

Environmental Health Tracking and Biomonitoring: Connecting Environment, Exposure and Public Health

MINNESOTA DEPARTMENT OF HEALTH
REPORT TO THE LEGISLATURE 2015

APRIL 2015



Minnesota
Department of Health



Protecting, maintaining and improving the health of all Minnesotans

April 24, 2015

Chairs and Ranking Members
Health and Environment Committees
Minnesota State Legislature

Dear Legislators:

The Minnesota Department of Health (MDH) is pleased to share this Legislative Report on the progress of our Environmental Public Health Tracking and Biomonitoring Program, in accordance with Minnesota Statute 144.996, Subdivision 1.2.

Created in 2007 by the Minnesota Legislature, the Environmental Public Health Tracking and Biomonitoring Program was directed to gather and share with the public data on environmental hazards, chemicals in people (biomonitoring) and chronic diseases in Minnesota. This report showcases the progress we have made since our last report in 2013 as we continue to build our state's capacity for monitoring current trends, disparities and geographic patterns of environmental hazards, exposure and public health in communities, guided by the Environmental Health Tracking and Biomonitoring Advisory Panel.

Continuing investment in this program will enable MDH to track and share its progress in addressing Minnesota health issues, such as mercury exposure in newborns, air quality in our cities, contaminants in drinking water, heat-related illness and asthma in children. Improving public access to current, accurate information helps citizens, communities and health officials make better decisions and policy to protect the health of Minnesota communities and future generations.

Sincerely,

A handwritten signature in blue ink, appearing to read "Edward P. Ehlinger", is written over a horizontal line.

Edward P. Ehlinger, MD, MSHP
Commissioner

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Enclosure: 2015 Legislative Report

ENVIRONMENTAL HEALTH TRACKING AND BIOMONITORING:
CONNECTING ENVIRONMENT, EXPOSURE AND PUBLIC HEALTH

MINNESOTA DEPARTMENT OF HEALTH REPORT TO THE LEGISLATURE 2015

APRIL 2015

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Upon request, this material will be made available in an alternative format such as large print, Braille or audio recording. Printed on recycled paper.

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EXECUTIVE SUMMARY

The environment—our air, water, food, homes, workplaces and communities, as well as the social and economic conditions where we live, work and play—is important to our health. First established in 2007, Minnesota’s Environmental Health Tracking and Biomonitoring program today brings together, in one place, data from statewide monitoring and surveillance of environmental hazards, human exposures and population health. Knowing the connections between environment, exposures, health and social conditions are important to understanding how best to protect the health of Minnesota communities.

Environmental Health Tracking and Biomonitoring shares data with citizens, communities, policy makers and health officials, who then use the data to inform actions that protect health in Minnesota communities. It can also help individuals to make healthy choices and prevent chronic conditions.

MN Biomonitoring measures chemicals in people or *exposure*—the level of a chemical hazard in samples of people’s blood or urine. Monitoring harmful chemicals in people helps understand the sources of exposures, what actions are needed to prevent exposure and how environmental hazards impact public health. Major accomplishments of the MN Biomonitoring program at MDH include:

- Completing four community-based pilot projects, and several follow-up studies.
- Building capacity in the MDH Public Health Laboratory to measure over 17 different chemicals in human specimens.
- Tracking changes in perfluorochemical (PFC) exposure since 2008 in the East Metro community to test the efficacy of interventions.
- Working closely with academic partners at the University of Minnesota and an advisory panel to study methods for monitoring mercury exposure in newborns.
- Implementing a strategic plan to sustain ongoing state biomonitoring with a focus on protecting vulnerable communities, pregnant women, newborns and children.

The East Metro PFC3 Biomonitoring Project measures levels of perfluorochemicals (PFCs) in residents of Oakdale, Lake Elmo and Cottage Grove, where some drinking water sources were found to be polluted. The 2008 MN Biomonitoring pilot project showed that PFC levels were elevated in long-term residents who were exposed to PFCs in drinking water. In 2010, PFC levels in this group had declined following water treatment, but were still somewhat higher than levels seen in the U.S. population. In 2014-15, MN Biomonitoring successfully recruited 156 past participants and 157 newer residents who consented to provide a blood sample to test whether public health interventions have continued to be effective at reducing exposures. Full results will be shared with the community in summer 2015.

Recruitment is beginning for the Minnesota Department of Health (MDH) **Minnesota Family Environmental Exposure Tracking**, or **MN FEET** project, in four diverse Twin Cities communities. MN Biomonitoring is focusing its newest project on monitoring levels of toxic metals—mercury, lead and cadmium—in pregnant women and newborns. This work follows on the 2011 findings of elevated mercury exposure among newborns in the Great Lakes region, along with studies in other parts of the country that find significant racial/ethnic differences in average mercury levels among women and newborns. MDH is working with the communities to address elevated exposures, if found, that may be contributing to health disparities.

MN Tracking gathers existing data on *environmental hazards*, such as indoor and outdoor air pollution, along with data on their related *health* problems and analyzes it for geographic patterns, trends over time and associations. Data are shared with the public in charts and maps on a web-based data portal for everyone to see and explore. Today MN Tracking provides public health data on over 20 topic areas accessible to everyone on a web-based data portal. Tracking has been working closely with program partners to explore and display new data at the community level.



