	90.6	77.2	63.3	46.7	46.6	45.6	34.2
5577.43	1700	114.8	99.2	91.9	91.8	91.1	89.7	86.8	74.8	61.8	46.0	42.9	44.1	33.7
5905.51	1800	106.9	92.7	85.7	85.8	85.4	84.4	82.1	71.6	59.4	44.6	39.2	41.7	32.4
6233.60	1900	98.6	85.4	79.5	79.6	79.2	78.5	76.7	67.6	56.5	42.7	35.5	39.1	31.1
6561.68	2000	92.0	79.8	74.4	74.5	74.4	74.0	72.6	64.6	54.3	41.3	32.9	36.8	29.9

Table 6. Annual dispersion values averaged over seven metropolitan counties (µg/m^3 per ton/yr)

Distance to receptor in feet	Distance to receptor in meters	Stack height at 10 ft (3.05 m)	Stack height at 15 ft (4.57 m)	Stack height at 20 ft (6.10 m)	Stack height at 25 ft (7.62 m)	Stack height at 30 ft (9.14 m)	Stack height at 35 ft (10.67 m)	Stack height at 40 ft (12.19 m)	Stack height at 50 ft (15.24 m)	Stack height at 60 ft (18.29 m)	Stack height at 75 ft (22.86 m)	Stack height at 100 ft (30.48 m)	Stack height at 150 ft (45.72 m)	Stack height at 200 ft (60.96 m)
16.40	5	237.85	142.10	81.58	48.65	29.76	19.67	14.32	7.62	5.17	3.19	1.69	0.68	0.36
32.81	10	119.35	76.39	52.33	32.03	21.49	14.81	10.82	5.81	4.24	2.80	1.57	0.66	0.36
49.21	15	74.92	46.48	31.17	19.08	13.12	9.30	6.89	3.81	3.19	2.30	1.39	0.62	0.34
65.62	20	34.68	31.94	22.76	14.10	9.55	6.65	4.87	2.65	2.17	1.80	1.20	0.58	0.33
82.02	25	19.41	13.45	12.10	8.57	6.80	5.16	3.89	2.10	1.67	1.31	1.00	0.53	0.31
114.83	35	12.24	8.59	6.41	4.75	3.61	2.73	2.05	1.08	1.12	0.89	0.64	0.42	0.27
164.04	50	7.37	5.26	4.00	3.14	2.51	2.05	1.66	1.05	0.71	0.48	0.43	0.27	0.21
246.06	75	4.18	3.09	2.38	1.95	1.59	1.35	1.16	0.84	0.63	0.42	0.22	0.17	0.12
328.08	100	2.80	2.17	1.68	1.39	1.14	0.97	0.84	0.65	0.51	0.36	0.22	0.10	0.09

S-2. Screening Threshold Values Development

Distance to receptor in feet	Distance to receptor in meters	Stack height at 10 ft (3.05 m)	Stack height at 15 ft (4.57 m)	Stack height at 20 ft (6.10 m)	Stack height at 25 ft (7.62 m)	Stack height at 30 ft (9.14 m)	Stack height at 35 ft (10.67 m)	Stack height at 40 ft (12.19 m)	Stack height at 50 ft (15.24 m)	Stack height at 60 ft (18.29 m)	Stack height at 75 ft (22.86 m)	Stack height at 100 ft (30.48 m)	Stack height at 150 ft (45.72 m)	Stack height at 200 ft (60.96 m)
492.13	150	1.36	1.19	0.98	0.83	0.69	0.58	0.50	0.40	0.33	0.26	0.17	0.09	0.05
656.17	200	0.80	0.76	0.67	0.58	0.48	0.41	0.35	0.28	0.23	0.19	0.13	0.08	0.05
820.21	250	0.53	0.52	0.48	0.42	0.36	0.31	0.27	0.21	0.17	0.14	0.10	0.06	0.04
984.25	300	0.39	0.38	0.36	0.32	0.28	0.25	0.21	0.16	0.14	0.11	0.08	0.05	0.04
1148.29	350	0.29	0.29	0.28	0.25	0.23	0.20	0.17	0.13	0.11	0.09	0.07	0.05	0.03
1312.34	400	0.24	0.23	0.22	0.21	0.19	0.17	0.15	0.11	0.09	0.07	0.06	0.04	0.03
1476.38	450	0.19	0.19	0.18	0.17	0.16	0.14	0.12	0.09	0.08	0.06	0.05	0.03	0.03
1640.42	500	0.16	0.16	0.15	0.14	0.13	0.12	0.11	0.08	0.07	0.05	0.04	0.03	0.02
1804.46	550	0.13	0.13	0.13	0.12	0.11	0.10	0.09	0.07	0.06	0.05	0.04	0.03	0.02
1968.50	600	0.11	0.11	0.11	0.10	0.10	0.09	0.08	0.06	0.05	0.04	0.03	0.02	0.02
2132.55	650	0.10	0.10	0.10	0.09	0.09	0.08	0.08	0.06	0.05	0.04	0.03	0.02	0.02
2296.59	700	0.09	0.09	0.09	0.08	0.08	0.07	0.07	0.05	0.04	0.03	0.03	0.02	0.01
2460.63	750	0.08	0.08	0.08	0.07	0.07	0.07	0.06	0.05	0.04	0.03	0.02	0.02	0.01
2624.67	800	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.04	0.03	0.03	0.02	0.01	0.01
2788.71	850	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.04	0.03	0.03	0.02	0.01	0.01
2952.76	900	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.03	0.02	0.02	0.01	0.01
3116.80	950	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.03	0.02	0.02	0.01	0.01
3280.84	1000	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.02	0.02	0.01	0.01
3608.92	1100	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.02	0.01	0.01	0.01
3937.01	1200	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.01	0.01	0.01
4265.09	1300	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.01	0.01	0.01
4593.18	1400	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01
4921.26	1500	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
5249.34	1600	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	4.69E-03
5577.43	1700	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	4.44E-03
5905.51	1800	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	4.95E-03	4.11E-03
6233.60	1900	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	4.59E-03	3.80E-03
6561.68	2000	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	4.25E-03	3.52E-03

Table 7. 1 Hour dispersion values averaged over seven metropolitan counties (µg/m³ per lb/hr)

Distance to receptor in feet	Distance to receptor in meters	Stack height at 10 ft (3.05 m)	Stack height at 15 ft (4.57 m)	Stack height at 20 ft (6.10 m)	Stack height at 25 ft (7.62 m)	Stack height at 30 ft (9.14 m)	Stack height at 35 ft (10.67 m)	Stack height at 40 ft (12.19 m)	Stack height at 50 ft (15.24 m)	Stack height at 60 ft (18.29 m)	Stack height at 75 ft (22.86 m)	Stack height at 100 ft (30.48 m)	Stack height at 150 ft (45.72 m)	Stack height at 200 ft (60.96 m)
16.40	5	15265.97	7581.03	3800.91	2228.64	1300.90	887.76	673.47	451.02	296.57	178.43	94.21	39.04	21.45
32.81	10	16604.67	9133.37	4730.94	2787.88	1626.91	1091.66	765.73	546.88	360.76	212.83	108.72	43.03	22.90
49.21	15	14913.69	8807.10	4627.97	2724.69	1597.00	1060.93	722.20	522.42	369.48	237.12	122.54	47.22	24.63
65.62	20	7627.64	7243.62	4347.90	2608.41	1541.32	1029.68	690.91	500.57	353.73	231.37	131.60	51.36	26.39
82.02	25	4980.69	3198.96	2612.10	1794.60	1313.08	927.07	642.39	480.89	342.16	224.00	129.75	55.15	28.10
114.83	35	3835.28	2583.66	1693.61	1167.01	833.77	608.67	396.11	257.21	285.35	210.69	123.50	57.09	31.17
164.04	50	2752.64	1963.06	1330.53	941.02	689.77	530.87	366.99	254.08	167.88	116.53	114.18	53.47	31.32
246.06	75	1880.65	1420.57	1017.55	732.11	544.35	423.76	300.69	233.40	162.30	100.24	56.62	50.86	29.84
328.08	100	1315.34	1103.33	825.96	599.86	453.77	352.13	247.74	200.30	146.76	95.22	54.34	27.75	28.52
492.13	150	590.39	601.79	530.27	399.78	323.77	258.51	181.10	148.32	114.38	80.92	48.04	23.47	13.66
656.17	200	320.89	332.77	333.74	262.92	230.24	194.72	142.57	121.04	91.59	67.36	42.73	21.81	12.98
820.21	250	215.28	205.41	211.06	174.02	163.04	145.64	110.85	98.44	77.20	56.69	37.62	20.29	12.39
984.25	300	166.04	147.65	145.94	124.11	117.70	109.59	86.64	80.33	65.69	48.75	33.27	18.83	11.87
1148.29	350	134.77	115.50	110.30	96.44	90.18	84.24	68.50	65.95	56.06	43.44	29.55	17.36	11.33
1312.34	400	113.51	96.36	89.72	79.89	73.48	67.78	55.00	54.61	48.44	39.22	26.60	16.01	10.75
1476.38	450	96.24	81.75	75.61	68.39	62.19	56.41	45.24	45.33	41.88	35.31	24.41	14.76	10.13
1640.42	500	83.73	71.37	65.86	60.33	54.55	49.04	38.69	38.30	36.56	31.96	22.64	13.66	9.54
1804.46	550	71.71	61.38	56.65	52.43	47.58	42.66	33.22	32.19	31.13	28.28	20.55	12.34	8.75
1968.50	600	63.54	54.61	50.28	46.99	42.99	38.64	29.90	28.32	27.30	25.66	19.23	11.52	8.24
2132.55	650	58.27	50.21	46.24	43.52	40.06	36.10	27.90	26.11	24.81	24.01	18.55	11.18	7.99
2296.59	700	52.62	45.40	42.07	39.82	36.84	33.27	25.60	23.72	22.11	21.91	17.46	10.63	7.56
2460.63	750	48.19	41.71	38.72	36.78	34.20	31.02	23.82	21.72	19.90	20.03	16.47	10.13	7.17
2624.67	800	42.12	36.47	34.08	32.48	30.37	27.71	21.30	19.20	17.08	17.30	14.72	9.18	6.47
2788.71	850	41.15	35.74	33.60	32.13	30.17	27.68	21.36	19.15	16.48	16.71	14.69	9.29	6.55
2952.76	900	37.17	32.33	30.42	29.19	27.52	25.40	19.74	17.78	14.81	14.87	13.49	8.67	6.14
3116.80	950	35.65	31.03	29.13	28.01	26.53	24.62	19.28	17.58	14.10	14.01	13.08	8.57	6.08

Distance to receptor in feet	Distance to receptor in meters	Stack height at 10 ft (3.05 m)	Stack height at 15 ft (4.57 m)	Stack height at 20 ft (6.10 m)	Stack height at 25 ft (7.62 m)	Stack height at 30 ft (9.14 m)	Stack height at 35 ft (10.67 m)	Stack height at 40 ft (12.19 m)	Stack height at 50 ft (15.24 m)	Stack height at 60 ft (18.29 m)	Stack height at 75 ft (22.86 m)	Stack height at 100 ft (30.48 m)	Stack height at 150 ft (45.72 m)	Stack height at 200 ft (60.96 m)
3280.84	1000	33.07	28.78	27.06	26.11	24.85	23.20	18.23	16.83	13.41	12.79	12.33	8.26	5.87
3608.92	1100	29.03	25.27	23.75	23.03	22.09	20.83	16.57	15.57	12.32	10.89	10.99	7.70	5.48
3937.01	1200	25.92	22.62	21.29	20.75	20.03	19.02	15.25	14.50	11.51	9.24	9.80	7.22	5.16
4265.09	1300	23.46	20.52	19.33	18.88	18.30	17.49	14.10	13.52	10.84	8.20	8.73	6.81	4.88
4593.18	1400	21.38	18.80	17.65	17.26	16.79	16.11	13.07	12.65	10.28	7.49	7.78	6.43	4.62
4921.26	1500	19.50	17.17	16.22	15.89	15.49	14.93	12.12	11.93	9.69	6.95	6.89	6.07	4.41
5249.34	1600	17.36	15.29	14.52	14.24	13.93	13.47	11.01	10.97	8.92	6.38	5.92	5.58	4.09
5577.43	1700	16.43	14.48	13.79	13.55	13.29	12.90	10.59	10.62	8.76	6.23	5.41	5.40	4.03
5905.51	1800	15.21	13.41	12.74	12.55	12.35	12.04	9.93	10.07	8.36	6.03	4.88	5.10	3.88
6233.60	1900	14.20	12.53	11.88	11.71	11.53	11.28	9.34	9.59	7.97	5.81	4.46	4.80	3.73
6561.68	2000	13.24	11.68	11.14	10.99	10.84	10.63	8.82	9.13	7.64	5.59	4.08	4.50	3.59

Table 8. 24 Hour dispersion values averaged over seven metropolitan counties (µg/m³ per lb/hr)

Distance to receptor in feet	Distance to receptor in meters	Stack height at 10 ft (3.05 m)	Stack height at 15 ft (4.57 m)	Stack height at 20 ft (6.10 m)	Stack height at 25 ft (7.62 m)	Stack height at 30 ft (9.14 m)	Stack height at 35 ft (10.67 m)	Stack height at 40 ft (12.19 m)	Stack height at 50 ft (15.24 m)	Stack height at 60 ft (18.29 m)	Stack height at 75 ft (22.86 m)	Stack height at 100 ft (30.48 m)	Stack height at 150 ft (45.72 m)	Stack height at 200 ft (60.96 m)
16.40	5	3470.53	2241.06	1244.39	737.63	444.36	291.12	210.37	112.83	73.46	43.76	22.71	9.29	5.16
32.81	10	3012.56	2030.31	1178.01	703.95	438.02	291.52	211.26	113.79	74.31	44.14	22.94	9.33	5.15
49.21	15	2349.13	1631.99	965.53	578.82	366.70	247.43	180.19	97.62	69.85	44.36	23.16	9.39	5.15
65.62	20	1107.15	1214.62	800.92	488.44	312.65	211.00	153.09	82.78	60.03	40.60	23.20	9.44	5.16
82.02	25	662.23	496.41	441.08	312.39	239.60	178.51	134.05	73.07	52.79	35.89	21.85	9.49	5.16
114.83	35	462.58	343.42	250.61	186.39	139.58	104.24	77.55	40.51	40.10	29.53	18.10	9.14	5.15
164.04	50	312.60	233.18	169.38	133.15	105.17	84.27	67.53	41.73	27.32	17.30	14.70	7.51	4.77
246.06	75	201.25	155.05	111.41	89.13	72.01	60.15	50.81	36.15	25.85	16.29	8.31	6.04	3.83
328.08	100	140.49	116.69	83.98	67.22	54.12	45.57	39.07	29.41	22.00	14.87	8.42	3.80	3.29
492.13	150	69.88	67.60	53.31	43.49	35.48	29.71	25.37	19.90	15.88	11.63	7.28	3.43	1.84
656.17	200	41.42	43.15	36.94	30.71	25.60	21.76	18.76	14.91	11.84	9.03	6.04	3.16	1.83

S-2. Screening Threshold Values Development

Distance to receptor in feet	Distance to receptor in meters	Stack height at 10 ft (3.05 m)	Stack height at 15 ft (4.57 m)	Stack height at 20 ft (6.10 m)	Stack height at 25 ft (7.62 m)	Stack height at 30 ft (9.14 m)	Stack height at 35 ft (10.67 m)	Stack height at 40 ft (12.19 m)	Stack height at 50 ft (15.24 m)	Stack height at 60 ft (18.29 m)	Stack height at 75 ft (22.86 m)	Stack height at 100 ft (30.48 m)	Stack height at 150 ft (45.72 m)	Stack height at 200 ft (60.96 m)
820.21	250	28.38	29.70	26.89	22.94	19.53	16.64	14.38	11.52	9.36	7.19	5.00	2.80	1.73
984.25	300	21.39	22.19	20.47	18.00	15.58	13.37	11.54	9.14	7.66	5.94	4.19	2.47	1.59
1148.29	350	16.85	17.37	16.20	14.59	12.87	11.10	9.54	7.39	6.34	5.05	3.56	2.18	1.45
1312.34	400	13.90	14.31	13.38	12.25	10.93	9.49	8.13	6.17	5.32	4.37	3.10	1.94	1.33
1476.38	450	11.50	11.88	11.19	10.37	9.34	8.17	7.03	5.27	4.50	3.81	2.75	1.73	1.21
1640.42	500	9.79	10.13	9.57	8.96	8.16	7.22	6.25	4.61	3.89	3.35	2.46	1.55	1.10
1804.46	550	8.24	8.57	8.12	7.66	7.04	6.30	5.50	4.04	3.32	2.89	2.17	1.37	0.99
1968.50	600	7.15	7.44	7.06	6.70	6.22	5.64	4.98	3.70	2.94	2.57	1.97	1.25	0.91
2132.55	650	6.44	6.72	6.40	6.12	5.72	5.23	4.67	3.51	2.74	2.36	1.86	1.18	0.86
2296.59	700	5.75	6.00	5.73	5.50	5.17	4.76	4.28	3.26	2.52	2.13	1.71	1.10	0.80
2460.63	750	5.18	5.43	5.19	4.99	4.72	4.37	3.95	3.04	2.33	1.91	1.59	1.03	0.74
2624.67	800	4.46	4.67	4.49	4.34	4.12	3.83	3.49	2.71	2.07	1.66	1.40	0.91	0.66
2788.71	850	4.31	4.52	4.36	4.22	4.02	3.76	3.45	2.71	2.06	1.61	1.37	0.91	0.65
2952.76	900	3.86	4.04	3.90	3.79	3.62	3.40	3.14	2.50	1.90	1.45	1.25	0.84	0.60
3116.80	950	3.65	3.83	3.70	3.59	3.45	3.25	3.02	2.44	1.86	1.38	1.18	0.82	0.59
3280.84	1000	3.35	3.52	3.40	3.31	3.19	3.02	2.82	2.31	1.78	1.30	1.10	0.77	0.56
3608.92	1100	2.90	3.04	2.94	2.88	2.78	2.66	2.50	2.09	1.64	1.17	0.97	0.70	0.51
3937.01	1200	2.55	2.68	2.60	2.55	2.48	2.38	2.25	1.92	1.52	1.06	0.85	0.64	0.47
4265.09	1300	2.28	2.39	2.32	2.28	2.23	2.15	2.04	1.76	1.42	0.98	0.75	0.59	0.44
4593.18	1400	2.05	2.15	2.08	2.05	2.00	1.94	1.85	1.61	1.32	0.92	0.67	0.55	0.40
4921.26	1500	1.84	1.93	1.88	1.85	1.82	1.76	1.69	1.49	1.24	0.86	0.60	0.50	0.38
5249.34	1600	1.63	1.71	1.67	1.65	1.62	1.57	1.51	1.35	1.13	0.79	0.53	0.46	0.35
5577.43	1700	1.53	1.60	1.57	1.55	1.52	1.49	1.44	1.29	1.09	0.77	0.50	0.44	0.34
5905.51	1800	1.40	1.47	1.44	1.42	1.41	1.38	1.33	1.21	1.03	0.74	0.46	0.41	0.32
6233.60	1900	1.30	1.36	1.33	1.32	1.30	1.28	1.24	1.13	0.98	0.71	0.44	0.38	0.30
6561.68	2000	1.20	1.26	1.23	1.22	1.21	1.19	1.15	1.06	0.92	0.68	0.41	0.35	0.28

Screening threshold values

Once MPCA staff completed the modeling and averaged the model dispersion values, the next step was to evaluate the inhalation health benchmarks (IHBs) that the MPCA staff used to calculate the screening threshold values for each individual air toxic. IHBs have the correct units to result in a threshold value that is in units (lb/hr or ton/yr) that can then be compared to hourly and annual emission rates in the same units (lb/hr or ton/yr). Some air toxics do have an oral value, but for the purposes of this rule and screening threshold analysis only the inhalation values are used. The next sections discuss how the MPCA staff selected which IHBs to use, calculated the screening threshold values, and summarized the screening threshold values.