INTRODUCTION

Before Minnesota's Environmental Health Tracking and Biomonitoring program's initiation in 2007 by the Minnesota Legislature¹ no program existed in the state to track and organize existing data from environmental monitoring, biomonitoring in people and chronic diseases. Similar to the public health surveillance and epidemiology programs that track infectious and chronic diseases in the state, the Tracking and Biomonitoring program at MDH is a surveillance and epidemiology program for informing programs that address environmental risks. It works by systematically collecting and analyzing environmental public health data to observe patterns and trends, and look for connections. Understanding the connections between environmental hazards, exposure and health is key to understanding how best to improve and protect the health of Minnesotans.

Some communities are disproportionately affected by environmental risks. They may be more exposed due to environmental conditions where they live and work, or more vulnerable because they have higher rates of existing chronic health conditions. In low-income communities, people may lack the resources they need to take action, such as removing lead paint or mitigating radon in a home, thereby avoiding environmental risks. The social and economic conditions in our communities affect the health impacts that we see from environmental conditions. By integrating new data and measures of chemical exposure, poverty, health insurance and race/ethnicity, we are able to show that the burden of environmental conditions on the health of Minnesotans is not shared equally.

Together, tracking and biomonitoring are valuable new tools for informing environmental health programs and policies, collecting and using data, tracking progress toward health improvements, identifying health disparities and vulnerable populations and responding to community needs for information.

¹Minn.stats. 144.995-998.

Environmental Health Tracking and Biomonitoring 2007 Legislation: Overview and Role of the Advisory Panel

Created in 2007 by Minnesota Statute 144.995-998, the Environmental Health Tracking and Biomonitoring program at the Minnesota Department of Health (MDH) was directed to:

- Collect, analyze and share data to track how much people in Minnesota are exposed to hazards in the environment and related chronic diseases or health outcomes.
- Coordinate with the Pollution Control Agency, Department of Agriculture, University of Minnesota and any other relevant agencies to share access to health and environmental databases.
- Implement a pilot biomonitoring program to measure communities' exposure to four chemicals in Minnesota's diverse communities.
- Plan and implement an ongoing biomonitoring program.
- Create an advisory panel to guide the program in the selection of communities, chemicals and disease outcomes for tracking and biomonitoring.

The Environmental Health Tracking and Biomonitoring (EHTB) Advisory Panel meets regularly each year. Members provide important guidance to the Commissioner of Health on program decisions related to the selection of chemicals and communities for ongoing biomonitoring, as well as data and topics for tracking. The panel reviews results and advises staff on interpretation and communication.

A current roster of the EHTB Advisory Panel and the complete statute can be found in the appendices. Panel members have scientific backgrounds and represent a broad range of stakeholder interests—business, government, non-profit organizations and state universities.

“By measuring exposure in vulnerable populations, we can better address their risks and their needs and let’s hope that it’s true that ‘What gets measured gets done.’”

*- Minnesota
Commissioner of Health
Ed Ehlinger*



MINNESOTA BIOMONITORING PROGRESS REPORT

We're all exposed to chemicals in our air, water, food and consumer products. Some can be harmful to our health. Minnesota's State Biomonitoring Program (MN Biomonitoring) measures levels of chemicals in Minnesotans and whether chemical exposures differ between groups and over time.

Biomonitoring is used to:

- Measure and track changes in harmful chemical exposures over time;
- Identify groups that are most at risk of being exposed to chemical hazards for targeted interventions;
- Inform and evaluate programs and policies to prevent harmful exposures.

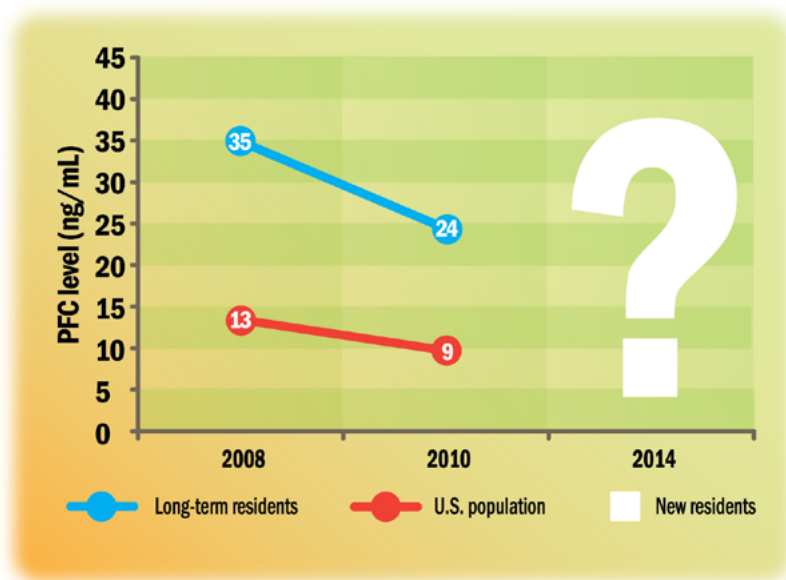
When MN Biomonitoring was established in 2007, the law directed the program to conduct four pilot projects in communities that were likely to be exposed to harmful chemicals. These projects were highly successful and provided the groundwork for MDH to build its biomonitoring capacity. Upon completion of these projects, MDH had:

- Measured 17 different chemicals in Minnesotans, including perfluorochemicals (PFCs), mercury, arsenic, cotinine, parabens and bisphenol A;
- Tested chemicals in over 1,400 Minnesota adults, pregnant women and children;
- Included rural, urban and suburban communities.