Inhalation Health Benchmarks

MPCA staff collected IHBs from various resources and MPCA staff used IHBs to calculate the screening threshold values for each air toxic. MPCA staff used IHBs that are cancer values based on inhalation unit risks (IURs) or noncancer reference concentrations (RfCs). RfCs are an estimate of the continuous inhalation exposure to the human population. The IUR is an estimate of the increased cancer risk from inhalation exposure for a lifetime. The documentation for the IHBs can be found in Sonar Exhibit 3.

MCPA staff used either cancer values or RfCs for the annual (or chronic) screening thresholds value, given the availability. If a chemical has both a cancer value and a reference concentration, then the MPCA staff used the lower value. RfCs used to calculate the annual screening threshold value are denoted with the subscript chronic ($RfC_{chronic}$).

Acute thresholds are based on 1-hr or 24-hr toxicity data. These are evaluated against the 1-hr or 24-hr dispersion values and are denoted with the subscript acute (RfC_{acute})

MPCA staff used a variety of resources to collect IHB data, which included the Agency for Toxic Substances and Disease Registry (ATSDR), California Office of Environmental Health Hazard Assessment (CAL EPA), Integrated Risk Information System (IRIS), Minnesota Depart of Health air guidance values, and Provisional Peer-Reviewed Toxicity Values (PPRTV).

Agency for Toxic Substances and Disease Registry

The Agency for Toxic Substances and Disease Registry (ATSDR) is an environmental public health agency overseen by the U.S. Department of Health and Human Services. ATSDR has developed Minimal Risk Levels (MRLs) which are a prediction of how much someone can be exposed to a chemical without detectable health risks[4]. MRLs are developed for health effects other than cancer and do not mean that health problems will occur if exposed to levels above the MRLs.

MRLs are derived for three different time periods: acute (about 1 to 14 days), intermediate (from 15-364 days), and chronic (exposure for more than 364 days). MPCA staff used the acute and chronic MRLs for the hourly and annual screening threshold values.

[4] *Minimal Risk Levels (MRLs). Retrieved from https://www.atsdr.cdc.gov/minimal-risk-levels/about/index.html*

California Office of Environmental Health Hazard Assessment

The California Office of Environmental Health Hazard Assessment (CAL EPA) is the lead state agency for the assessment of health risks posed by environmental contaminants[5]. Part of CAL EPA's work is to develop reference exposure levels (RELs) and unit risk factors.

CAL EPA's RELs are also developed for different time durations; acute (hourly), intermediate, and chronic (continuous exposure over a lifetime). Unit risk factors look at the lifetime continuous exposure to a carcinogen. Acute RELs, chronic RELs, and unit risk factor were used to calculate screening threshold values.

Integrated Risk Information System

The U.S. EPA Integrated Risk Information System's (IRIS) mission is to identify and characterize the health hazards of chemicals found in the environment [6]. IRIS assessments can cover a chemical, a group of related chemicals, or a complex mixture.

IRIS assessments derive toxicity values including RfCs, and IURs. MPCA staff used RfCs to calculate hourly and annual screening threshold values, and IURs to calculate the annual screening thresholds values.

Minnesota Department of Health

The Minnesota Department of Health (MDH) develops air guidance values to evaluate the potential human health risks from exposures to chemicals in ambient air[7]. MDH has developed different air guidance values which include Health Based Values (HBVs), Risk Assessment Advice (RAA), and Volatile Organic Compounds (VOCs) toxicity values.

Air values from MDH are either a RfC or an IUR. RfCs are developed for different time durations: $acute_{1h}$ (1 hour), $acute_{24h}$ (24 hrs), intermediate (greater than 24 hours to 1 year), and chronic (greater than 1 year to lifetime). IURs cover a lifetime, which is between 0 to 70 years. MPCA staff used MDH's HBV,RAA, and VOC RfCs and IURs to calculate the hourly and annual screening threshold values.

Provisional Peer-Reviewed Toxicity Values

The Provisional Peer-Reviewed Toxicity Value (PPRTV) program's mission is to protect human health and the environment by identifying and characterizing health hazards and by providing toxicity information and toxicity values for chemicals of concern to the Superfund Program[8].

PPRTV assessments develop toxicity values that include inhalation reference concentrations (p-RfCs), and provisional inhalation unit risks (p-IURs). MPCA staff used both p-RfCs and p-IURS to calculate annual screening threshold values.

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[5] OEHHA. Retrieved from https://oehha.ca.gov/

[6] Basic Information About Integrated Risk Information System. Retrieved from https://www.epa.gov/iris/basic-information-about-integrated-risk-information-system.

[7] Air Guidance Values. Retrieved from https://www.health.state.mn.us/communities/environment/risk/guidance/air/table.html

[8] Basic Information About Provisional Peer-Reviewed Toxicity Values (PPRTVs). Retrieved from https://www.epa.gov/pprtv/basic-information-about-provisional-peer-reviewed-toxicity-values-pprtvs

Grouped compounds

Some air toxics that are required to be reported through emissions inventory do not have an IHB, but are a part of a compound group. For this reason, MPCA staff has developed a way for these air toxics to be grouped in the STRATA spreadsheet. For instance, antimony trichloride (CAS # 10025-91-9) does not have an IHB associated with it, but it is part of the Antimony Compounds. Since antimony trichloride is included in the Antimony Compounds, the emissions from antimony trichloride can be grouped along with other Antimony air toxics that don't have an IHB and then are evaluated as a group as Antimony Compounds. In the case of metal grouped compounds, there is a conversion factor applied to individual air toxics that do not have an IHB and are being grouped in a metal compound. For example, antimony trichloride has a conversion factor of 0.534 applied to any antimony trichloride emissions reported. The conversion factors are found by taking the molecular mass of the metal divided by the mass of the specific air toxics. For this example, antimony has a molecular mass of 121.76 g/mol and antimony trichloride has a molecular mass of 228.12 g/mol. Given this information (121.76 g/mol /228.12 g/mol) = 0.534. For grouped compounds that are not metals, such as glycol ethers, polychlorinated biphenyls, and polycyclic organic matter (POM), the conversion factor is assumed to be 1. These air toxics that do not have an IHB are not listed in this document, but are included in the Screening Threshold for Regulated Air Toxics Analysis (STRATA) spreadsheet, along with the conversion factors.

List of values

Tables 9 and 10 below show the values the MPCA staff used to calculate the hourly and annual screening threshold values and their sources. Table 9 includes values (RfC_{acute}) that the MPCA used to calculate the hourly screening threshold values. Table 10 includes the $RfC_{chronic}$ and cancer values that the MPCA staff used to calculate the annual screening threshold values. Additionally, Table 10 includes information on whether the chemical needs an age dependent adjustment factor (ADAF) applied to it. The ADAFs are only applied to cancer values. MPCA staff applied ADAFs when there is an increased susceptibility to cancer from early-life exposures to linear carcinogens in the absence of chemical-specific data. The equations in the next section will show how the MPCA staff calculated these screening threshold values given the different IHBs and modeled dispersion values.

Table 9. List of RFC_{acute} values

CAS number	Air toxic	HAP	RfC_{acute} value (ug/m^3)	Source	Using 1-hr or 24-hr dispersion value
75-07-0	Acetaldehyde	x	470	CAL EPA	1-hr
67-64-1	Acetone		19000	ATSDR	24-hr
107-02-8	Acrolein	x	5	MDH HBV	1-hr
79-10-7	Acrylic acid	x	6000	CAL EPA	1-hr
---	Aldehydes		50	MDH HBV	1-hr
7664-41-7	Ammonia		11800	ATSDR	24-hr
7440-36-0	Antimony	x	1	ATSDR	24-hr
ANTIMONY-COMPS	Antimony Compounds	x	1	ATSDR	24-hr
7440-38-2	Arsenic	x	0.2	CAL EPA	1-hr
ARSENIC-COMPS	Arsenic Compounds	x	0.2	CAL EPA	1-hr
1327-53-3	Arsenic (V) oxide	x	0.2	CAL EPA	1-hr

CAS number	Air toxic	HAP	RfC_{acute} value (ug/m^3)	Source	Using 1-hr or 24-hr dispersion value
1327-53-3	Arsenic Trioxide	x	0.2	CAL EPA	1-hr
7784-42-1	Arsine	x	0.2	CAL EPA	1-hr
71-43-2	Benzene	x	30	MDH HBV	24-hr
100-44-7	Benzyl chloride	x	240	CAL EPA	1-hr
74-83-9	Bromomethane	x	3900	CAL EPA	1-hr
106-94-5	Bromopropane, 1-	x	100	MDH HBV	24-hr
106-99-0	Butadiene, 1,3-	x	660	CAL EPA	1-hr
111-76-2	Butyl Cellosolve (ethylene glycol monobutyl ether)		29000	ATSDR	24-hr
7440-43-9	Cadmium	x	0.03	ATSDR	24-hr
CADMIUM-COMPS	Cadmium Compounds	x	0.03	ATSDR	24-hr
1306-19-0	Cadmium oxide	x	0.03	ATSDR	24-hr
105-60-2	Caprolactam		50	CAL EPA	1-hr
75-15-0	Carbon disulfide	x	600	ATSDR	24-hr
56-23-5	Carbon tetrachloride	x	1900	CAL EPA	1-hr
463-58-1	Carbonyl sulfide	x	660	CAL EPA	1-hr
111-15-9	Cellosolve Acetate (ethylene glycol monoethyl ether acetate)	x	140	CAL EPA	1-hr
7782-50-5	Chlorine	x	170	ATSDR	24-hr
67-66-3	Chloroform	x	5	ATSDR	24-hr
7440-48-4	Cobalt	x	0.3	ATSDR	24-hr
COBALT-COMPS	Cobalt Compounds	x	0.3	ATSDR	24-hr
7440-50-8	Copper		100	CAL EPA	1-hr
COPPER-COMPS	Copper Compounds		100	CAL EPA	1-hr
57-12-5	Cyanide (Cyanide ion, Inorganic cyanides, Isocyanide)	x	340	CAL EPA	1-hr
CYANIDE-COMPS	Cyanide Compounds	x	340	CAL EPA	1-hr
106-46-7	Dichlorobenzene(p), 1,4-	x	12000	ATSDR	24-hr
25321-22-6	Dichlorobenzenes		12000	ATSDR	24-hr
156-60-5	Dichloroethylene, trans-1,2-		12000	ATSDR	24-hr
62-73-7	Dichlorvos	x	18	ATSDR	24-hr
123-91-1	Dioxane, 1,4- (1,4-Diethylene dioxide)	x	7200	ATSDR	24-hr
106-89-8	Epichlorohydrin (l-Chloro-2,3-epoxypropane)	x	1300	CAL EPA	1-hr
110-80-5	Ethoxyethanol, 2- (ethylene glycol monoethyl ether)	x	370	CAL EPA	1-hr
100-41-4	Ethylbenzene	x	21700	ATSDR	24-hr
75-00-3	Ethyl chloride (Chloroethane)	x	34000	ATSDR	24-hr
107-06-2	Ethylene dichloride (1,2-Dichloroethane)	x	400	ATSDR	24-hr

CAS number	Air toxic	HAP	RfC_{acute} value (ug/m^3)	Source	Using 1-hr or 24-hr dispersion value
107-21-1	Ethylene glycol	x	2000	ATSDR	24-hr
75-21-8	Ethylene oxide	x	50	MDH HBV	24-hr
50-00-0	Formaldehyde	x	50	MDH HBV	1-hr
GLYCOL ETHERS-COMPS	Glycol ethers	x	93	CAL EPA	1-hr
67-72-1	Hexachloroethane	x	58000	ATSDR	24-hr
822-06-0	Hexamethylene-1,6-diisocyanate	x	0.3	CAL EPA	1-hr
110-54-3	Hexane	x	21000	ATSDR	24-hr
7647-01-0	Hydrochloric acid (hydrogen chloride)	x	2100	CAL EPA	1-hr
74-90-8	Hydrogen cyanide	x	340	CAL EPA	1-hr
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)	x	16	ATSDR	24-hr
7783-07-5	Hydrogen selenide	x	5	CAL EPA	1-hr
7783-06-4	Hydrogen sulfide		98	ATSDR	24-hr
7439-97-6	Mercury (elemental)	x	0.6	CAL EPA	1-hr
MERCURY-COMPS	Mercury Compounds	x	0.6	CAL EPA	1-hr
67-56-1	Methanol	x	28000	CAL EPA	1-hr
109-86-4	Methoxyethanol, 2- (ethylene glycol monomethyl ether EGME)	x	93	CAL EPA	1-hr
74-87-3	Methyl chloride (Chloromethane)	x	1000	ATSDR	24-hr
71-55-6	Methyl chloroform (1,1,1-Trichloroethane)	x	9000	IRIS	1-hr
78-93-3	Methyl ethyl ketone (2-Butanone)		2950	ATSDR	24-hr
1634-04-4	Methyl tert butyl ether	x	7200	ATSDR	24-hr
75-09-2	Methylene chloride (Dichloromethane)	x	2000	ATSDR	24-hr
101-68-8	Methylene diphenyl diisocyanate (MDI)	x	12	CAL EPA	1-hr
91-20-3	Naphthalene	x	200	MDH HBV	1-hr
7440-02-0	Nickel	x	0.2	CAL EPA	1-hr
373-02-4	Nickel Acetate	x	0.2	CAL EPA	1-hr
3333-67-3	Nickel Carbonate	x	0.2	CAL EPA	1-hr
13463-39-3	Nickel Carbonyl	x	0.2	CAL EPA	1-hr
NICKEL-COMPS	Nickel Compounds	x	0.2	CAL EPA	1-hr
12054-48-7	Nickel Hydroxide	x	0.2	CAL EPA	1-hr
1313-99-1	Nickel oxide	x	0.2	CAL EPA	1-hr
---	Nickel refinery dust	x	0.2	CAL EPA	1-hr
12035-72-2	Nickel Subsulfide (NI3S2)	x	0.2	CAL EPA	1-hr
1271-28-9	Nickelocene	x	0.2	CAL EPA	1-hr
7697-37-2	Nitric acid		86	CAL EPA	1-hr
98-95-3	Nitrobenzene	x	500	ATSDR	24-hr
108-95-2	Phenol	x	5800	CAL EPA	1-hr

CAS number	Air toxic	HAP	RfC_{acute} value (ug/m^3)	Source	Using 1-hr or 24-hr dispersion value
75-44-5	Phosgene	x	4	CAL EPA	1-hr
9016-87-9	Polymeric diphenylmethane diisocyanate		12	CAL EPA	1-hr
151-50-8	Potassium cyanide	x	340	CAL EPA	1-hr
78-87-5	Propylene dichloride (1,2-Dichloropropane)	x	92	ATSDR	24-hr
75-56-9	Propylene oxide	x	3100	CAL EPA	1-hr
143-33-9	Sodium cyanide	x	340	CAL EPA	1-hr
100-42-5	Styrene	x	21000	ATSDR	24-hr
7664-93-9	Sulfuric acid (aerosol forms only)		120	CAL EPA	1-hr
127-18-4	Tetrachloroethylene (perchloroethylene)	x	41	ATSDR	24-hr
108-88-3	Toluene	x	7600	ATSDR	24-hr
584-84-9	Toluene-2,4-diisocyanate	x	2	CAL EPA	1-hr
26471-62-5	Toluenediisocyanate (mixed isomers)	x	0.07	ATSDR	24-hr
79-00-5	Trichloroethane, 1,1,2-	x	160	ATSDR	24-hr
79-01-6	Trichloroethylene (TCE)	x	2	MDH HBV	24-hr
96-18-4	Trichloropropane, 1,2,3-		6	ATSDR	24-hr
121-44-8	Triethylamine	x	2800	CAL EPA	1-hr
526-73-8	Trimethylbenzene, 1,2,3-		2400	CAL EPA	1-hr
95-63-6	Trimethylbenzene, 1,2,4-		2400	CAL EPA	1-hr
108-67-8	Trimethylbenzene, 1,3,5-		2400	CAL EPA	1-hr
7440-62-2	Vanadium		0.8	ATSDR	24-hr
VANADIUM-COMPS	Vanadium Compounds		0.8	ATSDR	24-hr
1314-62-1	Vanadium Pentoxide, (V2O5)		30	CAL EPA	1-hr
108-05-4	Vinyl acetate	x	3500	ATSDR	24-hr
75-01-4	Vinyl chloride	x	1300	ATSDR	24-hr
1330-20-7	Xylenes	x	8700	ATSDR	24-hr
108-38-3	Xylenes, m-	x	8700	ATSDR	24-hr
95-47-6	Xylenes, o-	x	8700	ATSDR	24-hr
106-42-3	Xylenes, p-	x	8700	ATSDR	24-hr

Table 10. List of $RFC_{chronic}$ and cancer values (C)

CAS number	Air toxic	HAP	$RfC_{chronic}$ or cancer value (ug/m^3)	$RfC_{chronic}$ or C	Source	ADAF applied?
75-07-0	Acetaldehyde	x	4.55	C	IRIS	N
60-35-5	Acetamide	x	5.00E-01	C	CAL EPA	Y
67-64-1	Acetone		2.00E+04	$RfC_{chronic}$	MDH VOC	
75-05-8	Acetonitrile	x	6.00E+01	$RfC_{chronic}$	IRIS	
53-96-3	Acetylaminofluorene, 2-	x	7.70E-03	C	CAL EPA	Y
107-02-8	Acrolein	x	0.4	$RfC_{chronic}$	MDH HBV	
79-06-1	Acrylamide	x	1.00E-01	C	IRIS	Y
79-10-7	Acrylic acid	x	1	$RfC_{chronic}$	IRIS	
107-13-1	Acrylonitrile	x	1.50E-01	C	IRIS	Y
---	Aldehydes	x	4.55	C	IRIS	N
309-00-2	Aldrin		2.04E-03	C	IRIS	Y
107-05-1	Allyl chloride	x	1	$RfC_{chronic}$	IRIS	
7429-90-5	Aluminum		5	$RfC_{chronic}$	PPRTV	
ALUMINUM-COMPOUNDS	Aluminum Compounds		5	$RfC_{chronic}$	PPRTV	
82-28-0	Amino-2-methylanthraquinone, 1-	x	2.30E-01	C	CAL EPA	Y
117-79-3	Aminoanthraquinone, 2-	x	1.1	C	CAL EPA	Y
97-56-3	Aminoazotoluene, o- (C.I. Solvent Yellow 3)	x	9.00E-03	C	CAL EPA	Y
92-67-1	Aminobiphenyl, 4-	x	1.70E-03	C	CAL EPA	Y
7664-41-7	Ammonia		500	$RfC_{chronic}$	ATSDR	
62-53-3	Aniline	x	1	$RfC_{chronic}$	IRIS	
90-04-0	Anisidine, o-	x	2.50E-01	C	CAL EPA	Y
7440-36-0	Antimony	x	0.3	$RfC_{chronic}$	ATSDR	
ANTIMONY-COMPS	Antimony Compounds	x	0.3	$RfC_{chronic}$	ATSDR	
1309-64-4	Antimony trioxide	x	0.2	$RfC_{chronic}$	IRIS	
140-57-8	Aramite		1.4	C	IRIS	Y
7440-38-2	Arsenic	x	2.33E-03	C	IRIS	Y
ARSENIC-COMPS	Arsenic Compounds	x	2.33E-03	C	IRIS	Y
1303-28-2	Arsenic (V) oxide	x	2.33E-03	C	IRIS	Y
1327-53-3	Arsenic Trioxide	x	2.33E-03	C	IRIS	Y
7784-42-1	Arsine	x	2.33E-03	C	IRIS	Y
1332-21-4	Asbestos (units in fibers)	x	43	C	IRIS	Y
492-80-8	Auramine (C.I. Solvent Yellow 34)	x	4.00E-02	C	CAL EPA	Y
103-33-3	Azobenzene		3.23E-01	C	IRIS	Y
10294-40-3	Barium Chromate	x	9.01E-04	C	IRIS	Y
56-55-3	Benz[a]anthracene	x	9.09E-02	C	CAL EPA	Y

CAS number	Air toxic	HAP	$RfC_{chronic}$ or cancer value (ug/m^3)	$RfC_{chronic}$ or C	Source	ADAF applied?
71-43-2	Benzene	x	0.8	C	MDH HBV	N
92-87-5	Benzidine	x	1.49E-04	C	IRIS	Y
205-82-3	Benzo(j)fluoranthene	x	9.09E-02	C	CAL EPA	Y
207-08-9	Benzo(k)fluoranthene	x	9.09E-02	C	CAL EPA	Y
50-32-8	Benzo[a]pyrene	x	2.00E-04	$RfC_{chronic}$	IRIS	
205-99-2	Benzo[b]fluoranthene	x	9.09E-02	C	CAL EPA	Y
100-44-7	Benzyl chloride	x	2.00E-01	C	MDH VOC	Y
7440-41-7	Beryllium	x	4.17E-03	C	IRIS	Y
BERYLLIUM-COMPS	Beryllium Compounds	x	4.17E-03	C	IRIS	Y
1304-56-9	Beryllium Oxide	x	4.17E-03	C	CAL EPA	Y
13510-49-1	Beryllium sulfate	x	1.20E-05	C	CAL EPA	Y
111-44-4	Bis(2-chloroethyl)ether	x	3.00E-02	C	IRIS	Y
117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)	x	4.2	C	CAL EPA	Y
542-88-1	Bis(chloromethyl)ether	x	1.61E-04	C	IRIS	Y
108-86-1	Bromobenzene		60	$RfC_{chronic}$	IRIS	
75-25-2	Bromoform	x	9.1	C	IRIS	Y
74-83-9	Bromomethane	x	4	$RfC_{chronic}$	MDH VOC	
106-94-5	Bromopropane, 1-	x	2	$RfC_{chronic}$	MDH HBV	
106-99-0	Butadiene, 1,3-	x	2.78E-01	C	MDH VOC	N
111-76-2	Butyl Cellosolve (ethylene glycol monobutyl ether)		1600	$RfC_{chronic}$	IRIS	
7440-43-9	Cadmium	x	5.56E-03	C	IRIS	Y
CADMIUM-COMPS	Cadmium Compounds	x	5.56E-03	C	IRIS	Y
1306-19-0	Cadmium Oxide	x	5.56E-03	C	IRIS	Y
13765-19-0	Calcium Chromate	x	9.01E-04	C	IRIS	Y
105-60-2	Caprolactam		2.2	$RfC_{chronic}$	CAL EPA	
133-06-2	Captan	x	15.2	C	CAL EPA	Y
75-15-0	Carbon disulfide	x	800	$RfC_{chronic}$	MDH VOC	
56-23-5	Carbon tetrachloride	x	1.7	C	MDH VOC	Y
463-58-1	Carbonyl sulfide	x	100	$RfC_{chronic}$	PPRTV	
111-15-9	Cellosolve Acetate (ethylene glycol monoethyl ether acetate)		60	$RfC_{chronic}$	PPRTV	
1306-38-3	Cerium Oxide		0.9	$RfC_{chronic}$	IRIS	
57-74-9	Chlordane	x	2.94E-02	C	CAL EPA	Y
12789-03-6	Chlordane, technical		1.00E-01	C	IRIS	Y
7782-50-5	Chlorine	x	0.15	$RfC_{chronic}$	ATSDR	
10049-04-4	Chlorine Dioxide (CLO2)		0.2	$RfC_{chronic}$	IRIS	

CAS number	Air toxic	HAP	$RfC_{chronic}$ or cancer value (ug/m^3)	$RfC_{chronic}$ or C	Source	ADAF applied?
75-68-3	Chloro-1,1-difluoroethane, 1- (HCFC-142b)		50000	$RfC_{chronic}$	IRIS	
563-47-3	Chloro-2-methylpropene, 3-		2.50E-01	C	CAL EPA	Y
532-27-4	Chloroacetophenone, 2-	x	0.03	$RfC_{chronic}$	IRIS	
108-90-7	Chlorobenzene	x	50	$RfC_{chronic}$	MDH VOC	
510-15-6	Chlorobenzilate	x	3.17E-01	C	CAL EPA	Y
75-45-6	Chlorodifluoromethane (HCFC-22)		50000	$RfC_{chronic}$	IRIS	
67-66-3	Chloroform	x	4.30E-01	C	IRIS	Y
107-30-2	Chloromethyl Methyl Ether	x	1.45E-02	C	CAL EPA	Y
126-99-8	Chloroprene	x	3.30E-02	C	IRIS	Y
7738-94-5	Chromic acid	x	8.00E-04	C	IRIS	Y
1333-82-0	Chromic Trioxide	x	9.01E-04	C	IRIS	Y
7440-47-3	Chromium	x	9.01E-04	C	IRIS	Y
18540-29-9	Chromium (Hexavalent)	x	9.01E-04	C	IRIS	Y
CHROMVI-COMPS	Chromium VI Compounds	x	9.01E-04	C	IRIS	Y
218-01-9	Chrysene (Benzo(a)phenanthrene)	x	9.09E-01	C	CAL EPA	Y
10061-01-5	cis-1,3-Dichloropropene		2.5	C	MDH VOC	Y
8007-45-2	Coal Tar		1.61E-02	C	IRIS	Y
7440-48-4	Cobalt	x	1.10E-03	C	PPRTV	N
COBALT-COMPS	Cobalt Compounds	x	1.10E-03	C	PPRTV	N
1307-96-6	Cobalt (II) oxide	x	1.30E-03	C	CAL EPA	N
10124-43-3	Cobalt sulfate	x	1.00E-03	C	CAL EPA	N
---	Coke Oven Emissions	x	1.61E-02	C	IRIS	Y
108-39-4	Cresol, m-	x	600	$RfC_{chronic}$	CAL EPA	
95-48-7	Cresol, o-	x	600	$RfC_{chronic}$	CAL EPA	
106-44-5	Cresol, p-	x	600	$RfC_{chronic}$	CAL EPA	
1319-77-3	Cresols/Cresylic acid (isomers and mixture)	x	600	$RfC_{chronic}$	CAL EPA	
98-82-8	Cumene	x	400	$RfC_{chronic}$	IRIS	
57-12-5	Cyanide (Cyanide ion, Inorganic cyanides, Isocyanide)	x	0.8	$RfC_{chronic}$	IRIS	
CYANIDE-COMPS	Cyanide Compounds	x	0.8	$RfC_{chronic}$	IRIS	
110-82-7	Cyclohexane		6000	$RfC_{chronic}$	PPRTV	
101-80-4	Diaminodiphenyl ether, 4,4-	x	2.50E-01	C	CAL EPA	Y
226-36-8	Dibenz(a,h)acridine	x	9.09E-02	C	CAL EPA	Y
224-42-0	Dibenz(a,j)acridine	x	9.09E-02	C	CAL EPA	Y
53-70-3	Dibenz[a,h]anthracene	x	8.33E-03	C	CAL EPA	Y

CAS number	Air toxic	HAP	$RfC_{chronic}$ or cancer value (ug/m^3)	$RfC_{chronic}$ or C	Source	ADAF applied?
192-65-4	Dibenzo(a,e)pyrene	x	9.09E-03	C	CAL EPA	Y
189-64-0	Dibenzo(a,h)pyrene	x	9.09E-04	C	CAL EPA	Y
191-30-0	Dibenzo(a,l)pyrene	x	9.09E-04	C	CAL EPA	Y
194-59-2	Dibenzo(c,g)carbazole, 7H-	x	9.09E-03	C	CAL EPA	Y
189-55-9	Dibenzo[a,i]pyrene	x	9.09E-04	C	CAL EPA	Y
96-12-8	Dibromo-3-chloropropane, 1,2-	x	1.67E-09	C	PPRTV	N
106-46-7	Dichlorobenzene(p), 1,4-	x	0.91	C	CAL EPA	Y
25321-22-6	Dichlorobenzenes		0.91	C	CAL EPA	Y
91-94-1	Dichlorobenzidene, 3,3-	x	2.90E-02	C	CAL EPA	Y
72-55-9	Dichlorodiphenyldichloroethylene (DDE)	x	0.10	C	CAL EPA	Y
50-29-3	Dichlorodiphenyltrichloroethane, p, p'- (DDT)		0.10	C	IRIS	Y
75-35-4	Dichloroethylene (1,1-) (Vinylidene chloride)	x	200	$RfC_{chronic}$	MDH VOC	
156-59-2	Dichloroethylene, cis-1,2-		40	$RfC_{chronic}$	PPRTV	
156-60-5	Dichloroethylene, trans-1,2-		20	$RfC_{chronic}$	MDH RAA	
542-75-6	Dichloropropene, 1,3-	x	2.5	C	IRIS	Y
62-73-7	Dichlorvos	x	0.12	C	CAL EPA	Y
111-42-2	Diethanolamine	x	0.2	$RfC_{chronic}$	PPRTV	
112-34-5	Diethylene Glycol Monobutyl Ether	x	0.1	$RfC_{chronic}$	MDH HBV	
111-90-0	Diethylene Glycol Monoethyl Ether	x	2	$RfC_{chronic}$	MDH HBV	
60-11-7	Dimethyl aminoazobenzene	x	7.70E-03	C	CAL EPA	Y
68-12-2	Dimethyl formamide	x	30	$RfC_{chronic}$	IRIS	
57-97-6	Dimethylbenz[a]anthracene, 7,12-	x	1.41E-04	C	CAL EPA	Y
79-44-7	Dimethylcarbamoyl Chloride	x	2.70E-03	C	CAL EPA	Y
42397-64-8	Dinitropyrene, 1,6- (BaP)	x	9.09E-04	C	CAL EPA	Y
42397-65-9	Dinitropyrene, 1,8- (BaP)	x	9.09E-03	C	CAL EPA	Y
121-14-2	Dinitrotoluene, 2,4-	x	0.11	C	CAL EPA	Y
123-91-1	Dioxane, 1,4- (1,4-Diethylene dioxide)	x	2	C	IRIS	Y
122-66-7	Diphenylhydrazine, 1,2-	x	4.55E-02	C	IRIS	Y
1937-37-7	Direct Black 38	x	4.76E-03	C	CAL EPA	Y
2602-46-2	Direct Blue 6	x	4.76E-03	C	CAL EPA	Y
16071-86-6	Direct Brown 95	x	5.26E-03	C	CAL EPA	Y
106-89-8	Epichlorohydrin (l-Chloro-2,3-epoxypropane)	x	1	$RfC_{chronic}$	IRIS	
106-88-7	Epoxybutane, 1,2-	x	20	$RfC_{chronic}$	IRIS	
110-80-5	Ethoxyethanol, 2- (ethylene glycol monoethyl ether)	x	200	$RfC_{chronic}$	IRIS	
140-88-5	Ethyl Acrylate	x	8	$RfC_{chronic}$	PPRTV	

CAS number	Air toxic	HAP	$RfC_{chronic}$ or cancer value (ug/m^3)	$RfC_{chronic}$ or C	Source	ADAF applied?
100-41-4	Ethylbenzene	x	4	C	MDH VOC	N
51-79-6	Ethyl carbamate (Urethane)	x	3.40E-02	C	CAL EPA	Y
75-00-3	Ethyl chloride (Chloroethane)	x	4000	$RfC_{chronic}$	MDH VOC	
637-92-3	Ethyl tertiary-butyl ether (ETBE)		125	C	IRIS	Y
106-93-4	Ethylene dibromide (Dibromoethane)	x	1.70E-02	C	MDH VOC	Y
107-06-2	Ethylene dichloride (1,2-Dichloroethane)	x	0.38	C	MDH VOC	Y
107-21-1	Ethylene glycol	x	400	$RfC_{chronic}$	CAL EPA	
75-21-8	Ethylene oxide	x	2.00E-03	C	MDH HBV	N
96-45-7	Ethylene thiourea	x	0.77	C	CAL EPA	Y
151-56-4	Ethyleneimine	x	5.26E-04	C	CAL EPA	Y
75-34-3	Ethylidene dichloride (1,1-Dichloroethane)	x	6.3	C	CAL EPA	Y
50-00-0	Formaldehyde	x	7	$RfC_{chronic}$	MDH HBV	
GLYCOL ETHERS-COMP	Glycol ethers	x	0.1	$RfC_{chronic}$	PPRTV	
76-44-8	Heptachlor	x	7.69E-03	C	IRIS	Y
35822-46-9	Heptachlorodibenzo-p-dioxin, 1,2,3,4,6,7,8-	x	2.50E-06	C	MDH RAA	N
67562-39-4	Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	x	2.50E-06	C	MDH RAA	N
55673-89-7	Heptachlorodibenzofuran, 1,2,3,4,7,8,9-	x	2.50E-06	C	MDH RAA	N
118-74-1	Hexachlorobenzene	x	2.20E-02	C	IRIS	Y
87-68-3	Hexachlorobutadiene	x	0.45	C	IRIS	Y
608-73-1	Hexachlorocyclohexane (technical grade)	x	2.00E-02	C	IRIS	Y
319-84-6	Hexachlorocyclohexane, alpha-	x	5.60E-03	C	IRIS	Y
319-85-7	Hexachlorocyclohexane, beta-1,2,3,4,5,6-	x	1.90E-02	C	IRIS	Y
58-89-9	Hexachlorocyclohexane- Gamma Isomer	x	3.23E-02	C	CAL EPA	N
77-47-4	Hexachlorocyclopentadiene	x	0.20	$RfC_{chronic}$	IRIS	
39227-28-6	Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8-	x	2.50E-07	C	MDH RAA	N
57653-85-7	Hexachlorodibenzo-p-dioxin, 1,2,3,6,7,8-	x	7.69E-06	C	MDH RAA	N
19408-74-3	Hexachlorodibenzo-p-dioxin, 1,2,3,7,8,9-	x	7.69E-06	C	MDH RAA	N
70648-26-9	Hexachlorodibenzofuran, 1,2,3,4,7,8-	x	2.50E-07	C	MDH RAA	N
57117-44-9	Hexachlorodibenzofuran, 1,2,3,6,7,8-	x	2.50E-07	C	MDH RAA	N

CAS number	Air toxic	HAP	$RfC_{chronic}$ or cancer value (ug/m^3)	$RfC_{chronic}$ or C	Source	ADAF applied?
72918-21-9	Hexachlorodibenzofuran, 1,2,3,7,8,9-	x	2.50E-07	C	MDH RAA	N
60851-34-5	Hexachlorodibenzofuran, 2,3,4,6,7,8-	x	2.50E-07	C	MDH RAA	N
67-72-1	Hexachloroethane	x	0.91	C	CAL EPA	Y
822-06-0	Hexamethylene-1,6-diisocyanate	x	0.01	$RfC_{chronic}$	IRIS	
110-54-3	Hexane	x	700	$RfC_{chronic}$	MDH VOC	
591-78-6	Hexanone-2		30	$RfC_{chronic}$	MDH VOC	
302-01-2	Hydrazine	x	2.04E-03	C	IRIS	Y
7647-01-0	Hydrochloric acid (hydrogen chloride)	x	20	$RfC_{chronic}$	IRIS	
74-90-8	Hydrogen cyanide	x	0.8	$RfC_{chronic}$	IRIS	
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)	x	14	$RfC_{chronic}$	CAL EPA	
7783-06-4	Hydrogen sulfide		2	$RfC_{chronic}$	IRIS	
193-39-5	Indeno(1,2,3-cd)pyrene	x	9.09E-02	C	CAL EPA	Y
78-59-1	Isophorone	x	2000	$RfC_{chronic}$	CAL EPA	
7439-92-1	Lead	x	0.83	C	CAL EPA	Y
301-04-2	Lead Acetate	x	0.13	C	CAL EPA	Y
7758-97-6	Lead Chromate	x	9.01E-04	C	IRIS	Y
LEAD-COMPS	Lead Compounds	x	0.83	C	IRIS	Y
7446-27-7	Lead Phosphate	x	0.83	C	CAL EPA	Y
1335-32-6	Lead Subacetate	x	0.91	C	CAL EPA	Y
108-31-6	Maleic anhydride	x	0.7	$RfC_{chronic}$	CAL EPA	
7439-96-5	Manganese	x	0.1	$RfC_{chronic}$	MDH RAA	
MANGANESE-COMPS	Manganese Compounds	x	0.1	$RfC_{chronic}$	MDH RAA	
7439-97-6	Mercury (elemental)	x	0.3	$RfC_{chronic}$	IRIS	
MERCURY-COMPS	Mercury Compounds	x	0.3	$RfC_{chronic}$	IRIS	
67-56-1	Methanol	x	20000	$RfC_{chronic}$	IRIS	
109-86-4	Methoxyethanol, 2- (ethylene glycol monomethyl ether EGME)	x	20	$RfC_{chronic}$	IRIS	
110-49-6	Methyl Cellosolve Acetate	x	1	$RfC_{chronic}$	PPRTV	
74-87-3	Methyl chloride (Chloromethane)	x	90	$RfC_{chronic}$	MDH VOC	
71-55-6	Methyl chloroform (1,1,1-Trichloroethane)	x	5000	$RfC_{chronic}$	MDH VOC	
78-93-3	Methyl ethyl ketone (2-Butanone)		3000	$RfC_{chronic}$	MDH VOC	
108-10-1	Methyl isobutyl ketone (Hexone)	x	3000	$RfC_{chronic}$	MDH VOC	
624-83-9	Methyl isocyanate	x	1	$RfC_{chronic}$	CAL EPA	
80-62-6	Methyl methacrylate	x	700	$RfC_{chronic}$	IRIS	
1634-04-4	Methyl tert butyl ether	x	38	C	IRIS	Y
56-49-5	Methylcholanthrene, 3-	x	1.59E-03	C	CAL EPA	Y
3697-24-3	Methylchrysene, 5-	x	9.09E-03	C	CAL EPA	Y

CAS number	Air toxic	HAP	$RfC_{chronic}$ or cancer value (ug/m^3)	$RfC_{chronic}$ or C	Source	ADAF applied?
101-14-4	Methylene bis(2-chloroaniline), 4,4-	x	2.30E-02	C	CAL EPA	Y
75-09-2	Methylene chloride (Dichloromethane)	x	600	$RfC_{chronic}$	MDH VOC	
101-68-8	Methylene diphenyl diisocyanate (MDI)	x	0.6	$RfC_{chronic}$	IRIS	
101-77-9	Methylenedianiline, 4,4-	x	2.20E-02	C	CAL EPA	Y
90-12-0	Methylnaphthalene,1-	x	3.00E-03	$RfC_{chronic}$	PPRTV	
90-94-8	Michler's ketone	x	4.00E-02	C	CAL EPA	Y
2385-85-5	Mirex		1.96E-03	C	CAL EPA	Y
684-93-5	N-Nitroso-N-methylurea	x	2.94E-04	C	CAL EPA	Y
924-16-3	N-Nitrosodi-n-butylamine		6.20E-03	C	IRIS	Y
55-18-5	N-Nitrosodiethylamine		2.30E-04	C	IRIS	Y
62-75-9	N-Nitrosodimethylamine	x	7.10E-04	C	IRIS	Y
86-30-6	N-Nitrosodiphenylamine	x	3.8	C	CAL EPA	Y
59-89-2	N-Nitrosomorpholine	x	5.30E-03	C	CAL EPA	Y
91-20-3	Naphthalene	x	9	$RfC_{chronic}$	MDH HBV	
7440-02-0	Nickel	x	1.40E-02	$RfC_{chronic}$	CAL EPA	
373-02-4	Nickel Acetate	x	1.40E-02	$RfC_{chronic}$	CAL EPA	
3333-67-3	Nickel Carbonate	x	1.40E-02	$RfC_{chronic}$	CAL EPA	
13463-39-3	Nickel Carbonyl	x	1.40E-02	$RfC_{chronic}$	CAL EPA	
NICKEL-COMPS	Nickel Compounds	x	1.40E-02	$RfC_{chronic}$	CAL EPA	
12054-48-7	Nickel Hydroxide	x	1.40E-02	$RfC_{chronic}$	CAL EPA	
1313-99-1	Nickel oxide	x	2.00E-02	$RfC_{chronic}$	CAL EPA	
---	Nickel refinery dust from the pyrometallurgical process	x	1.40E-02	$RfC_{chronic}$	CAL EPA	
12035-72-2	Nickel Subsulfide (NI3S2)	x	1.40E-02	$RfC_{chronic}$	CAL EPA	
1271-28-9	Nickelocene	x	1.40E-02	$RfC_{chronic}$	CAL EPA	
602-87-9	Nitroacenaphthene, 5-	x	2.70E-01	C	CAL EPA	Y
98-95-3	Nitrobenzene	x	0.25	C	IRIS	N
7496-02-8	Nitrochrysene, 6-	x	9.09E-04	C	CAL EPA	Y
1836-75-5	Nitrofen		0.44	C	CAL EPA	Y
607-57-8	Nitrofluorene, 2-	x	9.09E-01	C	CAL EPA	Y
79-46-9	Nitropropane, 2-	x	20	$RfC_{chronic}$	IRIS	
5522-43-0	Nitropyrene, 1-	x	9.09E-02	C	CAL EPA	Y
57835-92-4	Nitropyrene, 4-	x	9.09E-02	C	CAL EPA	Y
156-10-5	Nitrosodiphenylamine, p-		1.6	C	MDH RAA	Y
3268-87-9	Octachlorodibenzo-p-dioxin, 1,2,3,4,6,7,8,9-	x	8.33E-05	C	MDH RAA	N