Furthermore, the pilot program provided a solid foundation for the program's current work and a framework for an ongoing program focused on vulnerable communities. Current work of the program includes the following projects: East Metro PFC3 Biomonitoring Project, MN Family Environmental Exposure Tracking (MN FEET), and a series of smaller projects testing methods for measuring newborn exposures to mercury. **The East Metro PFC3 Biomonitoring Project** is measuring levels of perfluorochemicals (PFCs) in residents of Oakdale, Lake Elmo and Cottage Grove, where some drinking water sources were found to be polluted with PFCs. These chemicals are used to make products that resist stains, water and heat. Today, public health interventions have reduced PFC levels in drinking water to below health-based limits.



This project is a six-year follow-up to 2008 and 2010 projects in the same community. The 2008 MN Biomonitoring pilot project showed that PFC levels were elevated in long-term residents who were exposed to PFCs in drinking water before the interventions. In 2010, PFC levels in this group had declined, but were still somewhat higher than levels seen in the U.S. population.



Results from PFC3 will show whether public health interventions have continued to be effective at reducing exposures by measuring PFCs in two groups:

- East Metro residents who participated in the 2008 and 2010 projects, who had known drinking water exposures.
- Newer Oakdale residents who moved to the city after the intervention, who had no known drinking water exposures.

In 2014-15, MN Biomonitoring successfully recruited 156 past participants and 157 newer residents who filled out a survey and consented to provide a blood sample for testing. Analysis of the blood samples for eight different PFCs was completed by the MDH Public Health Laboratory in early 2015. Individual results were sent to participants in April 2015, with full results shared with the community in summer 2015.

PFC3 Project By The Numbers:

313 East Metro residents participated

8 PFC chemicals tested

6 years of follow-up



MN Family Environmental Exposure Tracking (MN FEET)

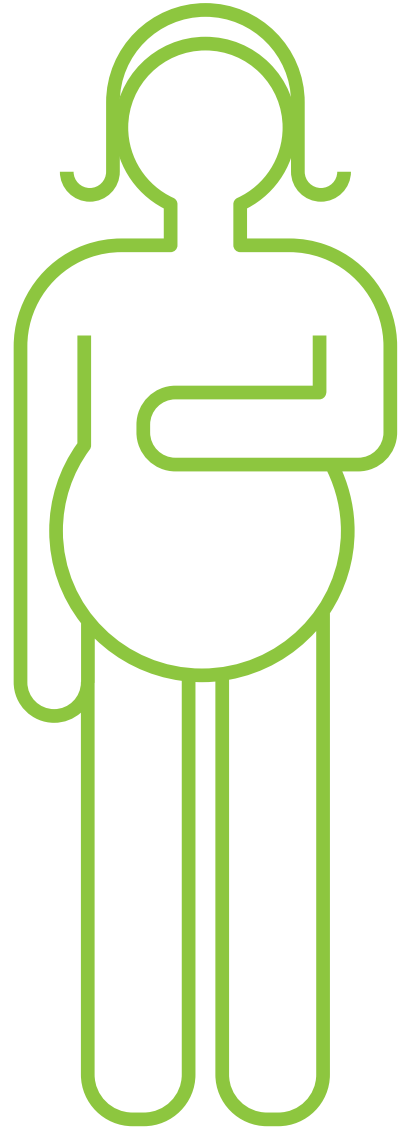
is testing for three chemicals—mercury, lead and cadmium—in Minnesota women and their babies. These chemicals are in some foods, products and the environment and can be harmful to babies' health.

The initial phase of MN FEET is enrolling up to 600 Twin Cities-area women, specifically focused on four racial-ethnic communities—Hmong, Latina, Somali and White women. The project is a partnership with two health care organizations, West Side Community Health Services and the HealthPartners Institute for Education and Research.

MN FEET measures exposures in these communities and checks whether there are disparities in exposure. Results will help us learn how families and communities can protect their babies from these chemicals.

Women are being recruited through their prenatal health care clinic and are giving informed consent to participate. Women are completing a survey and having a small amount of cord blood and urine collected at birth in order to test for mercury, lead and cadmium. All participants get their test results and information on how to protect their family from these chemicals. If a baby tests high, MDH works with them to identify the source and prevent exposure.

Future phases of MN FEET are being planned, and additional communities or chemicals may be added, within the available resources.



MN FEET By The Numbers

3 chemicals that may harm babies' brain development

4 communities of pregnant women and newborns

2 health care partners

Newborn Exposures to Mercury

MN Biomonitoring is conducting a series of projects in partnership with scientists at the University of Minnesota and the National Children's Study to find the best way to measure newborn exposures to mercury. Three projects are involved: The Riverside Newborn Mercury Project, The Pregnancy and Newborns Exposure Study and a supplemental study of The National Children's Study. These projects are testing and comparing mercury levels in different sample types—cord blood, dried newborn blood spots and mother's blood. The results will provide important information for measuring exposures in Minnesota newborns from different communities. All tests and specimen collection are conducted with informed consents from mothers.



Protecting Future Generations:

A Framework for an Ongoing Biomonitoring Program

MN Biomonitoring developed a strategic plan for an ongoing biomonitoring program, as directed by the 2007 Environmental Health Tracking and Biomonitoring legislation. After gathering advice from a wide range of experts and stakeholders, MN Biomonitoring worked with the advisory panel and agency partners to develop this framework.

Going forward, MN Biomonitoring plans to track exposures to harmful chemicals in vulnerable Minnesota populations with a focus on pregnant women, children and disadvantaged communities. MN FEET is part of this larger effort.

In the future, MN Biomonitoring hopes to gather enough data to track trends over time and see whether some demographic or geographic communities have higher exposures than others. Results will inform decisions and evaluate actions for protecting future generations.

MINNESOTA TRACKING PROGRESS REPORT



Minnesota's Environmental Public Health Tracking program (MN Tracking) began with the 2007 Environmental Health Tracking and Biomonitoring Legislation. This law created the first state program specifically directed to collect and integrate environmental monitoring and public health surveillance data, thereby providing a critical link for understanding environmental hazards and their impact on the health of Minnesota communities.

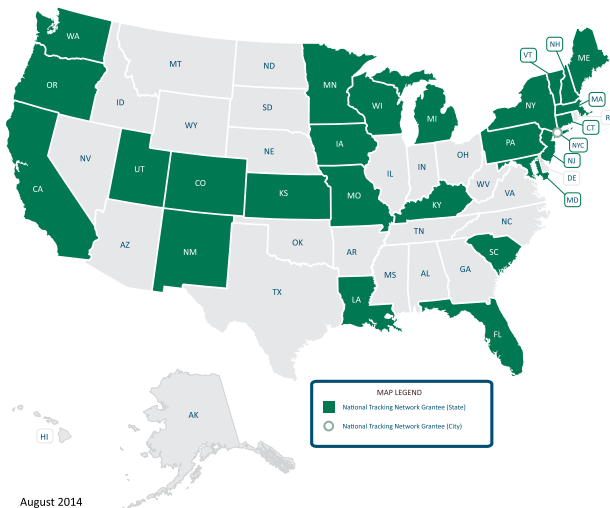
MN Tracking actively promotes uses of the data in ways that will save lives, protect people and save money by preventing exposure and disease. Data can be used by state and local public health officials, policy makers, community organizations, epidemiologists, health care organizations, students, health educators and the media.

Tracking data are used to:

- Identify trends and geographic patterns of diseases and environmental hazards over time;
- Identify priorities and opportunities that address disparities and risk factors;
- Better understand the relationship between health and the environment;
- Measure progress on health and environment initiatives.

Since 2009, the Center for Disease Control and Prevention's National Environmental Public Health Tracking Network has funded MN Tracking. Minnesota now collaborates with a network of 25 states for collecting and disseminating environmental public health data in ways that are nationally consistent.

CDC's National Environmental Public Health Tracking Program



MN Tracking Receives 2013 Governors Award

In December 2013, MN Tracking's data portal team received the Governor's Award for Continuous Improvement, which recognized outstanding achievement in reforming state government and saving taxpayers' dollars. By relying on best practices in usability, plain language and web design, the portal provides public health information that is user-friendly and widely accessible on the MDH web site. Cost savings, estimated at \$14 million, are attributed to reductions in staff time associated with handling individual data requests. The portal provides an efficient system for sharing data all in one place, avoiding the costs of creating and maintaining multiple, independent online data systems.



MN Tracking Increases Available Data for Public Use

MN Tracking continues to increase and enhance the data available. The MN Public Health Data Access portal — <https://apps.health.state.mn.us/mndata> — provides information on over 20 environment and health topics. Features of the portal include interactive data and maps, and downloadable data for many common diseases like cancer, asthma, lead poisoning and heart attacks. In addition, current data are available on social and economic characteristics—important determinants of population health.

Data Currently Available

TOPIC	FACTS	QUERY	MAP
Air Quality	•	•	
Asthma	•	•	•
Birth Defects	•		
Cancer	•	•	•
Carbon Monoxide	•	•	
Chemicals in People	•		
Childhood Immunizations	•		
Childhood Lead Poisoning	•	•	•
Chronic Obstructive Pulmonary Disease	•	•	•
Developmental Disabilities	•		
Drinking Water Quality	•		•
Environmental Tobacco Smoke	•		
Health Insurance	•	•	
Heart Attacks	•	•	
Heat-related Illness	•		
Obesity	•		
Oral Health	•		
Pesticide Poisonings	•	•	
Poverty & Income	•	•	
Reproductive/Birth Outcomes	•	•	
Smoking	•		