CAS number	Air toxic	HAP	$RfC_{chronic}$ or cancer value (ug/m^3)	$RfC_{chronic}$ or C	Source	ADAF applied?
39001-02-0	Octachlorodibenzofuran, 1,2,3,4,6,7,8,9-	x	8.33E-05	C	MDH RAA	N
74472-37-0	PCB 114 (2,3,4,4,5 Pentachlorobiphenyl)	x	9.00E-03	C	CAL EPA	Y
31508-00-6	PCB 118 (2,3,4,4,5 Pentachlorobiphenyl)	x	9.00E-03	C	CAL EPA	Y
65510-44-3	PCB 123 (2,3,4,4,5 Pentachlorobiphenyl)	x	9.00E-03	C	CAL EPA	Y
57465-28-8	PCB 126 (3,3,4,4,5 Pentachlorobiphenyl)	x	2.60E-06	C	CAL EPA	Y
38380-08-4	PCB 156 (2,3,3,4,4,5 Hexachlorobiphenyl)	x	9.00E-03	C	CAL EPA	Y
69782-90-7	PCB 157 (2,3,3,4,4,5 Hexachlorobiphenyl)	x	9.00E-03	C	CAL EPA	Y
52663-72-6	PCB 167 (2,3,4,4,5,5 Hexachlorobiphenyl)	x	9.00E-03	C	CAL EPA	Y
32774-16-6	PCB 169 (3,3,4,4,5,5 Hexachlorobiphenyl)	x	9.09E-06	C	CAL EPA	Y
39635-31-9	PCB 189 (2,3,3,4,4,5,5 Heptachlorobiphenyl)	x	9.00E-03	C	CAL EPA	Y
32598-13-3	PCB 77 (3,3,4,4-Tetrachlorobiphenyl)	x	2.60E-03	C	CAL EPA	Y
70362-50-4	PCB 81 (3,4,4,5 Tetrachlorobiphenyl)	x	9.09E-04	C	CAL EPA	Y
32598-14-4	PCB 105 (2,3,3,4,4 Pentachlorobiphenyl)	x	9.00E-03	C	CAL EPA	Y
40321-76-4	Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-	x	2.50E-08	C	CAL EPA	N
57117-41-6	Pentachlorodibenzofuran, 1,2,3,7,8-	x	8.33E-07	C	MDH RAA	N
57117-31-4	Pentachlorodibenzofuran, 2,3,4,7,8-	x	8.33E-08	C	MDH RAA	N
87-86-5	Pentachlorophenol	x	1.96	C	CAL EPA	Y
375-73-5	Perfluorobutane sulfonic acid (PFBS)		0.30	$RfC_{chronic}$	MDH RAA	
375-22-4	Perfluorobutanoic acid (PFBA)		10	$RfC_{chronic}$	MDH RAA	
355-46-4	Perfluorohexanesulfonic acid (PFHxS)		0.034	$RfC_{chronic}$	MDH RAA	
307-24-4	Perfluorohexanoic acid (PFHxA)		0.5	$RfC_{chronic}$	MDH RAA	
335-67-1	Perfluorooctanoic acid (PFOA)		0.063	$RfC_{chronic}$	MDH RAA	
1763-23-1	Perfluorooctane sulfonic acid (PFOS)		0.011	$RfC_{chronic}$	MDH RAA	
198-55-0	Perylene	x	2.00E-03	$RfC_{chronic}$	PPRTV	
108-95-2	Phenol	x	200	$RfC_{chronic}$	CAL EPA	
132-27-4	Phenylphenate, Sodium, o-	x	11.6	C	CAL EPA	Y
75-44-5	Phosgene	x	0.3	$RfC_{chronic}$	IRIS	
7803-51-2	Phosphine	x	0.3	$RfC_{chronic}$	IRIS	
7664-38-2	Phosphoric acid		10	$RfC_{chronic}$	IRIS	

CAS number	Air toxic	HAP	$RfC_{chronic}$ or cancer value (ug/m^3)	$RfC_{chronic}$ or C	Source	ADAF applied?
85-44-9	Phthalic anhydride	x	20	$RfC_{chronic}$	CAL EPA	
36355-01-8	Polybrominated Biphenyls	x	1.20E-03	C	CAL EPA	Y
1336-36-3	Polychlorinated biphenyls (Aroclors unspeciated)	x	0.1	C	IRIS	Y
POM-COMPS	Polycyclic Organic Matter (POM)	x	0.33	C	MDH RAA	Y
9016-87-9	Polymeric diphenylmethane diisocyanate		0.60	$RfC_{chronic}$	IRIS	
3761-53-3	Ponceau MX (C.I. Food Red 5)	x	7.69	C	CAL EPA	Y
151-50-9	Potassium cyanide	x	0.8	$RfC_{chronic}$	IRIS	
1120-71-4	Propane sultone, 1,3-	x	1.40E-02	C	CAL EPA	Y
57-57-8	Propiolactone, beta-	x	2.50E-03	C	CAL EPA	Y
123-38-6	Propionaldehyde	x	8	$RfC_{chronic}$	IRIS	
115-07-1	Propylene		3000	$RfC_{chronic}$	MDH ISV	
78-87-5	Propylene dichloride (1,2-Dichloropropane)	x	2.7	C	PPRTV	Y
107-98-2	Propylene Glycol Monomethyl Ether		2000	$RfC_{chronic}$	MDH VOC	
75-56-9	Propylene oxide	x	2.7	C	IRIS	Y
930-55-2	Pyrrolidine, 1-Nitroso-		1.64E-02	C	IRIS	Y
7782-49-2	Selenium	x	20	$RfC_{chronic}$	CAL EPA	
SELENIUM-COMPS	Selenium Compounds	x	20	$RfC_{chronic}$	CAL EPA	
7446-34-6	Selenium Sulfide	x	20	$RfC_{chronic}$	CAL EPA	
7631-86-9	Silica (crystalline, respirable, PM4)		3	$RfC_{chronic}$	MDH HBV	
143-33-9	Sodium cyanide	x	0.8	$RfC_{chronic}$	IRIS	
10588-01-9	Sodium Dichromate	x	9.01E-04	C	IRIS	Y
7789-06-2	Strontium chromate	x	9.01E-04	C	IRIS	Y
100-42-5	Styrene	x	9.00E+02	$RfC_{chronic}$	MDH VOC	
96-09-3	Styrene oxide	x	0.22	C	CAL EPA	Y
7664-93-9	Sulfuric acid (aerosol forms only)		1	$RfC_{chronic}$	CAL EPA	
540-88-5	Tert-Butyl Acetate		7.7	C	CAL EPA	N
75-65-0	tert-Butyl Alcohol (tBA)		5000	$RfC_{chronic}$	IRIS	
1746-01-6	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	x	2.50E-08	C	MDH RAA	N
51207-31-9	Tetrachlorodibenzofuran, 2,3,7,8-	x	2.50E-07	C	MDH RAA	N
79-34-5	Tetrachloroethane, 1,1,2,2-	x	0.17	C	CAL EPA	Y
127-18-4	Tetrachloroethylene (Perchloroethylene)	x	2	C	MDH RAA	N
811-97-2	Tetrafluoroethane, 1,1,2,2-		8.00E+04	$RfC_{chronic}$	IRIS	
109-99-9	Tetrahydrofuran		2000	$RfC_{chronic}$	MDH VOC	
101-61-1	Tetramethyldiaminodiphenylmethane	x	0.77	C	CAL EPA	Y
139-65-1	Thiodianiline, 4,4'-	x	2.33E-03	C	CAL EPA	Y

CAS number	Air toxic	HAP	$RfC_{chronic}$ or cancer value (ug/m^3)	$RfC_{chronic}$ or C	Source	ADAF applied?
62-56-6	Thiourea		0.48	C	CAL EPA	Y
7550-45-0	Titanium Tetrachloride	x	0.1	$RfC_{chronic}$	ATSDR	
108-88-3	Toluene	x	4000	$RfC_{chronic}$	MDH VOC	
584-84-9	Toluene-2,4-diisocyanate	x	7.00E-02	$RfC_{chronic}$	IRIS	
26471-62-5	Toluenediisocyanate (mixed isomers)		7.00E-02	$RfC_{chronic}$	IRIS	
95-80-7	Toluene diamine, 2,4-	x	9.1E-03	C	CAL EPA	Y
95-53-4	Toluidine, o- (Methylaniline, 2-)	x	0.2	C	CAL EPA	Y
8001-35-2	Toxaphene (chlorinated camphene)	x	3.10E-02	C	IRIS	Y
10061-02-6	trans-1,3-Dichloropropene		2.5	C	MDH VOC	Y
120-82-1	Trichlorobenzene, 1,2,4-	x	2	$RfC_{chronic}$	MDH VOC	
79-00-5	Trichloroethane, 1,1,2-	x	0.2	$RfC_{chronic}$	MDH VOC	
79-01-6	Trichloroethylene (TCE)	x	2	C	MDH HBV	N
75-69-4	Trichlorofluoromethane (CFC-11)		1000	$RfC_{chronic}$	MDH VOC	
88-06-2	Trichlorophenol, 2,4,6-	x	3.2	C	IRIS	Y
96-18-4	Trichloropropane, 1,2,3-		0.3	$RfC_{chronic}$	IRIS	
121-44-8	Triethylamine	x	7	$RfC_{chronic}$	IRIS	
420-46-2	Trifluoroethane, 1,1,1-		20000	$RfC_{chronic}$	PPRTV	
526-73-8	Trimethylbenzene, 1,2,3-		60	$RfC_{chronic}$	IRIS	
95-63-6	Trimethylbenzene, 1,2,4-		60	$RfC_{chronic}$	MDH VOC	
108-67-8	Trimethylbenzene, 1,3,5-		60	$RfC_{chronic}$	MDH VOC	
7440-62-2	Vanadium		0.1	$RfC_{chronic}$	ATSDR	
VANADIUM-COMPS	Vanadium Compounds		0.1	$RfC_{chronic}$	ATSDR	
1314-62-1	Vanadium Pentoxide, (V2O5)		1.20E-03	C	PPRTV	Y
108-05-4	Vinyl acetate	x	200	$RfC_{chronic}$	MDH VOC	
593-60-2	Vinyl bromide	x	0.67	C	PPRTV	Y
75-01-4	Vinyl chloride	x	1.14	C	IRIS	N
1330-20-7	Xylenes	x	100	$RfC_{chronic}$	MDH VOC	
108-38-3	Xylenes, m-	x	100	$RfC_{chronic}$	MDH VOC	
95-47-6	Xylenes, o-	x	100	$RfC_{chronic}$	MDH VOC	
106-42-3	Xylenes, p-	x	100	$RfC_{chronic}$	MDH VOC	
13530-65-9	Zinc chromate	x	9.01E-04	C	IRIS	Y

Calculating screening threshold values

With the dispersion values modeled and the inhalation health benchmarks defined, the next step was for the MPCA staff to calculate the screening threshold values.

MPCA staff calculated hourly screening threshold values with one of the following equations (Equation 1 and 2). MPCA staff calculated the hourly screening threshold value by using either the 1-hr or 24-hr modeled dispersion value and the RfC_{acute}. Table 9 lists which pollutants use the 1-hr versus the 24-hr modeled dispersion value.

Equation 1.

$$HSTV = \frac{RfC_{acute}}{MDV_{1hr}}$$

where:

HSTV = hourly screening threshold value, lb/hr

RfC_{acute} = reference concentration, µg/m^3

MDV_{1hr} = 1-hr modeled dispersion value, µg/m^3 per lb/hr

The other option to calculate the hourly screening threshold value is:

Equation 2.

$$HSTV = \frac{RfC_{acute}}{MDV_{24hr}}$$

where:

HSTV = hourly screening threshold value, lb/hr

RfC_{acute} = reference concentration, µg/m^3

MDV_{24hr} = 24-hr modeled dispersion value, µg/m^3 per lb/hr

MPCA staff calculated annual screening threshold values slightly different than acute screening threshold values. In this case, MPCA staff used the annual modeled dispersion value and either the RfCchronic or cancer value to calculate the annual screening threshold value. The following equations (Equations 3 through 6) show how the MPCA staff calculated the annual screening threshold values.

Equation 3.

$$ASTV = \frac{RfC_{chronic}}{MDV_{annual}}$$

where:

ASTV = annual screening threshold value, ton/yr

$RfC_{chronic}$ = reference concentration, µg/m^3

MDV_{annual} = annual modeled dispersion value, µg/m^3 per ton/yr

Another option to calculate the annual screening threshold value is:

Equation 4.

$$C = \frac{0.00001}{IUR}$$

where:

C = Cancer value, µg/m^3

IUR= inhalation unit risk factor, (µg/m^3)$^{-1}$

0.00001 = 1 X 10^{-5} (risk of 1 in 100,000)

Equation 5.

$$ASTV = \frac{C}{MDV_{annual}}$$

where:

ASTV = annual screening threshold value, ton/yr

C = Cancer value, µg/m^3

MDV_{annual} = annual modeled dispersion value, µg/m^3 per ton/yr

The last option to calculate the annual threshold value accounts for the ADAF:

Equation 6.

$$ASTV = \frac{C}{MDV_{annual} * ADAF}$$

where:

ASTV = annual screening threshold value, ton/yr

C = Cancer value, µg/m^3

MDV_{annual} = annual modeled dispersion value, µg/m^3 per ton/yr

ADAF= age dependent adjustment factor, 1.6, unitless

S-3. Inhalation Health Benchmarks (IHBs)

Inhalation Health Benchmarks (IHBs) are used for the development of the screening threshold values. The IHBs used to calculate screening threshold values are cancer values based on inhalation unit risks (IURs) or noncancer reference concentrations (RfCs).

The IUR is an estimate of the increased cancer risk from a population's continuous inhalation exposure to 1 mg/m^3 of a chemical for a lifetime. Most cancer risk values are also adjusted for early-life sensitivity, with an age dependent adjustment factor (ADAF), to derive an air guidance value associated with a negligible cancer risk over a lifetime. The 1 in 100,000 population excess cancer risk is calculated by dividing 0.00001 (or 10^{-5}) by the IUR.

RfCs are an estimate of an air concentration likely to be without health risk for the continuous inhalation exposure to the human population, including sensitive subgroups, over a specified time period. For annual (or chronic) thresholds either IUR cancer values or RfCs are used where available. If a chemical has both a cancer value and a RfC, then the lower value is used to calculate the screening threshold value. RfCs used to calculate the annual threshold value are denoted with the subscript chronic ($RfC_{chronic}$).

Acute thresholds are based on 1-hr or 24-hr exposure duration RfCs. These are evaluated against the 1-hr or 24-hr dispersion values, respectively, and are denoted with the subscript acute (RfC_{acute}). Table 9 in SONAR Exhibit 2 details whether RfC_{acute} value is using the 1-hr or 24-hr dispersion value.

Acetaldehyde CAS # 75-07-0

Acute (RfC_{acute})

470 $\mu g/m^3$ https://oehha.ca.gov/chemicals/acetaldehyde. Retrieved on December 16, 2024.

Cancer Value

IUR = 2.70E-06 $(\mu g/m^3)^{-1}$ or cancer value = 4.55 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0290_summary.pdf. Retrieved on December 16, 2024.

Acetamide CAS # 60-35-5

Cancer Value

IUR = 2.00E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.5 $\mu g/m^3$ https://oehha.ca.gov/chemicals/acetamide. Retrieved on December 30, 2024.

Acetone CAS # 67-64-1

Acute (RfC_{acute})

19,000 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp21.pdf. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)

20,000 $\mu g/m^3$
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Acetonitrile CAS # 75-05-8

Chronic ($RfC_{chronic}$)

60 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0205_summary.pdf. Retrieved on December 31, 2024.

Acetylaminofluorene, 2- CAS # 53-96-3

Cancer Value

IUR = 1.30E-03 $(\mu g/m^3)^{-1}$ or cancer value = 7.70E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/2-acetylaminofluorene. Retrieved on December 31, 2024.

Acrolein CAS # 107-02-8

Acute (RfC_{acute})

5 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/acrolein.pdf. Retrieved on December 30, 2024.

Chronic ($RfC_{chronic}$)

0.40 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/acrolein.pdf. Retrieved on December 30, 2024.

Acrylamide CAS # 79-06-1

Cancer Value

IUR = 1.00E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.1 $\mu g/m^3$ https://oehha.ca.gov/chemicals/2-acetylaminofluorene. Retrieved on December 31, 2024.

Acrylic acid CAS #79-10-7

Acute (RfC_{acute})

6,000 $\mu g/m^3$ https://oehha.ca.gov/chemicals/acrylic-acid. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)

1 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0002_summary.pdf. Retrieved on December 31, 2024.

Acrylonitrile CAS # 107-13-1

Cancer Value

IUR = 6.80E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.15 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0206_summary.pdf. Retrieved on December 30, 2024.

Aldehydes

Acute (RfC_{acute})

50 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/formaldehyde.pdf. Retrieved on December 30, 2024.

Cancer Value

IUR = 2.20E-06 $(\mu g/m^3)^{-1}$ or cancer value = 4.55 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0290_summary.pdf. Retrieved on December 16, 2024.

Aldrin CAS # 309-00-2

Cancer Value

IUR = 4.90E-03 $(\mu g/m^3)^{-1}$ or cancer value = 2.04E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0130_summary.pdf. Retrieved on November 10, 2025.

Allyl chloride CAS # 107-05-1

Chronic ($RfC_{chronic}$)
1 µg/m^3 https://iris.epa.gov/static/pdfs/0387_summary.pdf. Retrieved on December 31, 2024.

Aluminum CAS # 7429-90-5

Chronic ($RfC_{chronic}$)
5 µg/m^3 https://cfpub.epa.gov/ncea/pprtv/documents/Aluminum.pdf. Retrieved on December 31, 2024.

Aluminum Compounds CAS # ALUMINUM-COMPS

Chronic ($RfC_{chronic}$)
5 µg/m^3 https://cfpub.epa.gov/ncea/pprtv/documents/Aluminum.pdf. Retrieved on December 31, 2024.

Amino-2-methylanthraquinone, 1- CAS # 82-28-0

Cancer Value
IUR = 4.30E-05 (µg/m^3)$^{-1}$ or cancer value = 0.23 µg/m^3 https://oehha.ca.gov/chemicals/1-amino-2-methylanthraquinone. Retrieved on December 31, 2024.

Aminoanthraquinone, 2- CAS # 117-79-3

Cancer Value
IUR = 9.40E-06 (µg/m^3)$^{-1}$ or cancer value = 1.1 µg/m^3 https://oehha.ca.gov/chemicals/2-aminoanthraquinone. Retrieved on December 31, 2024.

Aminoazotoluene, o- (C.I. Solvent Yellow 3) CAS # 97-56-3

Cancer Value
IUR = 1.10E-03 (µg/m^3)$^{-1}$ or cancer value = 9.09E-03 µg/m^3 https://oehha.ca.gov/chemicals/o-aminoazotoluene. Retrieved on December 31, 2024.

Aminobiphenyl, 4- CAS # 92-67-1

Cancer Value
IUR = 6.00E-03 (µg/m^3)$^{-1}$ or cancer value = 1.67E-03 µg/m^3 https://oehha.ca.gov/chemicals/4-aminobiphenyl. Retrieved on December 31, 2024.

Ammonia CAS # 7664-41-7

Acute (RfC_{acute})
11,800 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp126.pdf. Retrieved on December 17, 2024.

Chronic ($RfC_{chronic}$)
500 µg/m^3 https://iris.epa.gov/static/pdfs/0422_summary.pdf. Retrieved on December 31, 2024.