MN Tracking By The Numbers

25 states in the National
Tracking Network

20+ data topic areas tracked

24/7 access to public health
data online

\$14 million saved with public
data access



MN Public Health Data Access



Data Access Portal Enhancements — Highlights from 2014-15

- County Health Profiles, a one-click overview of health and environment data for all 87 Minnesota counties, now include data on poverty, income and health insurance access.
- Interactive maps by ZIP code for asthma, poverty and chronic obstructive pulmonary disease (COPD) in the metro area provide data to finer levels of geography.
- MN Tracking implemented a mobile-friendly redesign for the portal—20% of data users browse and search for the data from mobile phones and tablets.
- Minnesota is one of the first states in the national network to display maps of statewide data on arsenic levels in private wells. Private wells provide water for approximately 20% of Minnesotans.
- With the addition of colorectal cancer, the third most common cancer diagnosis, the portal now makes data available on 19 cancer types for tracking incidence, time trends and disparities. About 27,000 Minnesota cancer cases are diagnosed each year in the state.
- State and county level portal data for health insurance coverage reveal disparities by race, ethnicity, geography and age. Health insurance serves as a measure of access to health care and prevention services, an important determinant of community health.
- New measures of non-occupational, unintentional pesticide poisonings show emergency department visits, hospitalizations and exposure calls to the MN Poison Control Center. Children under four years of age have the highest rate of emergency department visits for pesticide poisonings in Minnesota.
- National biomonitoring data are displayed for six chemicals that are measurable in people—lead, mercury, cadmium, arsenic, perfluorochemicals (PFCs) and cotinine (an indicator of tobacco smoke exposure). These national averages in human population exposure provide useful reference values for comparison to community studies in Minnesota.
- MN Tracking's data portal now includes state and county level data on heat-related illness as well as population vulnerability to inform climate change adaptation planning at the local level.

Data Access Portal By The Numbers:

87 County Health Profiles

20% visit the portal from
mobile devices

19 cancer types state and
county data displayed

From Data to Action—Putting Data to Work

Estimating Economic Burden. In 2014, MN Tracking worked with CDC and other state partners to release a report, *The Economic Burden of the Environment on Two Childhood Diseases: Asthma and Lead Poisoning in Minnesota*. This report focuses on the costs of both conditions and estimates the fraction that is attributable to environmental causes.

The report found that:

- The total economic burden of childhood lead exposure in Minnesota on lifetime earnings is \$1.9 billion (in 2014 dollars) for children born in 2004 (one year).
- The total economic burden of childhood asthma in Minnesota in 2010 attributable to the environment is \$31.6 million in 2014 dollars (ranging from \$10.5 million to \$36.9 million)



The Economic Burden
of the Environment on
Two Childhood Diseases:
Asthma & Lead Poisoning
in Minnesota
December 2014

Informing Cancer Prevention Policy. MN Tracking worked with the Minnesota Cancer Alliance and others to publish new interactive charts and maps for melanoma, the most dangerous form of skin cancer. Data are collected by the Minnesota Cancer Surveillance System. These data revealed a striking increase in melanoma incidence, as well as high tanning bed use by young women in Minnesota. In July 2014, Minnesota passed Tan-free Teen legislation that prohibits children under age 18 from using indoor tanning beds. Tracking data are used to understand health disparities related to cancer, smoking, access to health care and more.

Informing local tobacco policy. Despite progress over the last decade, smoking continues to be a leading cause of preventable death and disease, killing more than 5,100 Minnesotans each year. While this statistic illustrates the impact of smoking at the state level, local health officials require access to data at finer spatial scales (e.g., county, ZIP code) to strengthen smoking policies. To address this need, MN Tracking developed and published county and ZIP code data for asthma and COPD disease on the Minnesota Tracking Data Access Portal. In Mille Lacs County, local health officials used tracking data to implement new local smoking policies in multi-unit low-income housing.

Building Tribal Epidemiology Capacity. MN Tracking continues to work with local officials through the Statewide Health Improvement Program at MDH to use tracking data for tobacco prevention initiatives. These efforts highlight striking disparities in the rates of cancer and COPD in American Indians and new opportunities to advance health equity by partnering with tribal communities. In 2014, the Center for Disease Control and Prevention (CDC) and MN Tracking began a new collaboration with the Great Lakes Tribal Epidemiology Center to build tribal capacity for environmental public health surveillance.

Developing Tools for Health Impact Assessment, Climate Adaptation. In April 2014, MN Tracking, along with CDC and other state tracking partners, developed a toolkit for tracking data in Health Impact Assessments (HIA). HIAs inform local decisions for land use, transportation, and climate adaptation. Our partners use tracking data on heat-related illness and a video, produced in collaboration with Twin Cities Public Television, to inform communities, students and decision-makers of the public health impacts of climate and the importance of preparing for extreme weather events in Minnesota.

Measuring the Health Impacts of Air Pollution. MDH and the Minnesota Pollution Control Agency (MPCA) are collaborating on a joint state legislative initiative measuring the health impacts of air pollution in the seven-county metro area. An online community toolkit will provide data, tools and resources for keeping communities informed. Analysis of MN Tracking data on asthma, chronic obstructive pulmonary disease (COPD) and cardiovascular disease show how the burden of chronic respiratory disease and air pollution are distributed across the Twin Cities metro area.

VISIT US ON THE WEB

To learn more about any of the following topics, see the links below:

Advisory Panel (<http://www.health.state.mn.us/divs/hpcd/tracking/panel>)

PFC3 Biomonitoring Project (<http://tinyurl.com/pfc3project>)

Minnesota Family Environmental Exposure Tracking project,
MN FEET (<http://www.health.state.mn.us/mnfeet>)

Newborn biomonitoring methods projects (<http://tinyurl.com/newbornbiomonitoring>)

The public can view county and ZIP code maps for asthma, poverty and COPD on
MDH's Public Health Data Access Portal (<https://apps.health.state.mn.us/mndata>)

Access the Economic Burden report and Climate and Health video under "Special Projects"
MN Tracking (<http://www.health.state.mn.us/tracking>)

Tracking and biomonitoring data being used to inform public health action in Minnesota
Tracking In Action (<http://www.health.state.mn.us/divs/hpcd/tracking/stories>)

Contact Us

For more information about the Minnesota Environmental Public Health Tracking and Biomonitoring Program, contact us at: health.tracking@state.mn.us

APPENDIX A

Environmental Health Tracking and Biomonitoring Advisory Panel Roster

As of April, 2015

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APPENDIX B

Environmental Health Tracking and Biomonitoring Statute

144.995 DEFINITIONS; ENVIRONMENTAL HEALTH TRACKING AND BIOMONITORING.

- (a) For purposes of sections 144.995 to 144.998, the terms in this section have the meanings given.
- (b) “Advisory panel” means the Environmental Health Tracking and Biomonitoring Advisory Panel established under section 144.998.
- (c) “Biomonitoring” means the process by which chemicals and their metabolites are identified and measured within a biospecimen.
- (d) “Biospecimen” means a sample of human fluid, serum, or tissue that is reasonably available as a medium to measure the presence and concentration of chemicals or their metabolites in a human body.
- (e) “Commissioner” means the commissioner of the Department of Health.
- (f) “Community” means geographically or nongeographically based populations that may participate in the biomonitoring program. A “nongeographical community” includes, but is not limited to, populations that may share a common chemical exposure through similar occupations, populations experiencing a common health outcome that may be linked to chemical exposures, populations that may experience similar chemical exposures because of comparable consumption, lifestyle, product use, and subpopulations that share ethnicity, age, or gender.
- (g) “Department” means the Department of Health.
- (h) “Designated chemicals” means those chemicals that are known to, or strongly suspected of, adversely impacting human health or development, based upon scientific, peer-reviewed animal, human, or in vitro studies, and baseline human exposure data, and consists of chemical families or metabolites that are included in the federal Centers for Disease Control and Prevention studies that are known collectively as the National Reports on Human Exposure to Environmental Chemicals Program and any substances specified by the commissioner after receiving recommendations under section 144.998, subdivision 3, clause (6).
- (i) “Environmental hazard” means a chemical or other substance for which scientific, peer-reviewed studies of humans, animals, or cells have demonstrated that the chemical is known or reasonably anticipated to adversely impact human health.
- (j) “Environmental health tracking” means collection, integration, analysis, and dissemination of data on human exposures to chemicals in the environment and on diseases potentially caused or aggravated by those chemicals.

144.996 ENVIRONMENTAL HEALTH TRACKING; BIOMONITORING.

Subdivision 1. **Environmental health tracking.** In cooperation with the commissioner of the Pollution Control Agency, the commissioner shall establish an environmental health tracking program to:

- (1) coordinate data collection with the Pollution Control Agency, Department of Agriculture, University of Minnesota, and any other relevant state agency and work to promote the sharing of and access to health and environmental databases to develop an environmental health tracking system for Minnesota, consistent with applicable data practices laws;
- (2) facilitate the dissemination of aggregate public health tracking data to the public and researchers in accessible format;

- (3) develop a strategic plan that includes a mission statement, the identification of core priorities for research and epidemiologic surveillance, and the identification of internal and external stakeholders, and a work plan describing future program development and addressing issues having to do with compatibility with the Centers for Disease Control and Prevention's National Environmental Public Health Tracking Program;
- (4) develop written data sharing agreements as needed with the Pollution Control Agency, Department of Agriculture, and other relevant state agencies and organizations, and develop additional procedures as needed to protect individual privacy;
- (5) organize, analyze, and interpret available data, in order to:
 - (i) characterize statewide and localized trends and geographic patterns of population-based measures of chronic diseases including, but not limited to, cancer, respiratory diseases, reproductive problems, birth defects, neurologic diseases, and developmental disorders;
 - (ii) characterize statewide and localized trends and geographic patterns in the occurrence of environmental hazards and exposures;
 - (iii) assess the feasibility of integrating disease rate data with indicators of exposure to the selected environmental hazards such as biomonitoring data, and other health and environmental data;
 - (iv) incorporate newly collected and existing health tracking and biomonitoring data into efforts to identify communities with elevated rates of chronic disease, higher likelihood of exposure to environmental hazards, or both;
 - (v) analyze occurrence of environmental hazards, exposures, and diseases with relation to socioeconomic status, race, and ethnicity;
 - (vi) develop and implement targeted plans to conduct more intensive health tracking and biomonitoring among communities; and
 - (vii) work with the Pollution Control Agency, the Department of Agriculture, and other relevant state agency personnel and organizations to develop, implement, and evaluate preventive measures to reduce elevated rates of diseases and exposures identified through activities performed under sections 144.995 to 144.998; and
- (6) submit a biennial report to the chairs and ranking members of the committees with jurisdiction over environment and health by January 15, beginning January 15, 2009, on the status of environmental health tracking activities and related research programs, with recommendations for a comprehensive environmental public health tracking program.