Aniline CAS # 62-53-3

Chronic ($RfC_{chronic}$)
1 µg/m^3 https://iris.epa.gov/static/pdfs/0350_summary.pdf. Retrieved on December 31, 2024.

Anisidine, o- CAS # 90-04-0

Cancer Value
IUR = 4.00E-05 (µg/m^3)$^{-1}$ or cancer value = 0.25 µg/m^3 https://oehha.ca.gov/chemicals/o-anisidine. Retrieved on December 31, 2024.

Antimony CAS # 7440-36-0

Acute (RfC_{acute})
1 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp23.pdf. Retrieved on December 17, 2024.

Chronic ($RfC_{chronic}$)
0.3 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp23.pdf. Retrieved on December 17, 2024.

Antimony Compounds CAS # ANTIMONY-COMPS

Acute (RfC_{acute})
1 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp23.pdf. Retrieved on December 17, 2024.

Chronic ($RfC_{chronic}$)
0.3 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp23.pdf. Retrieved on December 17, 2024.

Antimony trioxide CAS # 1309-64-4

Chronic ($RfC_{chronic}$)
0.2 µg/m^3 https://iris.epa.gov/static/pdfs/0676_summary.pdf. Retrieved on December 31, 2024.

Aramite CAS # 140-57-8

Cancer Value
IUR = 7.10E-06 (µg/m^3)$^{-1}$ or cancer value = 1.4 µg/m^3 https://iris.epa.gov/static/pdfs/0473_summary.pdf. Retrieved on December 30, 2024.

Arsenic CAS # 7440-38-2

Acute (RfC_{acute})
0.2 µg/m^3 https://oehha.ca.gov/chemicals/arsenic. Retrieved on December 16, 2024.

Cancer Value
IUR = 4.30E-03 (µg/m^3)$^{-1}$ or cancer value = 2.33E-03 µg/m^3 https://iris.epa.gov/static/pdfs/0278_summary.pdf. Retrieved on December 30, 2024.

Arsenic Compounds CAS # ARSENIC-COMPS

Acute (RfC_{acute})
0.2 µg/m^3 https://oehha.ca.gov/chemicals/arsenic. Retrieved on December 16, 2024.

Cancer Value
IUR = 4.30E-03 $(\mu g/m^3)^{-1}$ or cancer value = 2.33E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0278_summary.pdf. Retrieved on December 30, 2024.

Arsenic (V) oxide CAS # 1303-28-2

Acute (RfC_{acute})
0.2 $\mu g/m^3$ https://oehha.ca.gov/chemicals/arsenic. Retrieved on December 16, 2024.

Cancer Value
IUR = 4.30E-03 $(\mu g/m^3)^{-1}$ or cancer value = 2.33E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0278_summary.pdf. Retrieved on December 30, 2024.

Arsenic Trioxide CAS # 1327-53-3

Acute (RfC_{acute})
0.2 $\mu g/m^3$ https://oehha.ca.gov/chemicals/arsenic. Retrieved on December 16, 2024.

Cancer Value
IUR = 4.30E-03 $(\mu g/m^3)^{-1}$ or cancer value = 2.33E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0278_summary.pdf. Retrieved on December 30, 2024.

Arsine CAS # 7784-42-1

Acute (RfC_{acute})
0.2 $\mu g/m^3$ https://oehha.ca.gov/chemicals/arsenic. Retrieved on December 16, 2024.

Cancer Value
IUR = 4.30E-03 $(\mu g/m^3)^{-1}$ or cancer value = 2.33E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0278_summary.pdf. Retrieved on December 30, 2024.

Asbestos CAS # 1332-21-4

Cancer Value
IUR = 2.30E-07 $(\mu g/m^3)^{-1}$ or cancer value = 43 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0371_summary.pdf. Retrieved on December 30, 2024.

Auramine (C.I. Solvent Yellow 34) CAS # 492-80-8

Cancer Value
IUR = 2.50E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/auramine. Retrieved on December 31, 2024.

Azobenzene CAS # 103-33-3

Cancer Value
IUR = 3.10E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.32 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0351_summary.pdf. Retrieved on December 30, 2024.

Barium Chromate CAS # 10294-40-3

Cancer Value

IUR = 1.11E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.01E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.

Benz[a]anthracene CAS # 56-55-3

Cancer Value

IUR = 1.10E-04 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-02 $\mu g/m^3$ https://oehha.ca.gov/chemicals/benzaanthracene. Retrieved on February 23, 2025.

Benzene CAS # 71-43-2

Acute (RfC_{acute})

30 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/benzene.pdf. Retrieved on December 30, 2024.

Cancer Value

IUR = 1.30E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.8 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/benzene.pdf. Retrieved on December 30, 2024.

Benzidine CAS # 92-87-5

Cancer Value

IUR = 6.70E-02 $(\mu g/m^3)^{-1}$ or cancer value = 1.49E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0135_summary.pdf. Retrieved on December 30, 2024.

Benzo(j)fluoranthene CAS # 205-82-3

Cancer Value

IUR = 1.10E-04 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-02 $\mu g/m^3$ https://oehha.ca.gov/chemicals/benzojfluoranthene. Retrieved on February 23, 2025.

Benzo(k)fluoranthene CAS # 207-08-9

Cancer Value

IUR = 1.10E-04 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-02 $\mu g/m^3$ https://oehha.ca.gov/chemicals/benzokfluoranthene. Retrieved on February 23, 2025.

Benzo[a]pyrene CAS # 50-32-8

Cancer Value

IUR = 6.00-04 $(\mu g/m^3)^{-1}$ or cancer value = 1.67E-02 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0136_summary.pdf. Retrieved on February 23, 2025.

Benzo[b]fluoranthene CAS # 205-99-2

Cancer Value

IUR = 1.10E-04 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-02 $\mu g/m^3$ https://oehha.ca.gov/chemicals/benzobfluoranthene. Retrieved on February 23, 2025.

Benzyl chloride CAS # 100-44-7

Acute (RfC_{acute})

240 $\mu g/m^3$ https://oehha.ca.gov/chemicals/benzyl-chloride. Retrieved on December 16, 2024.

Cancer Value

IUR = 4.90E-05 $(\mu g/m^3)^{-1}$ or cancer value = 2.04E-01 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 30, 2024.

Beryllium CAS # 7440-41-7

Cancer Value

IUR = 2.40E-03 $(\mu g/m^3)^{-1}$ or cancer value = 4.17E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0012_summary.pdf. Retrieved on December 30, 2024.

Beryllium Compounds CAS # BERYLLIUM-COMPS

Cancer Value

IUR = 2.40E-03 $(\mu g/m^3)^{-1}$ or cancer value = 4.17E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0012_summary.pdf. Retrieved on December 30, 2024.

Beryllium Oxide CAS # 1304-56-9

Cancer Value

IUR = 2.40E-03 $(\mu g/m^3)^{-1}$ or cancer value = 4.17E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/beryllium-oxide. Retrieved on December 31, 2024.

Beryllium sulfate CAS # 13510-49-1

Cancer Value

IUR = 0.86 $(\mu g/m^3)^{-1}$ or cancer value = 1.20E-05 $\mu g/m^3$ https://oehha.ca.gov/chemicals/beryllium-sulfate. Retrieved on December 31, 2024.

Bis(2-chloroethyl)ether CAS # 111-44-4

Cancer Value

IUR = 3.30E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0137_summary.pdf. Retrieved on December 30, 2024.

Bis(2-ethylhexyl)phthalate (DEHP) CAS # 117-81-7

Cancer Value

IUR = 2.40E-06 $(\mu g/m^3)^{-1}$ or cancer value = 4.2 $\mu g/m^3$ https://oehha.ca.gov/chemicals/di2-ethylhexylphthalate. Retrieved on October 13, 2025.

Bis(chloromethyl)ether CAS # 542-88-1

Cancer Value

IUR = 6.20E-02 $(\mu g/m^3)^{-1}$ or cancer value = 1.61E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0375_summary.pdf. Retrieved on December 30, 2024.

Bromobenzene CAS # 180-86-1

Chronic ($RfC_{chronic}$)

60 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/1020_summary.pdf. Retrieved on December 31, 2024.

Bromoform CAS # 75-25-2

Cancer Value

IUR = 1.10E-06 $(\mu g/m^3)^{-1}$ or cancer value = 9.1 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0214_summary.pdf. Retrieved on December 30, 2024.

Bromomethane CAS # 74-83-9

Acute (RfC_{acute})

3,900 $\mu g/m^3$ https://oehha.ca.gov/chemicals/methyl-bromide. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)

4 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Bromopropane, 1- CAS # 106-94-5

Acute (RfC_{acute})

100 $\mu g/m^3$
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/1bromopropane.pdf. Retrieved on December 30, 2024.

Cancer Value

IUR = 1.55E-06 $(\mu g/m^3)^{-1}$ or cancer value = 6 $\mu g/m^3$
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/1bromopropane.pdf. Retrieved on December 30, 2024.

Butadiene, 1,3- CAS # 106-99-0

Acute (RfC_{acute})

660 $\mu g/m^3$ https://oehha.ca.gov/chemicals/13-butadiene. Retrieved on October 13, 2025.

Cancer Value
IUR = 3.60E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.28 $\mu g/m^3$
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on October 13, 2025.

Butyl Cellosolve (ethylene glycol monobutyl ether) CAS # 111-76-2

Acute (RfC_{acute})
29,000 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp118.pdf. Retrieved on December 17, 2024.

Chronic ($RfC_{chronic}$)
1,600 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0500_summary.pdf. Retrieved on January 2, 2025.

Cadmium CAS # 7440-43-9

Acute (RfC_{acute})
0.03 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp5.pdf. Retrieved on December 17, 2024.

Cancer Value
IUR = 1.80E-03 $(\mu g/m^3)^{-1}$ or cancer value = 5.56E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0141_summary.pdf. Retrieved on December 30, 2024.

Cadmium Compounds CAS # CADMIUM-COMPS

Acute (RfC_{acute})
0.03 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp5.pdf. Retrieved on December 17, 2024.

Cancer Value
IUR = 1.80E-03 $(\mu g/m^3)^{-1}$ or cancer value = 5.56E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0141_summary.pdf. Retrieved on December 30, 2024.

Cadmium Oxide CAS # 1306-19-0

Acute (RfC_{acute})
0.03 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp5.pdf. Retrieved on December 17, 2024.

Cancer Value
IUR = 1.80E-03 $(\mu g/m^3)^{-1}$ or cancer value = 5.56E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0141_summary.pdf. Retrieved on December 30, 2024.

Calcium Chromate CAS # 13765-19-0

Cancer Value
IUR = 1.11E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.01E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.

Caprolactam CAS # 105-60-2

Acute (RfC_{acute})
50 $\mu g/m^3$ https://oehha.ca.gov/chemicals/caprolactam. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
2.2 µg/m^3 https://oehha.ca.gov/chemicals/caprolactam. Retrieved on December 16, 2024.

Captan CAS # 133-06-2

Cancer Value
IUR = 6.60E-07 (µg/m^3)$^{-1}$ or cancer value = 15.15 µg/m^3 https://oehha.ca.gov/chemicals/captan. Retrieved on December 31, 2024.

Carbon disulfide CAS # 75-15-0

Acute (RfC_{acute})
600 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp82.pdf. Retrieved on January 22, 2026.

Chronic ($RfC_{chronic}$)
800 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Carbon tetrachloride CAS # 56-23-5

Acute (RfC_{acute})
1,900 µg/m^3 https://oehha.ca.gov/chemicals/carbon-tetrachloride. Retrieved on December 16, 2024.

Cancer Value
IUR = 6.0E-06 (µg/m^3)$^{-1}$ or cancer value = 1.7 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 30, 2024.

Carbonyl sulfide CAS # 463-58-1

Acute (RfC_{acute})
660 µg/m^3 https://oehha.ca.gov/chemicals/carbonyl-sulfide. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
100 µg/m^3 https://cfpub.epa.gov/ncea/pprtv/documents/CarbonylSulfide.pdf. Retrieved on December 31, 2024.

Cellosolve Acetate (ethylene glycol monoethyl ether acetate) CAS # 111-15-9

Acute (RfC_{acute})
140 µg/m^3 https://oehha.ca.gov/chemicals/ethylene-glycol-monoethyl-ether-acetate. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
60 µg/m^3 https://cfpub.epa.gov/ncea/pprtv/documents/EthoxyethanolAcetate.pdf. Retrieved on December 31, 2024.

Cerium Oxide CAS # 1306-38-3

Chronic ($RfC_{chronic}$)
0.90 µg/m^3 https://iris.epa.gov/static/pdfs/1018_summary.pdf. Retrieved on December 31, 2024.

Chlordane CAS # 57-74-9

Cancer Value

IUR = 3.40E-04 $(\mu g/m^3)^{-1}$ or cancer value = 2.94E-02 $\mu g/m^3$ https://oehha.ca.gov/chemicals/chlordane. Retrieved on November 10, 2025.

Chlordane, technical CAS # 12789-03-6

Cancer Value

IUR = 1.00E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.10 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0142_summary.pdf. Retrieved on November 10, 2025.

Chlorine CAS # 7782-50-5

Acute (RfC_{acute})

170 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp172.pdf. Retrieved on December 17, 2024.

Chronic ($RfC_{chronic}$)

0.15 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp172.pdf. Retrieved on December 17, 2024.

Chlorine Dioxide CAS # 10049-04-4

Chronic ($RfC_{chronic}$)

0.20 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0496_summary.pdf. Retrieved on December 31, 2024.

Chloro-1,1-difluoroethane, 1- CAS # 75-68-3

Chronic ($RfC_{chronic}$)

50,000 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0661_summary.pdf. Retrieved on December 31, 2024.

Chloro-2-methylpropene, 3- CAS # 563-47-3

Cancer Value

IUR = 4.0E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.25 $\mu g/m^3$ https://oehha.ca.gov/chemicals/3-chloro-2-methylpropene. Retrieved on December 31, 2024.

Chloroacetophenone, 2- CAS # 532-27-4

Chronic (RfCchronic)

0.03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0537_summary.pdf. Retrieved on December 31, 2024.

Chlorobenzene CAS # 108-90-7

Chronic ($RfC_{chronic}$)

50 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 31, 2024.

Chlorobenzilate CAS # 510-15-6

Cancer Value

IUR = 3.15E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.32 $\mu g/m^3$ https://oehha.ca.gov/chemicals/ethyl-4-4-dichlorobenzilate. Retrieved on December 31, 2024.

Chlorodifluoromethane CAS # 75-45-6

Chronic ($RfC_{chronic}$)

50,000 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0657_summary.pdf. Retrieved on December 31, 2024.

Chloroform CAS # 67-66-3

Acute (RfC_{acute})

5 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp6.pdf. Retrieved on December 17, 2024.

Cancer Value

IUR = 2.30E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.43 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0025_summary.pdf. Retrieved on December 30, 2024.

Chloromethyl Methyl Ether CAS # 107-30-2

Cancer Value

IUR = 6.90E-04 $(\mu g/m^3)^{-1}$ or cancer value = 1.45E-02 $\mu g/m^3$ https://oehha.ca.gov/chemicals/chloromethyl-methyl-ether-technical-grade. Retrieved on December 31, 2024.

Chloroprene CAS # 126-99-8

Cancer Value

IUR = 3.00E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/1021_summary.pdf. Retrieved on December 30, 2024.

Chromic Acid CAS # 7738-94-5

Cancer Value

IUR = 1.25E-02 $(\mu g/m^3)^{-1}$ or cancer value = 8.00E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.

Chromic Trioxide CAS # 1333-82-0

Cancer Value

IUR = 1.11E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.01E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.

Chromium CAS # 7440-47-3

Cancer Value

IUR = 1.11E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.01E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.

Chromium VI CAS # 18540-29-9

Cancer Value

IUR = 1.11E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.01E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.

Chromium VI Compounds CAS # CHROMVI-COMPS

Cancer Value

IUR = 1.11E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.01E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.

Chrysene CAS # 218-01-9

Cancer Value

IUR = 1.10E-05 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-01 $\mu g/m^3$ https://oehha.ca.gov/chemicals/chrysene. Retrieved on February 23, 2025.

Cis-1,3-Dichloropropene CAS # 10061-01-5

Cancer Value

IUR = 4.00E-06 $(\mu g/m^3)^{-1}$ or cancer value 2.5 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on October 14, 2025.

Coal Tar CAS # 8007-45-2

Cancer Value

IUR = 6.20E-04 $(\mu g/m^3)^{-1}$ or cancer value = 1.61E-02 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0395_summary.pdf. Retrieved on December 30, 2024.

Cobalt CAS # 7440-48-4

Acute (RfC_{acute})

0.3 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp33.pdf. Retrieved on December 18, 2024.

Cancer Value

IUR = 9.00E-03 $(\mu g/m^3)^{-1}$ or cancer value = 1.10E-03 $\mu g/m^3$ https://cfpub.epa.gov/ncea/pprtv/documents/Cobalt.pdf. Retrieved on December 30, 2024.

Cobalt Compounds CAS # COBALT-COMPS

Acute (RfC_{acute})

0.3 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp33.pdf. Retrieved on December 18, 2024.

Cancer Value

IUR = 9.00E-03 $(\mu g/m^3)^{-1}$ or cancer value = 1.10E-03 $\mu g/m^3$ https://cfpub.epa.gov/ncea/pprtv/documents/Cobalt.pdf. Retrieved on December 30, 2024.

Cobalt (II) oxide CAS # 1307-96-6

Cancer Value

IUR = 7.70E-03 $(\mu g/m^3)^{-1}$ or cancer value = 1.30E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/cobalt-ii-oxide. Retrieved on October 14, 2025.

Cobalt sulfate CAS # 10124-43-3

Cancer Value

IUR = 1.00E-02 $(\mu g/m^3)^{-1}$ or cancer value = 1.00E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/cobalt-sulfate. Retrieved on October 14, 2025.

Coke Oven Emissions

Cancer Value

IUR = 6.20E-04 $(\mu g/m^3)^{-1}$ or cancer value = 1.61E-02 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0395_summary.pdf. Retrieved on December 30, 2024.

Copper CAS # 7440-50-8

Acute (RfC_{acute})

100 $\mu g/m^3$ https://oehha.ca.gov/chemicals/copper. Retrieved on December 16, 2024.

Copper Compounds CAS # COPPER-COMPS

Acute (RfC_{acute})

100 $\mu g/m^3$ https://oehha.ca.gov/chemicals/copper. Retrieved on December 16, 2024.

Cresol, m- CAS # 108-39-4

Chronic ($RfC_{chronic}$)

600 $\mu g/m^3$ https://oehha.ca.gov/chemicals/cresol-mixtures. Retrieved on January 2, 2025.

Cresol, o- CAS # 95-48-7

Chronic ($RfC_{chronic}$)

600 $\mu g/m^3$ https://oehha.ca.gov/chemicals/cresol-mixtures. Retrieved on January 2, 2025.

Cresol, p- CAS # 106-44-5

Chronic ($RfC_{chronic}$)

600 $\mu g/m^3$ https://oehha.ca.gov/chemicals/cresol-mixtures. Retrieved on January 2, 2025.

Cresols/Cresylic acid CAS # 1319-77-3

Chronic ($RfC_{chronic}$)

600 $\mu g/m^3$ https://oehha.ca.gov/chemicals/cresol-mixtures. Retrieved on January 2, 2025.

Cumene CAS # 98-82-8

Chronic ($RfC_{chronic}$)
400 µg/m^3 https://iris.epa.gov/static/pdfs/0306_summary.pdf. Retrieved on December 31, 2024.

Cyanide CAS # 57-12-5

Acute (RfC_{acute})
340 µg/m^3 https://oehha.ca.gov/chemicals/cyanide. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
0.8 µg/m^3 https://iris.epa.gov/static/pdfs/0060_summary.pdf. Retrieved on October 14, 2025.

Cyanide Compounds CAS # CYANIDE-COMPS

Acute (RfC_{acute})
340 µg/m^3 https://oehha.ca.gov/chemicals/cyanide. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
0.8 µg/m^3 https://iris.epa.gov/static/pdfs/0060_summary.pdf. Retrieved on October 14, 2025.

Cyclohexane CAS # 110-82-7

Chronic ($RfC_{chronic}$)
6,000 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 31, 2024.

Diaminodiphenyl ether, 4,4- CAS # 101-80-4

Cancer Value
IUR = 4.00E-05 (µg/m^3)$^{-1}$ or cancer value = 0.25 µg/m^3 https://oehha.ca.gov/chemicals/44-diaminodiphenyl-ether. Retrieved on December 31, 2024.

Dibenz(a,h)acridine CAS # 226-36-8

Cancer Value
IUR = 1.10E-04 (µg/m^3)$^{-1}$ or cancer value = 9.09E-02 µg/m^3 https://oehha.ca.gov/chemicals/dibenzahacridine. Retrieved on February 23, 2025.

Dibenz(a,j)acridine CAS # 224-42-0

Cancer Value
IUR = 1.10E-04 (µg/m^3)$^{-1}$ or cancer value = 9.09E-02 µg/m^3 https://oehha.ca.gov/chemicals/dibenzajacridine. Retrieved on February 23, 2025.

Dibenz[a,h]anthracene CAS # 53-70-3

Cancer Value
IUR = 1.20E-03 (µg/m^3)$^{-1}$ or cancer value = 8.33E-03 µg/m^3 https://oehha.ca.gov/chemicals/dibenzahanthracene. Retrieved on February 23, 2025.

Dibenzo(a,e)pyrene CAS # 192-65-4

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/dibenzoaepyrene. Retrieved on February 23, 2025.

Dibenzo(a,h)pyrene CAS # 189-64-0

Cancer Value

IUR = 1.10E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/dibenzoahpyrene. Retrieved on February 23, 2025.

Dibenzo(a,l)pyrene CAS # 191-30-0

Cancer Value

IUR = 1.10E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/dibenzoalpyrene. Retrieved on February 23, 2025.

Dibenzo(c,g)carbazole, 7H- CAS # 194-59-2

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/7h-dibenzocgcarbazole. Retrieved on February 23, 2025.

Dibenzo[a,i]pyrene CAS # 189-55-9

Cancer Value

IUR = 1.10E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/dibenzoaipyrene. Retrieved on February 23, 2025.

Dibromo-3-chloroproane, 1,2- CAS # 96-12-8

Cancer Value

IUR = 6,000 $(\mu g/m^3)^{-1}$ or cancer value = 1.67E-09 $\mu g/m^3$ https://cfpub.epa.gov/ncea/pprtv/documents/Dibromo3Chloropropane12.pdf. Retrieved on November 10, 2025.

Dichlorobenzene(p), 1,4- CAS # 106-46-7

Acute (RfC_{acute})

12,000 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp10.pdf. Retrieved on December 18, 2024.

Cancer Value

IUR = 1.10E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.91 $\mu g/m^3$ https://oehha.ca.gov/chemicals/14-dichlorobenzene. Retrieved on December 30, 2024.

Dichlorobenzenes CAS # 25321-22-6

Acute (RfC_{acute})

12,000 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp10.pdf. Retrieved on December 18, 2024.

Cancer Value
IUR = 1.10E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.91 $\mu g/m^3$ https://oehha.ca.gov/chemicals/14-dichlorobenzene. Retrieved on December 30, 2024.

Dichlorobenzidene, 3,3- CAS # 91-94-1

Cancer Value
IUR = 3.40E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/33-dichlorobenzidine. Retrieved on December 31, 2024.

Dichlorodiphenyldichloroethylene (DDE) CAS # 72-55-9

Cancer Value
IUR = 9.70E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.10 $\mu g/m^3$
https://oehha.ca.gov/chemicals/dichlorodiphenyldichloroethylene-dde. Retrieved on December 31, 2024.

Dichlorodiphenyltrichloroethane, p, p'- (DDT) CAS # 50-29-3

Cancer Value
IUR = 9.70E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.10 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0147_summary.pdf. Retrieved on December 31, 2024.

Dichloroethylene (1,1-) (Vinylidene chloride) CAS # 75-35-4

Chronic ($RfC_{chronic}$)
200 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 31, 2024.

Dichloroethylene, cis-1,2- CAS # 156-59-2

Chronic ($RfC_{chronic}$)
40 $\mu g/m^3$ https://cfpub.epa.gov/ncea/pprtv/documents/Dichloroethylenecis12.pdf. Retrieved on December 31, 2024.

Dichloroethylene, trans-1,2- CAS # 156-60-5

Acute (RfC_{acute})
12,000 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp87.pdf. Retrieved on December 30, 2024.

Chronic ($RfC_{chronic}$)
20 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/tdcesumm.pdf. Retrieved on January 2, 2025.

Dichloropropene, 1,3- CAS # 542-75-6

Cancer Value
IUR = 4.00E-06 $(\mu g/m^3)^{-1}$ or cancer value = 2.5 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0224_summary.pdf. Retrieved on October 14, 2025.

Dichlorvos CAS # 62-73-7

Acute (RfC_{acute})
18 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp88.pdf. Retrieved on December 18, 2024.

Cancer Value
IUR = 8.30E-05 (µg/m^3)$^{-1}$ or cancer value = 0.12 µg/m^3 https://oehha.ca.gov/chemicals/dichlorvos. Retrieved on December 30, 2024.

Diethanolamine CAS # 111-42-2

Chronic ($RfC_{chronic}$)
0.20 µg/m^3 https://cfpub.epa.gov/ncea/pprtv/documents/Diethanolamine.pdf. Retrieved on December 31, 2024.

Diethylene Glycol Monobutyl Ether CAS # 112-34-5

Chronic ($RfC_{chronic}$)
0.10 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/degbesumm.pdf. Retrieved on April 7, 2026.

Diethylene Glycol Monoethyl Ether CAS # 111-90-0

Chronic ($RfC_{chronic}$)
2 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/degeesumm.pdf. Retrieved on April 7, 2026.

Dimethyl aminoazobenzene CAS # 60-11-7

Cancer Value
IUR = 1.30E-03 (µg/m^3)$^{-1}$ or cancer value = 7.70E-03 µg/m^3 https://oehha.ca.gov/chemicals/4-dimethylaminoazobenzene. Retrieved on December 31, 2024.

Dimethyl formamide CAS # 68-12-2

Chronic (RfCchronic)
30 µg/m^3 https://iris.epa.gov/static/pdfs/0511_summary.pdf. Retrieved on December 31, 2024.

Dimethylbenz[a]anthracene, 7,12- CAS # 57-97-6

Cancer Value
IUR = 7.10E-02 (µg/m^3)$^{-1}$ or cancer value = 1.41E-04 µg/m^3 https://oehha.ca.gov/chemicals/712-dimethylbenzaanthracene. Retrieved on February 23, 2025.

Dimethylcarbamoyl Chloride CAS # 79-44-7

Cancer Value
IUR = 3.70E-03 (µg/m^3)$^{-1}$ or cancer value = 2.70E-03 µg/m^3 https://oehha.ca.gov/chemicals/dimethylcarbamoyl-chloride. Retrieved on December 31, 2024.

Dinitropyrene, 1,6- (BaP) CAS # 42397-64-8

Cancer Value

IUR = 1.10E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/16-dinitropyrene. Retrieved on February 23, 2025.

Dinitropyrene, 1,8- (BaP) CAS # 42397-65-9

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/18-dinitropyrene. Retrieved on February 23, 2025.

Dinitrotoluene, 2,4- CAS # 121-14-2

Cancer Value

IUR = 8.90E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.11 $\mu g/m^3$ https://oehha.ca.gov/chemicals/24-dinitrotoluene. Retrieved on December 31, 2024.

Dioxane, 1,4- (1,4-Diethylene dioxide) CAS # 123-91-1

Acute (RfC_{acute})

7,200 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp187.pdf. Retrieved on December 19, 2024.

Cancer Value

IUR = 5.00E-06 $(\mu g/m^3)^{-1}$ or cancer value = 2 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0326_summary.pdf. Retrieved on October 14, 2025.

Diphenylhydrazine, 1,2- CAS # 112-66-7

Cancer Value

IUR = 2.20E-04 $(\mu g/m^3)^{-1}$ or cancer value = 4.55E-02 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0049_summary.pdf. Retrieved on October 14, 2025.

Direct Black 38 CAS # 1937-37-7

Cancer Value

IUR = 2.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 4.76E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/direct-black-38-technical-grade. Retrieved on December 31, 2024.

Direct Blue 6 CAS # 2602-46-2

Cancer Value

IUR = 2.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 4.76E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/direct-blue-6-technical-grade. Retrieved on December 31, 2024.

Direct Brown 95 CAS # 16071-86-6

Cancer Value

IUR = 1.90E-03 $(\mu g/m^3)^{-1}$ or cancer value = 5.26E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/direct-brown-95-technical-grade. Retrieved on December 31, 2024.

Epichlorohydrin (l-Chloro-2,3-epoxypropane) CAS # 106-89-8

Acute (RfC_{acute})
1,300 µg/m^3 https://oehha.ca.gov/chemicals/epichlorohydrin. Retrieved on December 16, 2024.

Cancer Value
IUR = 1.20E-06 (µg/m^3)$^{-1}$ or cancer value = 8.33 µg/m^3 https://iris.epa.gov/static/pdfs/0050_summary.pdf. Retrieved on December 30, 2024.

Epoxybutane, 1,2- CAS # 106-88-7

Chronic ($RfC_{chronic}$)
20 µg/m^3 https://iris.epa.gov/static/pdfs/0630_summary.pdf. Retrieved on December 31, 2024.

Ethoxyethanol, 2- (ethylene glycol monoethyl ether) CAS # 110-80-5

Acute (RfC_{acute})
370 µg/m^3 https://oehha.ca.gov/chemicals/ethylene-glycol-monoethyl-ether. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
200 µg/m^3 https://iris.epa.gov/static/pdfs/0513_summary.pdf. Retrieved on December 31, 2024.

Ethyl Acrylate CAS # 140-88-5

Chronic ($RfC_{chronic}$)
8 µg/m^3 https://cfpub.epa.gov/ncea/pprtv/documents/EthylAcrylate.pdf. Retrieved on December 31, 2024.

Ethylbenzene CAS # 100-41-4

Acute (RfC_{acute})
21,700 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp110.pdf. Retrieved on December 19, 2024.

Cancer Value
IUR = 2.50E-06 (µg/m^3)$^{-1}$ or cancer value = 4 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 30, 2024.

Ethyl carbamate (Urethane) CAS # 51-79-6

Cancer Value
IUR = 2.90E-04 (µg/m^3)$^{-1}$ or cancer value = 0.034 µg/m^3 https://oehha.ca.gov/chemicals/urethane. Retrieved on December 31, 2024.

Ethyl chloride (Chloroethane) CAS # 75-00-3

Acute (RfC_{acute})
34,000 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp105.pdf. Retrieved on December 19, 2024.

Chronic ($RfC_{chronic}$)
4,000 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 31, 2024.

Ethyl tertiary-butyl ether (ETBE) CAS # 637-92-3

Cancer Value

IUR = 8.00E-08 $(\mu g/m^3)^{-1}$ or cancer value = 130 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/1034_summary.pdf. Retrieved on December 30, 2024.

Ethylene dibromide (Dibromoethane) CAS # 106-93-4

Cancer Value

IUR = 6.00E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.02 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 31, 2024.

Ethylene dichloride (1,2-Dichloroethane) CAS # 107-06-2

Acute (RfC_{acute})

400 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp38.pdf. Retrieved on October 14, 2025.

Cancer Value

IUR = 2.60E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.38 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 31, 2024.

Ethylene glycol CAS # 107-21-1

Acute (RfC_{acute})

2,000 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp96.pdf. Retrieved on October 14, 2025.

Chronic ($RfC_{chronic}$)

400 $\mu g/m^3$ https://oehha.ca.gov/chemicals/ethylene-glycol-monoethyl-ether. Retrieved on January 2, 2025.

Ethylene oxide CAS # 75-21-8

Acute (RfC_{acute})

50 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/etosumm.pdf. Retrieved on October 14, 2025.

Cancer Value

IUR = 5.00E-03 $(\mu g/m^3)^{-1}$ or cancer value = 2.00E-03 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/etosumm.pdf. Retrieved on October 14, 2025.

Ethylene thiourea CAS # 96-45-7

Cancer Value

IUR = 1.30E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.77 $\mu g/m^3$ https://oehha.ca.gov/chemicals/ethylene-thiourea. Retrieved on December 31, 2024.

Ethyleneimine CAS # 151-56-4

Cancer Value

IUR = 1.90E-02 $(\mu g/m^3)^{-1}$ or cancer value = 5.26E-04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/ethyleneimine. Retrieved on December 31, 2024.

Ethylidene dichloride (1,1-Dichloroethane) CAS # 75-34-3

Cancer Value

IUR = 1.60E-06 $(\mu g/m^3)^{-1}$ or cancer value = 6.3 $\mu g/m^3$ https://oehha.ca.gov/chemicals/11-dichloroethane. Retrieved on December 31, 2024.

Formaldehyde CAS # 50-00-0

Acute (RfC_{acute})

50 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/formaldehyde.pdf. Retrieved on December 30, 2024.

Chronic ($RfC_{chronic}$)

7 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/formaldehyde.pdf. Retrieved on December 30, 2024.

Glycol ethers CAS # GLYCOL ETHERS-COMPS

Acute (RfC_{acute})

93 $\mu g/m^3$ https://oehha.ca.gov/chemicals/ethylene-glycol-monomethyl-ether. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)

0.10 $\mu g/m^3$ https://cfpub.epa.gov/ncea/pprtv/documents/DiethyleneGlycolMonobutylEther.pdf. Retrieved on December 31, 2024.

Heptachlor CAS # 76-44-8

Cancer Value

IUR = 1.30E-03 $(\mu g/m^3)^{-1}$ or cancer value = 7.69E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0243_summary.pdf. Retrieved on November 10, 2025.

Heptachlorodibenzo-p-dioxin, 1,2,3,4,6,7,8- CAS # 35822-46-9

Cancer Value

IUR = 4 $(\mu g/m^3)^{-1}$ or cancer value = 2.50E-06 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Heptachlorodibenzofuran, 1,2,3,4,6,7,8- CAS # 67562-39-4

Cancer Value

IUR = 4 $(\mu g/m^3)^{-1}$ or cancer value = 2.50E-06 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Heptachlorodibenzofuran, 1,2,3,4,7,8,9- CAS # 55673-89-7

Cancer Value

IUR = 4 $(\mu g/m^3)^{-1}$ or cancer value = 2.50E-06 $\mu g/m^3$
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Hexachlorobenzene CAS # 118-74-1

Cancer Value

IUR = 4.60E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.02 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0374_summary.pdf. Retrieved on December 30, 2024.

Hexachlorobutadiene CAS# 87-68-3

Cancer Value

IUR = 2.20E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.45 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0058_summary.pdf. Retrieved on December 30, 2024.

Hexachlorocyclohexane 1,2,3,4,5,6- (all isomers) CAS # 608-73-1

Cancer Value

IUR = 5.10E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.02 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0165_summary.pdf. Retrieved on December 30, 2024.

Hexachlorocyclohexane, alpha- CAS # 319-84-6

Cancer Value

IUR = 1.80E-03 $(\mu g/m^3)^{-1}$ or cancer value = 5.60E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0162_summary.pdf. Retrieved on December 30, 2024.

Hexachlorocyclohexane, beta-1,2,3,4,5,6- CAS # 319-85-7

Cancer Value

IUR = 5.30E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.02 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0244_summary.pdf. Retrieved on December 30, 2024.

Hexachlorocyclohexane- Gamma Isomer CAS # 58-89-9

Cancer Value

IUR = 3.10E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/hexachlorocyclohexane-gamma-isomer. Retrieved on December 30, 2024.

Lindane Compounds

Cancer Value

IUR = 3.10E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/hexachlorocyclohexane-gamma-isomer. Retrieved on December 30, 2024.

Hexachlorocyclopentadiene CAS # 77-47-4 CAS # 77-47-4

Chronic ($RfC_{chronic}$)

0.20 µg/m^3 https://iris.epa.gov/static/pdfs/0059_summary.pdf. Retrieved on January 2, 2025.

Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8- CAS # 39227-28-6

Cancer Value

IUR = 40 (µg/m^3)$^{-1}$ or cancer value = 2.50E-07 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Hexachlorodibenzo-p-dioxin, 1,2,3,6,7,8- CAS # 57653-85-7

Cancer Value

IUR = 1.3 (µg/m^3)$^{-1}$ or cancer value = 7.69E-06 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Hexachlorodibenzo-p-dioxin, 1,2,3,7,8,9- CAS # 19408-74-3

Cancer Value

IUR = 1.3 (µg/m^3)$^{-1}$ or cancer value = 7.69E-06 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Hexachlorodibenzofuran, 1,2,3,4,7,8- CAS # 70648-26-9

Cancer Value

IUR = 40 (µg/m^3)$^{-1}$ or cancer value = 2.50E-07 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Hexachlorodibenzofuran, 1,2,3,6,7,8- CAS # 57117-44-9

Cancer Value

IUR = 40 (µg/m^3)$^{-1}$ or cancer value = 2.50E-07 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Hexachlorodibenzofuran, 1,2,3,7,8,9- CAS # 72918-21-9

Cancer Value

IUR = 40 (µg/m^3)$^{-1}$ or cancer value = 2.50E-07 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Hexachlorodibenzofuran, 2,3,4,6,7,8- CAS # 60851-34-5

Cancer Value

IUR = 40 $(\mu g/m^3)^{-1}$ or cancer value = 2.50E-07 $\mu g/m^3$
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Hexachloroethane CAS # 67-72-1

Acute (RfC_{acute})

58,000 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp97.pdf. Retrieved on December 20, 2024.

Cancer Value

IUR = 1.1E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.91 $\mu g/m^3$ https://oehha.ca.gov/chemicals/hexachloroethane. Retrieved on December 30, 2024.

Hexamethylene-1,6-diisocyanate CAS # 822-06-0

Acute (RfC_{acute})

0.3 $\mu g/m^3$ https://oehha.ca.gov/chemicals/hexamethylene-diisocyanate-monomer. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)

0.01 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0638_summary.pdf. Retrieved on January 2, 2025.

Hexane CAS # 110-54-3

Acute (RfC_{acute})

21,000 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp113.pdf. Retrieved on October 24, 2025.

Chronic ($RfC_{chronic}$)

700 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Hexanone-2 CAS # 591-78-6

Chronic ($RfC_{chronic}$)

30 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Hydrazine CAS # 302-01-2

Cancer Value

IUR = 4.90E-03 $(\mu g/m^3)^{-1}$ or cancer value = 2.04E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0352_summary.pdf. Retrieved on December 30, 2024.

Hydrochloric acid (hydrogen chloride) CAS # 7647-01-0

Acute (RfC_{acute})

2,100 $\mu g/m^3$ https://oehha.ca.gov/chemicals/hydrogen-chloride. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
20 µg/m^3 https://iris.epa.gov/static/pdfs/0396_summary.pdf. Retrieved on January 2, 2025.

Hydrogen cyanide CAS # 74-90-8

Acute (RfC_{acute})
340 µg/m^3 https://oehha.ca.gov/chemicals/hydrogen-cyanide. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
0.8 µg/m^3 https://iris.epa.gov/static/pdfs/0060_summary.pdf. Retrieved on December 31, 2024.

Hydrogen fluoride (Hydrofluoric acid) CAS # 7664-39-3

Acute (RfC_{acute})
16 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp11.pdf. Retrieved on January 8, 2026.

Chronic ($RfC_{chronic}$)
14 µg/m^3 https://oehha.ca.gov/chemicals/hydrogen-fluoride. Retrieved on December 16, 2024.

Hydrogen selenide CAS # 7783-07-5

Acute (RfC_{acute})
5 µg/m^3 https://oehha.ca.gov/chemicals/hydrogen-selenide. Retrieved on December 16, 2024.

Hydrogen sulfide CAS # 7783-06-4

Acute (RfC_{acute})
98 µg/m^3 https://www.atsdr.cdc.gov/toxprofiles/tp114.pdf. Retrieved on January 8, 2026.

Chronic ($RfC_{chronic}$)
2 µg/m^3 https://iris.epa.gov/static/pdfs/0061_summary.pdf. Retrieved on January 2, 2025.