Subd. 2. **Biomonitoring.** The commissioner shall:

- (1) conduct biomonitoring of communities on a voluntary basis by collecting and analyzing biospecimens, as appropriate, to assess environmental exposures to designated chemicals;
- (2) conduct biomonitoring of pregnant women and minors on a voluntary basis, when scientifically appropriate;
- (3) communicate findings to the public, and plan ensuing stages of biomonitoring and disease tracking work to further develop and refine the integrated analysis;
- (4) share analytical results with the advisory panel and work with the panel to interpret results, communicate findings to the public, and plan ensuing stages of biomonitoring work; and
- (5) submit a biennial report to the chairs and ranking members of the committees with jurisdiction over environment and health by January 15, beginning January 15, 2009, on the status of the biomonitoring

program and any recommendations for improvement.

Subd. 3. **Health data.** Data collected under the biomonitoring program are health data under section 13.3805.

144.997 BIOMONITORING PILOT PROGRAM.

Subdivision 1. **Pilot program.** With advice from the advisory panel, and after the program guidelines in subdivision 4 are developed, the commissioner shall implement a biomonitoring pilot program. The program shall collect one biospecimen from each of the voluntary participants. The biospecimen selected must be the biospecimen that most accurately represents body concentration of the chemical of interest. Each biospecimen from the voluntary participants must be analyzed for one type or class of related chemicals. The commissioner shall determine the chemical or class of chemicals to which community members were most likely exposed. The program shall collect and assess biospecimens in accordance with the following:

- (1) 30 voluntary participants from each of three communities that the commissioner identifies as likely to have been exposed to a designated chemical;
- (2) 100 voluntary participants from each of two communities:
 - (i) That the commissioner identifies as likely to have been exposed to arsenic; and
 - (ii) That the commissioner identifies as likely to have been exposed to mercury; and
- (3) 100 voluntary participants from each of two communities that the commissioner identifies as likely to have been exposed to perfluorinated chemicals, including perfluorobutanoic acid.

Subd. 2. **Base program.** (a) By January 15, 2008, the commissioner shall submit a report on the results of the biomonitoring pilot program to the chairs and ranking members of the committees with jurisdiction over health and environment.

(b) Following the conclusion of the pilot program, the commissioner shall:

- (1) work with the advisory panel to assess the usefulness of continuing biomonitoring among members of communities assessed during the pilot program and to identify other communities and other designated chemicals to be assessed via biomonitoring
- (2) work with the advisory panel to assess the pilot program, including but not limited to the validity and accuracy of the analytical measurements and adequacy of the guidelines and protocols;
- (3) communicate the results of the pilot program to the public; and
- (4) after consideration of the findings and recommendations in clauses (1) and (2), and within the appropriations available, develop and implement a base program.

Subd. 3. **Participation.** (a) Participation in the biomonitoring program by providing biospecimens is voluntary and requires written, informed consent. Minors may participate in the program if a written consent is signed by the minor's parent or legal guardian. The written consent must include the information required to be provided under this subdivision to all voluntary participants.

(b) All participants shall be evaluated for the presence of the designated chemical of interest as a component of the biomonitoring process. Participants shall be provided with information and fact sheets about the program's activities and its findings. Individual participants shall, if requested, receive their complete results. Any results provided to participants shall be subject to the Department of Health Institutional Review Board protocols and guidelines. When either physiological or chemical data obtained from a participant indicate a significant known health risk, program staff experienced in communicating biomonitoring results shall consult with the individual and recommend follow-up steps, as appropriate. Program administrators shall receive training in administering the program in an ethical, culturally sensitive, participatory, and community-based manner.

Subd. 4. **Program guidelines.** (a) The commissioner, in consultation with the advisory panel, shall develop:

- (1) protocols or program guidelines that address the science and practice of biomonitoring to be utilized and procedures for changing those protocols to incorporate new and more accurate or efficient technologies as they become available. The commissioner and the advisory panel shall be guided by protocols and guidelines developed by the Centers for Disease Control and Prevention and the National Biomonitoring Program;
- (2) guidelines for ensuring the privacy of information; informed consent; follow-up counseling and support; and communicating findings to participants, communities, and the general public. The informed consent used for the program must meet the informed consent protocols developed by the National Institutes of Health;
- (3) educational and outreach materials that are culturally appropriate for dissemination to program participants and communities. Priority shall be given to the development of materials specifically designed to ensure that parents are informed about all of the benefits of breastfeeding so that the program does not result in an unjustified fear of toxins in breast milk, which might inadvertently lead parents to avoid breastfeeding. The materials shall communicate relevant scientific findings; data on the accumulation of pollutants to community health; and the required responses by local, state, and other governmental entities in regulating toxicant exposures;
- (4) a training program that is culturally sensitive specifically for health care providers, health educators, and other program administrators;
- (5) a designation process for state and private laboratories that are qualified to analyze biospecimens and report the findings; and
- (6) a method for informing affected communities and local governments representing those communities concerning biomonitoring activities and for receiving comments from citizens concerning those activities

(b) The commissioner may enter into contractual agreements with health clinics, community-based organizations, or experts in a particular field to perform any of the activities described under this section.

144.998 ENVIRONMENTAL HEALTH TRACKING AND BIOMONITORING ADVISORY PANEL.

Subdivision 1. **Creation.** The commissioner shall establish the Environmental Health Tracking and Biomonitoring Advisory Panel. The commissioner shall appoint, from the panel's membership, a chair. The panel shall meet as often as it deems necessary but, at a minimum, on a quarterly basis. Members of the panel shall serve without compensation but shall be reimbursed for travel and other necessary expenses incurred through performance of their duties. Members appointed by the commissioner are appointed for a three-year term and may be reappointed. Legislative appointees serve at the pleasure of the appointing authority.

Subd. 2. **Members.** (a) The commissioner shall appoint eight members, none of whom may be lobbyists registered under chapter 10A, who have backgrounds or training in designing, implementing, and interpreting health tracking and biomonitoring studies or in related fields of science, including epidemiology, biostatistics, environmental health, laboratory sciences, occupational health, industrial hygiene, toxicology, and public health, including:

- (1) at least two scientists representative of each of the following:
 - (i) nongovernmental organizations with a focus on environmental health, environmental

justice, children's health, or on specific chronic diseases; and

(ii) statewide business organizations; and

(2) at least one scientist who is a representative of the University of Minnesota.

- (b) Two citizen panel members meeting the scientific qualifications in paragraph (a) shall be appointed, one by the speaker of the house and one by the senate majority leader
- (c) In addition, one representative each shall be appointed by the commissioners of the Pollution Control Agency and the Department of Agriculture, and by the commissioner of health to represent the department's Health Promotion and Chronic Disease Division

Subd. 3. **Duties.** The advisory panel shall make recommendations to the commissioner and the legislature on:

- (1) priorities for health tracking;
- (2) priorities for biomonitoring that are based on sound science and practice, and that will advance the state of public health in Minnesota;
- (3) specific chronic diseases to study under the environmental health tracking system;
- (4) specific environmental hazard exposures to study under the environmental health tracking system, with the agreement of at least nine of the advisory panel members;
- (5) specific communities and geographic areas on which to focus environmental health tracking and biomonitoring efforts;
- (6) specific chemicals to study under the biomonitoring program, with the agreement of at least nine of the advisory panel members; in making these recommendations, the panel may consider the following criteria:

(i) the degree of potential exposure to the public or specific subgroups, including, but not limited to, occupational;

(ii) the likelihood of a chemical being a carcinogen or toxicant based on peer-reviewed health data, the chemical structure, or the toxicology of chemically related compounds;

(iii) the limits of laboratory detection for the chemical, including the ability to detect the chemical at low enough levels that could be expected in the general population;

(iv) exposure or potential exposure to the public or specific subgroups;

(v) the known or suspected health effects resulting from the same level of exposure based on peer-reviewed scientific studies;

(vi) the need to assess the efficacy of public health actions to reduce exposure to a chemical;

(vii) the availability of a biomonitoring analytical method with adequate accuracy, precision, sensitivity, specificity, and speed;

(viii) the availability of adequate biospecimen samples; or

(ix) other criteria that the panel may agree to; and

(7) other aspects of the design, implementation, and evaluation of the environmental health tracking and biomonitoring system, including, but not limited to:

- (i)identifying possible community partners and sources of additional public or private funding;
- (ii)developing outreach and educational methods and materials; and
- (iii)disseminating environmental health tracking and biomonitoring findings to the public.

Subd. 4. **Liability.** No member of the panel shall be held civilly or criminally liable for an act or omission by that person if the act or omission was in good faith and within the scope of the member's responsibilities under sections 144.995 to 144.998.

INFORMATION SHARING.

On or before August 1, 2007, the commissioner of health, the Pollution Control Agency, and the University of Minnesota are requested to jointly develop and sign a memorandum of understanding declaring their intent to share new and existing environmental hazard, exposure, and health outcome data, within applicable data privacy laws, and to cooperate and communicate effectively to ensure sufficient clarity and understanding of the data by divisions and offices within both departments. The signed memorandum of understanding shall be reported to the chairs and ranking members of the senate and house of representatives committees having jurisdiction over judiciary, environment, and health and human services.

Effective date: July 1, 2007

This document contains Minnesota Statutes, sections 144.995 to 144.998, as these sections were adopted in Minnesota Session Laws 2007, chapter 57, article 1, sections 143 to 146. The appropriation related to these statutes is in chapter 57, article 1, section 3, subdivision 4. The paragraph about information sharing is in chapter 57, article 1, section 169.