Indeno(1,2,3-cd)pyrene CAS # 193-39-5

Cancer Value
IUR = 1.10E-04 (µg/m^3)$^{-1}$ or cancer value = 9.09E-02 µg/m^3 https://oehha.ca.gov/chemicals/indeno1-2-3-c-dpyrene. Retrieved on February 23, 2025.

Isophorone CAS # 78-59-1

Chronic ($RfC_{chronic}$)
2,000 µg/m^3 https://oehha.ca.gov/chemicals/isophorone. Retrieved on January 2, 2025.

Lead CAS # 7439-92-1

Cancer Value
IUR = 1.20E-05 (µg/m^3)$^{-1}$ or cancer value = 0.83 µg/m^3 https://oehha.ca.gov/chemicals/lead-and-lead-compounds. Retrieved on December 31, 2024.

Lead Acetate CAS # 301-04-2

Cancer Value

IUR = 8.00E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.13 $\mu g/m^3$ https://oehha.ca.gov/chemicals/lead-acetate. Retrieved on December 31, 2024.

Lead Chromate CAS # 7758-97-6

Cancer Value

IUR = 1.11E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.01E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.

Lead Compounds CAS # LEAD-COMPS

Cancer Value

IUR = 1.20E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.83 $\mu g/m^3$ https://oehha.ca.gov/chemicals/lead-and-lead-compounds. Retrieved on December 31, 2024.

Lead Phosphate CAS # 7446-27-7

Cancer Value

IUR = 1.20E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.83 $\mu g/m^3$ https://oehha.ca.gov/chemicals/lead-and-lead-compounds. Retrieved on December 31, 2024.

Lead Subacetate CAS # 1335-32-6

Cancer Value

IUR = 1.10E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.91 $\mu g/m^3$ https://oehha.ca.gov/chemicals/lead-subacetate. Retrieved on December 31, 2024.

Maleic anhydride CAS # 108-31-6

Chronic ($RfC_{chronic}$)

0.70 $\mu g/m^3$ https://oehha.ca.gov/chemicals/maleic-anhydride. Retrieved on January 2, 2025.

Manganese CAS # 7439-96-5

Chronic ($RfC_{chronic}$)

0.10 $\mu g/m^3$
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/manganesesumm.pdf. Retrieved on October 15, 2025.

Manganese Compounds CAS # MANGANESE-COMPS

Chronic ($RfC_{chronic}$)

0.10 $\mu g/m^3$
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/manganesesumm.pdf. Retrieved on October 15, 2025.

Mercury (elemental) CAS # 7439-97-6

Acute (RfC_{acute})
0.6 µg/m^3 https://oehha.ca.gov/chemicals/mercury-inorganic. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
0.30 µg/m^3 https://iris.epa.gov/static/pdfs/0370_summary.pdf. Retrieved on January 2, 2025.

Mercury Compounds CAS # MERCURY-COMPS

Acute (RfC_{acute})
0.6 µg/m^3 https://oehha.ca.gov/chemicals/mercury-inorganic. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
0.30 µg/m^3 https://iris.epa.gov/static/pdfs/0370_summary.pdf. Retrieved on January 2, 2025.

Methanol CAS # 67-56-1

Acute (RfC_{acute})
28,000 µg/m^3 https://oehha.ca.gov/chemicals/methanol. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
20,000 µg/m^3 https://iris.epa.gov/static/pdfs/0305_summary.pdf. Retrieved on January 2, 2025.

Methoxyethanol, 2- (ethylene glycol monomethyl ether EGME) CAS # 109-86-4

Acute (RfC_{acute})
93 µg/m^3 https://oehha.ca.gov/chemicals/ethylene-glycol-monomethyl-ether. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
20 µg/m^3 https://iris.epa.gov/static/pdfs/0525_summary.pdf. Retrieved on January 2, 2025.

Methyl Cellosolve Acetate CAS # 110-49-6

Chronic ($RfC_{chronic}$)
1 µg/m^3 https://cfpub.epa.gov/ncea/pprtv/documents/MethoxyethanolAcetate2.pdf. Retrieved on December 31, 2024.

Methyl chloride (Chloromethane) CAS # 74-87-3

Acute (RfC_{acute})
1,000 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp106.pdf. Retrieved on December 20, 2024.

Chronic ($RfC_{chronic}$)
90 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Methyl chloroform (1,1,1-Trichloroethane) CAS # 71-55-6

Acute (RfC_{acute})
9,000 µg/m^3 https://iris.epa.gov/static/pdfs/0197_summary.pdf. Retrieved on December 30, 2024.

Chronic ($RfC_{chronic}$)
5,000 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Methyl ethyl ketone (2-Butanone) CAS # 78-93-3

Acute (RfC_{acute})
2,950 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp29.pdf. Retrieved on December 20, 2024.

Chronic ($RfC_{chronic}$)
3,000 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 20, 2024.

Methyl isobutyl ketone (Hexone) CAS # 108-10-1

Chronic ($RfC_{chronic}$)
3,000 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Methyl isocyanate CAS # 624-83-9

Chronic ($RfC_{chronic}$)
1 µg/m^3 https://oehha.ca.gov/chemicals/methyl-isocyanate. Retrieved on January 2, 2025.

Methyl methacrylate CAS # 80-62-6

Chronic ($RfC_{chronic}$)
700 µg/m^3 https://iris.epa.gov/static/pdfs/1000_summary.pdf. Retrieved on January 2, 2025.

Methyl tert butyl ether CAS # 1634-04-4

Acute (RfC_{acute})
7,200 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp91.pdf. Retrieved on December 23, 2024.

Cancer Value
IUR = 2.60E-07 (µg/m^3)$^{-1}$ or cancer value = 38 µg/m^3 https://oehha.ca.gov/chemicals/methyl-tertiary-butyl-ether. Retrieved on December 30, 2024.

Methylcholanthrene, 3- CAS # 56-49-5

Cancer Value
IUR = 6.30E-03 (µg/m^3)$^{-1}$ or cancer value = 1.59E-03 µg/m^3 https://oehha.ca.gov/chemicals/3-methylcholanthrene. Retrieved on February 23, 2025.

Methylchrysene, 5- CAS # 3697-24-3

Cancer Value
IUR = 1.10E-03 (µg/m^3)$^{-1}$ or cancer value = 9.09E-03 µg/m^3 https://oehha.ca.gov/chemicals/5-methylchrysene. Retrieved on February 23, 2025.

Methylene bis(2-chloroaniline), 4,4- CAS # 101-14-4

Cancer Value

IUR = 4.30E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.02 $\mu g/m^3$ https://oehha.ca.gov/chemicals/44-methylene-bis2-chloroaniline. Retrieved on December 31, 2024.

Methylene chloride (Dichloromethane) CAS # 75-09-2

Acute (RfC_{acute})

2,000 $\mu g/m^3$ https://www.atsdr.cdc.gov/ToxProfiles/tp14.pdf. Retrieved on December 23, 2024.

Chronic ($RfC_{chronic}$)

600 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Methylene diphenyl diisocyanate (MDI) CAS # 101-68-8

Acute (RfC_{acute})

12 $\mu g/m^3$ https://oehha.ca.gov/chemicals/methylene-diphenyl-diisocyanate-mdi. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)

0.60 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0529_summary.pdf. Retrieved on January 2, 2025.

Methylenedianiline, 4,4- CAS # 101-77-9

Cancer Value

IUR = 4.60E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.02 $\mu g/m^3$ https://oehha.ca.gov/chemicals/44-methylenedianiline. Retrieved on December 31, 2024.

Methylnaphthalene, 1- CAS # 90-12-0

Chronic ($RfC_{chronic}$)

3.00E-03 $\mu g/m^3$ https://cfpub.epa.gov/ncea/pprtv/documents/Methylnaphthalene1.pdf. Retrieved on December 31, 2024.

Michler's ketone CAS # 90-94-8

Cancer Value

IUR = 2.50E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/michlers-ketone. Retrieved on December 31, 2024.

Mirex CAS # 2385-85-5

Cancer Value

IUR = 5.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 1.96E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/mirex. Retrieved on December 31, 2024.

N-Nitroso-N-methylurea CAS # 684-93-5

Cancer Value

IUR = 3.40E-02 $(\mu g/m^3)^{-1}$ or cancer value = 2.94E-04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/n-nitroso-n-methylurea. Retrieved on December 31, 2024.

N-Nitrosodi-n-butylamine CAS # 924-16-3

Cancer Value

IUR = 1.60E-03 $(\mu g/m^3)^{-1}$ or cancer value = 6.20E-03 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0037_summary.pdf. Retrieved on December 30, 2024.

N-Nitrosodiethylamine CAS # 55-18-5

Cancer Value

IUR = 4.30E-02 $(\mu g/m^3)^{-1}$ or cancer value = 2.30E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0042_summary.pdf. Retrieved on December 30, 2024.

N-Nitrosodimethylamine CAS # 62-75-9

Cancer Value

IUR = 1.40E-02 $(\mu g/m^3)^{-1}$ or cancer value = 7.10E-04 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0045_summary.pdf. Retrieved on December 30, 2024.

N-Nitrosodiphenylamine CAS # 86-30-6

Cancer Value

IUR = 2.60E-06 $(\mu g/m^3)^{-1}$ or cancer value = 3.8 $\mu g/m^3$ https://oehha.ca.gov/chemicals/n-nitrosodiphenylamine. Retrieved on December 31, 2024.

N-Nitrosomorpholine CAS # 59-89-2

Cancer Value

IUR = 1.90E-03 $(\mu g/m^3)^{-1}$ or cancer value = 5.30E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/n-nitrosomorpholine. Retrieved on December 31, 2024.

Naphthalene CAS # 91-20-3

Acute (RfC_{acute})

200 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/naphthalene.pdf. Retrieved on December 30, 2024.

Chronic ($RfC_{chronic}$)

9 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/naphthalene.pdf. Retrieved on December 30, 2024.

Nickel CAS # 7440-02-0

Acute (RfC_{acute})

0.20 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-and-nickel-compounds. Retrieved on December 16, 2024.

Cancer Value
IUR = 2.60E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-and-nickel-compounds. Retrieved on December 30, 2024.

Nickel Acetate CAS # 373-02-4

Acute (RfC_{acute})
0.20 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-acetate. Retrieved on December 16, 2024.

Cancer Value
IUR = 2.60E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-acetate. Retrieved on December 16, 2024.

Nickel Carbonate CAS # 3333-67-3

Acute (RfC_{acute})
0.20 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-carbonate. Retrieved on December 16, 2024.

Cancer Value
IUR = 2.60E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-carbonate. Retrieved on December 16, 2024.

Nickel Carbonyl CAS # 13463-39-3

Acute (RfC_{acute})
0.20 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-carbonyl. Retrieved on December 16, 2024.

Cancer Value
IUR = 2.60E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-carbonyl. Retrieved on December 16, 2024.

Nickel Compounds CAS # NICKEL-COMPS

Acute (RfC_{acute})
0.2 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-and-nickel-compounds. Retrieved on December 30, 2024.

Cancer Value
IUR = 4.80E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.02 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0273_summary.pdf. Retrieved on December 30, 2024.

Nickel Hydroxide CAS # 12054-48-7

Acute (RfC_{acute})
0.20 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-hydroxide. Retrieved on December 16, 2024.

Cancer Value
IUR = 2.60E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nickel-hydroxide. Retrieved on December 16, 2024.

Nickel oxide CAS # 1313-99-1

Acute (RfC_{acute})
0.20 µg/m^3 https://oehha.ca.gov/chemicals/nickel-oxide. Retrieved on December 16, 2024.

Cancer Value
IUR = 2.60E-04 (µg/m^3)$^{-1}$ or cancer value = 0.04 µg/m^3 https://oehha.ca.gov/chemicals/nickel-oxide. Retrieved on December 16, 2024.

Nickel refinery dust

Acute (RfC_{acute})
0.20 µg/m^3 https://oehha.ca.gov/chemicals/nickel-refinery-dust. Retrieved on December 16, 2024.

Cancer Value
IUR = 2.40E-04 (µg/m^3)$^{-1}$ or cancer value = 0.04 µg/m^3 https://iris.epa.gov/static/pdfs/0272_summary.pdf. Retrieved on December 30, 2024.

Nickel Subsulfide (NI3S2) CAS # 12035-72-2

Acute (RfC_{acute})
0.20 µg/m^3 https://oehha.ca.gov/chemicals/nickel-subsulfide. Retrieved on December 16, 2024.

Cancer Value
IUR = 4.80E-04 (µg/m^3)$^{-1}$ or cancer value = 0.02 µg/m^3 https://iris.epa.gov/static/pdfs/0273_summary.pdf. Retrieved on December 30, 2024.

Nickelocene CAS # 1271-28-9

Acute (RfC_{acute})
0.20 µg/m^3 https://oehha.ca.gov/chemicals/nickelocene. Retrieved on December 16, 2024.

Cancer Value
IUR = 2.60E-04 (µg/m^3)$^{-1}$ or cancer value = 0.04 µg/m^3 https://oehha.ca.gov/chemicals/nickelocene. Retrieved on December 16, 2024.

Nitric acid CAS # 7697-37-2

Acute (RfC_{acute})
86 µg/m^3 https://oehha.ca.gov/chemicals/nitric-acid. Retrieved on December 16, 2024.

Nitroacenaphthene, 5- CAS # 602-87-9

Cancer Value
IUR = 3.70E-05 (µg/m^3)$^{-1}$ or cancer value = 2.70E-01 µg/m^3 https://oehha.ca.gov/chemicals/5-nitroacenaphthene. Retrieved on February 23, 2025.

Nitrobenzene CAS # 98-95-3

Acute (RfC_{acute})
500 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp140.pdf. Retrieved on December 23, 2024.

Cancer Value
IUR = 4.00E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.25 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nitrobenzene. Retrieved on October 15, 2025.

Nitrochrysene, 6- CAS # 7496-02-8

Cancer Value
IUR = 1.01E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/6-nitrochrysene. Retrieved on February 23, 2025.

Nitrofen CAS # 1836-75-5

Cancer Value
IUR = 2.30E-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.43 $\mu g/m^3$ https://oehha.ca.gov/chemicals/nitrofen-technical-grade. Retrieved on December 31, 2024.

Nitrofluorene, 2- CAS # 607-57-8

Cancer Value
IUR = 1.01E-05 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-01 $\mu g/m^3$ https://oehha.ca.gov/chemicals/2-nitrofluorene. Retrieved on February 23, 2025.

Nitropropane, 2- CAS # 79-46-9

Chronic ($RfC_{chronic}$)
20 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0519_summary.pdf. Retrieved on January 2, 2025.

Nitropyrene, 1- CAS # 5522-43-0

Cancer Value
IUR = 1.01E-04 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-02 $\mu g/m^3$ https://oehha.ca.gov/chemicals/1-nitropyrene. Retrieved on February 23, 2025.

Nitropyrene, 4- CAS # 57835-92-4

Cancer Value
IUR = 1.01E-04 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-02 $\mu g/m^3$ https://oehha.ca.gov/chemicals/4-nitropyrene. Retrieved on February 23, 2025.

Nitrosodiphenylamine, p- CAS # 156-10-5

Cancer Value
IUR = 6.30E-06 $(\mu g/m^3)^{-1}$ or cancer value = 1.6 $\mu g/m^3$ https://oehha.ca.gov/chemicals/p-nitrosodiphenylamine. Retrieved on December 31, 2024.

Octachlorodibenzo-p-dioxin, 1,2,3,4,6,7,8,9- CAS # 3268-87-9

Cancer Value

IUR = 0.12 $(\mu g/m^3)^{-1}$ or cancer value = 8.33E-05 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Octachlorodibenzofuran, 1,2,3,4,6,7,8,9- CAS # 39001-02-0

Cancer Value

IUR = 0.12 $(\mu g/m^3)^{-1}$ or cancer value = 8.33E-05 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

PCB 114 (2,3,4,4,5 Pentachlorobiphenyl) CAS # 74472-37-0

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.00E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/23445-pecb. Retrieved on December 31, 2024.

PCB 118 (2,3,4,4,5 Pentachlorobiphenyl) CAS # 31508-00-6

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.00E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/23445-pecb-0. Retrieved on December 31, 2024.

PCB 123 (2,3,4,4,5 Pentachlorobiphenyl) CAS # 65510-44-3

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.00E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/23445-pecb-1. Retrieved on December 31, 2024.

PCB 126 (3,3,4,4,5 Pentachlorobiphenyl) CAS # 57465-28-8

Cancer Value

IUR = 3.8 $(\mu g/m^3)^{-1}$ or cancer value = 2.60E-06 $\mu g/m^3$ https://oehha.ca.gov/chemicals/33445-pecb. Retrieved on December 31, 2024.

PCB 156 (2,3,3,4,4,5 Hexachlorobiphenyl) CAS # 38380-08-4

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.00E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/233445-hxcb. Retrieved on December 31, 2024.

PCB 157 (2,3,3,4,4,5 Hexachlorobiphenyl) CAS # 69782-90-7

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.00E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/233445-hxcb-0. Retrieved on December 31, 2024.

PCB 167 (2,3,4,4,5,5 Hexachlorobiphenyl) CAS # 52663-72-6

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.00E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/234455-hxcb. Retrieved on December 31, 2024.

PCB 169 (3,3,4,4,5,5 Hexachlorobiphenyl) CAS # 32774-16-6

Cancer Value

IUR = 1.10 $(\mu g/m^3)^{-1}$ or cancer value = 9.09E-06 $\mu g/m^3$ https://oehha.ca.gov/chemicals/334455-hxcb. Retrieved on December 31, 2024.

PCB 189 (2,3,3,4,4,5,5 Heptachlorobiphenyl) CAS # 39635-31-9

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.00E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/2334455-hpcb. Retrieved on December 31, 2024.

PCB 77 (3,3,4,4-Tetrachlorobiphenyl) CAS # 32598-13-3

Cancer Value

IUR = 3.80E-03 $(\mu g/m^3)^{-1}$ or cancer value = 2.60E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/3344-tcb. Retrieved on December 31, 2024.

PCB 81 (3,4,4,5 Tetrachlorobiphenyl) CAS # 70362-50-4

Cancer Value

IUR = 1.10E-02 $(\mu g/m^3)^{-1}$ or cancer value = 9.00E-04 $\mu g/m^3$ https://oehha.ca.gov/chemicals/3445-tcb. Retrieved on December 31, 2024.

PCB 105 (2,3,3,4,4 Pentachlorobiphenyl) CAS # 32598-14-4

Cancer Value

IUR = 1.10E-03 $(\mu g/m^3)^{-1}$ or cancer value = 9.00E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/23344-pecb. Retrieved on December 31, 2024.

Pentachlorodibenzo-p-dioxin, 1,2,3,7,8- CAS # 40321-76-4

Cancer Value

IUR = 400 $(\mu g/m^3)^{-1}$ or cancer value = 2.50E-08 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Pentachlorodibenzofuran, 1,2,3,7,8- CAS # 57117-41-6

Cancer Value

IUR = 12 $(\mu g/m^3)^{-1}$ or cancer value = 8.33E-07 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Pentachlorodibenzofuran, 2,3,4,7,8- CAS # 57117-31-4

Cancer Value

IUR = 120 $(\mu g/m^3)^{-1}$ or cancer value = 8.33E-08 $\mu g/m^3$
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Pentachlorophenol CAS # 87-86-5

Cancer Value

IUR = 5.10E-06 $(\mu g/m^3)^{-1}$ or cancer value = 1.96 $\mu g/m^3$ https://oehha.ca.gov/chemicals/pentachlorophenol. Retrieved on December 31, 2024.

Perfluorobutane sulfonic acid (PFBS) CAS # 375-73-5

Chronic ($RfC_{chronic}$)

0.30 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/pfbs.pdf. Retrieved on December 30, 2024.

Perfluorobutanoic acid (PFBA) CAS # 375-22-4

Chronic ($RfC_{chronic}$)

10 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/pfba.pdf. Retrieved on December 30, 2024.

Perfluorohexanesulfonic acid (PFHxS) CAS # 355-46-4

Chronic ($RfC_{chronic}$)

0.03 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/pfhxs.pdf. Retrieved on December 30, 2024.

Perfluorohexanoic acid (PFHxA) CAS # 307-24-4

Chronic ($RfC_{chronic}$)

0.50 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/pfhxa.pdf. Retrieved on December 30, 2024.

Perfluorooctanoic acid (PFOA) CAS # 335-67-1

Chronic ($RfC_{chronic}$)

9.10E-04 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/pfoa.pdf. Retrieved on October 15, 2025.

Perfluorooctane sulfonic acid (PFOS) CAS # 1763-23-1

Chronic ($RfC_{chronic}$)

3.50E-03 $\mu g/m^3$ https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/pfos.pdf. Retrieved on October 15, 2025.

Perylene CAS # 198-55-0

Chronic ($RfC_{chronic}$)
2.00E-03 µg/m^3 https://cfpub.epa.gov/ncea/pprtv/documents/Perylene.pdf. Retrieved on December 31, 2024.

Phenol CAS # 108-95-2

Acute (RfC_{acute})
5,800 µg/m^3 https://oehha.ca.gov/chemicals/phenol. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
200 µg/m^3 https://oehha.ca.gov/chemicals/phenol. Retrieved on January 2, 2025.

Phenylphenate, Sodium, o- CAS # 132-27-4

Cancer Value
IUR = 8.60E-07 (µg/m^3)$^{-1}$ or cancer value = 11.6 µg/m^3 https://oehha.ca.gov/chemicals/o-phenylphenate-sodium. Retrieved on December 31, 2024.

Phosgene CAS # 75-44-5

Acute (RfC_{acute})
4 µg/m^3 https://oehha.ca.gov/chemicals/phosgene. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
0.30 µg/m^3 https://iris.epa.gov/static/pdfs/0487_summary.pdf. Retrieved on January 2, 2025.

Phosphine CAS # 7803-51-2

Chronic ($RfC_{chronic}$)
0.30 µg/m^3 https://iris.epa.gov/static/pdfs/0090_summary.pdf. Retrieved on January 2, 2025.

Phosphoric acid CAS # 7664-38-2

Chronic ($RfC_{chronic}$)
10 µg/m^3 https://iris.epa.gov/static/pdfs/0697_summary.pdf. Retrieved on January 2, 2025.

Phthalic anhydride CAS # 85-44-9

Chronic ($RfC_{chronic}$)
20 µg/m^3 https://oehha.ca.gov/chemicals/phthalic-anhydride. Retrieved on January 2, 2025.

Polybrominated Biphenyls CAS # 36355-01-8

Cancer Value
IUR = 8.60E-03 (µg/m^3)$^{-1}$ or cancer value = 1.20E-03 µg/m^3 https://oehha.ca.gov/chemicals/polybrominated-biphenyls. Retrieved on December 31, 2024.

Polychlorinated biphenyls CAS # 1336-36-3

Cancer Value

IUR = 1.00E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.10 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0294_summary.pdf. Retrieved on December 30, 2024.

Polycyclic Organic Matter (POM) CAS # POM-COMPS

Cancer Value

IUR = 3.00-05 $(\mu g/m^3)^{-1}$ or cancer value = 0.33 $\mu g/m^3$ Assumes POM mixture is 5% as toxic as benzo(a)pyrene, based on guidance EPA's "Air Toxics Risk Assessment Reference Library Volume 2 - Facility-Specific Assessment" https://www.epa.gov/sites/default/files/2013-08/documents/volume_2_facilityassess.pdf. https://iris.epa.gov/static/pdfs/0136_summary.pdf. Retrieved on February 23, 2025.

Polymeric Methylene Diphenyl Diisocyanate CAS # 9016-87-9

Acute (RfC_{acute})

12 $\mu g/m^3$ https://oehha.ca.gov/chemicals/polymeric-methylene-diphenyl-diisocyanate. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)

0.60 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0529_summary.pdf. Retrieved on January 2, 2025.

Ponceau MX (C.I. Food Red 5) CAS # 3761-53-3

Cancer Value

IUR = 1.30E-06 $(\mu g/m^3)^{-1}$ or cancer value = 7.69 $\mu g/m^3$ https://oehha.ca.gov/chemicals/ponceau-mx. Retrieved on December 31, 2024.

Potassium cyanide CAS # 151-50-8

Acute (RfC_{acute})

340 $\mu g/m^3$ https://oehha.ca.gov/chemicals/cyanide. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)

0.80 $\mu g/m^3$ https://iris.epa.gov/static/pdfs/0060_summary.pdf. Retrieved on October 15, 2025.

Propane sultone, 1,3- CAS # 1120-71-4

Cancer Value

IUR = 6.90E-04 $(\mu g/m^3)^{-1}$ or cancer value = 0.01 $\mu g/m^3$ https://oehha.ca.gov/chemicals/13-propane-sultone. Retrieved on December 31, 2024.

Propiolactone, beta- CAS # 57-57-8

Cancer Value

IUR = 4.00E-03 $(\mu g/m^3)^{-1}$ or cancer value = 2.50E-03 $\mu g/m^3$ https://oehha.ca.gov/chemicals/beta-propiolactone. Retrieved on December 31, 2024.

Propionaldehyde CAS # 123-38-6

Chronic ($RfC_{chronic}$)
8 µg/m^3 https://iris.epa.gov/static/pdfs/1011_summary.pdf. Retrieved on January 2, 2025.

Propylene CAS # 115-07-1

Chronic ($RfC_{chronic}$)
3,000 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Propylene dichloride (1,2-Dichloropropane) CAS # 78-87-5

Acute (RfC_{acute})
92 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp134.pdf. Retrieved on December 23, 2024.

Cancer Value
IUR = 3.70E-06 (µg/m^3)$^{-1}$ or cancer value = 2.70 µg/m^3
https://cfpub.epa.gov/ncea/pprtv/documents/Dichloropropane12.pdf. Retrieved on December 31, 2024.

Propylene Glycol Monomethyl Ether CAS # 107-98-2

Chronic ($RfC_{chronic}$)
2,000 µg/m^3 https://iris.epa.gov/static/pdfs/0404_summary.pdf. Retrieved on January 2, 2025.

Propylene oxide CAS # 75-56-9

Acute (RfC_{acute})
3,100 µg/m^3 https://oehha.ca.gov/chemicals/propylene-oxide. Retrieved on December 16, 2024.

Cancer Value
IUR = 3.70E-06 (µg/m^3)$^{-1}$ or cancer value = 2.70 µg/m^3 https://iris.epa.gov/static/pdfs/0403_summary.pdf. Retrieved on December 30, 2024.

Pyrrolidine, 1-Nitroso- CAS # 930-55-2

Cancer Value
IUR = 6.10E-04 (µg/m^3)$^{-1}$ or cancer value = 1.64E-02 µg/m^3 https://iris.epa.gov/static/pdfs/0081_summary.pdf. Retrieved on October 15, 2025.

Selenium CAS # 7782-49-2

Chronic ($RfC_{chronic}$)
20 µg/m^3 https://oehha.ca.gov/chemicals/selenium. Retrieved on January 2, 2025.

Selenium Compounds CAS # SELENIUM-COMPS

Chronic ($RfC_{chronic}$)
20 µg/m^3 https://oehha.ca.gov/chemicals/selenium. Retrieved on January 2, 2025.

Selenium Sulfide CAS # 7446-34-6

Chronic ($RfC_{chronic}$)
20 µg/m^3 https://oehha.ca.gov/chemicals/selenium. Retrieved on January 2, 2025.

Silica CAS # 7631-86-9

Chronic ($RfC_{chronic}$)
3 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/silicasumm.pdf. Retrieved on January 2, 2025.

Sodium cyanide CAS # 143-33-9

Acute (RfC_{acute})
340 µg/m^3 https://oehha.ca.gov/chemicals/cyanide. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
0.8 µg/m^3 https://iris.epa.gov/static/pdfs/0060_summary.pdf. Retrieved on January 2, 2025.

Sodium Dichromate CAS # 10588-01-9

Cancer Value
IUR = 1.11E-02 (µg/m^3)$^{-1}$ or cancer value = 9.01E-04 µg/m^3 https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.

Strontium chromate CAS # 7789-06-2

Cancer Value
IUR = 1.11E-02 (µg/m^3)$^{-1}$ or cancer value = 9.01E-04 µg/m^3 https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.

Styrene CAS # 100-42-5

Acute (RfC_{acute})
21,000 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp53.pdf. Retrieved on December 23, 2024.

Chronic ($RfC_{chronic}$)
900 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on October 15, 2025.

Styrene oxide CAS # 96-09-3

Cancer Value
IUR = 4.60E-05 (µg/m^3)$^{-1}$ or cancer value = 0.22 µg/m^3 https://oehha.ca.gov/chemicals/styrene-oxide. Retrieved on October 15, 2025.

Sulfuric acid (aerosol forms only) CAS # 7664-93-9

Acute (RfC_{acute})
120 µg/m^3 https://oehha.ca.gov/chemicals/sulfuric-acid. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
1 µg/m^3 https://oehha.ca.gov/chemicals/sulfuric-acid. Retrieved on December 16, 2024.

Tert-Butyl Acetate CAS # 540-88-5

Cancer Value
IUR = 1.30E-06 (µg/m^3)$^{-1}$ or cancer value = 7.7 µg/m^3 https://oehha.ca.gov/chemicals/tertiary-butyl-acetate. Retrieved on December 31, 2024.

tert-Butyl Alcohol (tBA) CAS # 75-65-0

Chronic ($RfC_{chronic}$)
5,000 µg/m^3 https://iris.epa.gov/static/pdfs/1036_summary.pdf. Retrieved on January 2, 2025.

Tetrachlorodibenzo-p-dioxin, 2,3,7,8- CAS # 1746-01-6

Cancer Value
IUR = 400 (µg/m^3)$^{-1}$ or cancer value = 2.50E-08 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Tetrachlorodibenzofuran, 2,3,7,8- CAS # 51207-31-9

Cancer Value
IUR = 40 (µg/m^3)$^{-1}$ or cancer value = 2.50E-07 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/dioxinmemo1.pdf. Retrieved on December 31, 2024.

Tetrachloroethane, 1,1,2,2- CAS # 79-34-5

Cancer Value
IUR = 5.80E-05 (µg/m^3)$^{-1}$ or cancer value = 0.17 µg/m^3 https://oehha.ca.gov/chemicals/1122-tetrachloroethane. Retrieved on December 31, 2024.

Tetrachloroethylene (Perchloroethylene) CAS # 127-18-4

Acute (RfC_{acute})
41 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp18.pdf. Retrieved on December 23, 2024.

Cancer Value
IUR = 5.00E-06 (µg/m^3)$^{-1}$ or cancer value = 2 µg/m^3
https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/tetrafactsheet.pdf. Retrieved on January 2, 2025.

Tetrafloroethane, 1,1,2,2- CAS # 811-97-2

Chronic ($RfC_{chronic}$)
80,000 µg/m^3. https://iris.epa.gov/static/pdfs/0656_summary.pdf. Retrieved on January 27, 2026.

Tetrahydrofuran CAS # 109-99-9

Chronic ($RfC_{chronic}$)
2,000 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Tetramethyldiaminodiphenylmethane CAS # 101-61-1

Cancer Value
IUR = 1.30E-05 (µg/m^3)$^{-1}$ or cancer value = 0.77 µg/m^3 https://oehha.ca.gov/chemicals/tetramethyldiaminodiphenylmethane. Retrieved on December 31, 2024.

Thiodianiline, 4,4'- CAS # 139-65-1

Cancer Value
IUR = 4.30E-03 (µg/m^3)$^{-1}$ or cancer value = 2.33E-03 µg/m^3 https://oehha.ca.gov/chemicals/44-thiodianiline. Retrieved on December 31, 2024.

Thiourea CAS # 62-56-6

Cancer Value
IUR = 2.10E-05 (µg/m^3)$^{-1}$ or cancer value = 0.48 µg/m^3 https://oehha.ca.gov/chemicals/thiourea. Retrieved on December 31, 2024.

Titanium Tetrachloride CAS # 7550-45-0

Chronic ($RfC_{chronic}$)
0.1 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp101.pdf. Retrieved on January 2, 2025.

Toluene CAS # 108-88-3

Acute (RfC_{acute})
7,600 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp56.pdf. Retrieved on December 23, 2024.

Chronic ($RfC_{chronic}$)
4,000 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 23, 2024.

Toluene-2,4-diisocyanate CAS # 584-84-9

Acute (RfC_{acute})
2 µg/m^3 https://oehha.ca.gov/chemicals/toluene-diisocyanates-24-and-2-6. Retrieved on December 31, 2024.

Cancer Value
IUR = 1.10E-05 (µg/m^3)$^{-1}$ or cancer value = 0.91 µg/m^3 https://oehha.ca.gov/chemicals/toluene-diisocyanates-24-and-2-6. Retrieved on December 31, 2024.

Toluenediisocyanate (mixed isomers) CAS # 26471-62-5

Acute (RfC_{acute})

0.07 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp206.pdf. Retrieved on December 16, 2024.

Cancer Value

IUR = 1.10E-05 (µg/m^3)$^{-1}$ or cancer value = 0.91 µg/m^3 https://oehha.ca.gov/chemicals/toluene-diisocyanates. Retrieved on December 30, 2024.

Toluene diamine, 2,4- CAS # 95-80-7

Cancer Value

IUR = 1.10E-03 (µg/m^3)$^{-1}$ or cancer value = 9.1E-03 µg/m^3 https://oehha.ca.gov/chemicals/24-diaminotoluene. Retrieved on December 31, 2024.

Toluidine, o- (Methylaniline, 2-) CAS # 95-53-4

Cancer Value

IUR = 5.10E-05 (µg/m^3)$^{-1}$ or cancer value = 0.2 µg/m^3 https://oehha.ca.gov/chemicals/o-toluidine. Retrieved on December 31, 2024.

Toxaphene CAS # 8001-35-2

Cancer Value

IUR = 3.20E-04 (µg/m^3)$^{-1}$ or cancer value = 0.03 µg/m^3 https://iris.epa.gov/static/pdfs/0346_summary.pdf. Retrieved on December 30, 2024.

trans-1,3-Dichloropropene CAS # 10061-02-6

Cancer Value

IUR = 4.00E-06 (µg/m^3)$^{-1}$ or cancer value = 2.5 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on October 15, 2025.

Trichlorobenzene, 1,2,4- CAS # 120-82-1

Chronic ($RfC_{chronic}$)

2 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 31, 2024.

Trichloroethane, 1,1,2- CAS # 79-00-5

Acute (RfC_{acute})

160 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp148.pdf. Retrieved on October 15, 2025.

Cancer Value

IUR = 1.60E-05 (µg/m^3)$^{-1}$ or cancer value = 0.63 µg/m^3 https://iris.epa.gov/static/pdfs/0198_summary.pdf. Retrieved on October 15, 2025.

Trichloroethylene (TCE) CAS # 79-01-6

Acute (RfC_{acute})
2 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/tceairsumm.pdf. Retrieved on December 30, 2024.

Cancer Value
IUR = 5.00E-06 (µg/m^3)$^{-1}$ or cancer value = 2 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/tceairsumm.pdf. Retrieved on December 30, 2024.

Trichlorofluoromethane (CFC-11) CAS # 75-69-4

Chronic ($RfC_{chronic}$)
1,000 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on December 31, 2024.

Trichlorophenol, 2,4,6- CAS # 88-06-2

Cancer Value
IUR = 3.10E-06 (µg/m^3)$^{-1}$ or cancer value = 3.2 µg/m^3 https://iris.epa.gov/static/pdfs/0122_summary.pdf. Retrieved on October 15, 2025.

Trichloropropane, 1,2,3- CAS # 96-18-4

Acute (RfC_{acute})
6 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp57.pdf. Retrieved on October 15, 2025.

Chronic ($RfC_{chronic}$)
0.30 µg/m^3 https://iris.epa.gov/static/pdfs/0200_summary.pdf. Retrieved on December 31, 2024.

Triethylamine CAS # 121-44-8

Acute (RfC_{acute})
2,800 µg/m^3 https://oehha.ca.gov/chemicals/triethylamine. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
7 µg/m^3 https://iris.epa.gov/static/pdfs/0520_summary.pdf. Retrieved on January 2, 2025.

Trifluoroethane, 1,1,1- CAS # 420-46-2

Chronic ($RfC_{chronic}$)
20,000 µg/m^3 https://cfpub.epa.gov/ncea/pprtv/documents/Trifluoroethane111.pdf. Retrieved on December 3, 2025.

Trimethylbenzene, 1,2,3- CAS # 526-73-8

Acute (RfC_{acute})
2,400 µg/m^3 https://oehha.ca.gov/sites/default/files/media/downloads/crnr/tmbrelfinal100602023.pdf. Retrieved on January 22, 2026.

Chronic ($RfC_{chronic}$)
60 µg/m^3 https://iris.epa.gov/static/pdfs/1037_summary.pdf. Retrieved on January 2, 2025.

Trimethylbenzene, 1,2,4- CAS # 95-63-6

Acute (RfC_{acute})
2,400 µg/m^3 https://oehha.ca.gov/chemicals/124-trimethylbenzene. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
60 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Trimethylbenzene, 1,3,5- CAS # 108-67-8

Acute (RfC_{acute})
2,400 µg/m^3 https://oehha.ca.gov/chemicals/135-trimethylbenzene. Retrieved on December 16, 2024.

Chronic ($RfC_{chronic}$)
60 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Vanadium CAS # 7440-62-2

Acute (RfC_{acute})
0.8 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp58.pdf. Retrieved on December 30, 2024.

Chronic ($RfC_{chronic}$)
0.10 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp58.pdf. Retrieved on December 30, 2024.

Vanadium Compounds CAS # VANADIUM-COMPS

Acute (RfC_{acute})
0.8 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp58.pdf. Retrieved on December 30, 2024.

Chronic ($RfC_{chronic}$)
0.10 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp58.pdf. Retrieved on December 30, 2024.

Vanadium Pentoxide, (V2O5) CAS # 1314-62-1

Acute (RfC_{acute})
30 µg/m^3 https://oehha.ca.gov/chemicals/vanadium-pentoxide. Retrieved on December 16, 2024.

Cancer Value
IUR = 8.30E-03 $(\mu g/m^3)^{-1}$ or cancer value = 1.2E-03 µg/m^3
https://cfpub.epa.gov/ncea/pprtv/documents/VanadiumPentoxide.pdf. Retrieved on December 30, 2024.

Vinyl acetate CAS # 108-05-4

Acute (RfC_{acute})
3,500 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp59.pdf. Retrieved on December 30, 2024.

Chronic ($RfC_{chronic}$)
200 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Vinyl bromide CAS # 593-60-2

Cancer Value
IUR = 1.50E-05 (µg/m^3)$^{-1}$ or cancer value = 0.67 µg/m^3
https://cfpub.epa.gov/ncea/pprtv/documents/VinylBromide.pdf. Retrieved on December 31, 2024.

Vinyl chloride CAS # 75-01-4

Acute (RfC_{acute})
1,300 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp20.pdf. Retrieved on December 30, 2024.

Cancer Value

IUR = 8.80E-06 (µg/m^3)$^{-1}$ or cancer value = 1.1 µg/m^3 https://iris.epa.gov/static/pdfs/1001_summary.pdf. Retrieved on December 30, 2024.

Xylenes CAS # 1330-20-7

Acute (RfC_{acute})
8,700 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp71.pdf. Retrieved on December 23, 2024.

Chronic ($RfC_{chronic}$)
100 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Xylenes, m- CAS # 108-38-3

Acute (RfC_{acute})
8,700 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp71.pdf. Retrieved on December 23, 2024.

Chronic ($RfC_{chronic}$)
100 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Xylenes, o- CAS # 95-47-6

Acute (RfC_{acute})
8,700 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp71.pdf. Retrieved on December 23, 2024.

Chronic ($RfC_{chronic}$)
100 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Xylenes, p- CAS # 106-42-3

Acute (RfC_{acute})
8,700 µg/m^3 https://www.atsdr.cdc.gov/ToxProfiles/tp71.pdf. Retrieved on December 23, 2024.

Chronic ($RfC_{chronic}$)

100 µg/m^3 https://www.health.state.mn.us/communities/environment/risk/docs/guidance/air/inhalvalues.pdf. Retrieved on January 2, 2025.

Zinc chromate CAS # 13530-65-9

Cancer Value

IUR = 1.11E-02 (µg/m^3)$^{-1}$ or cancer value = 9.01E-04 µg/m^3 https://iris.epa.gov/static/pdfs/0144_summary.pdf. Retrieved on December 30, 2024.