

**Pollution Prevention
Summary Reports**

as submitted by
members of the

Interagency Pollution Prevention Advisory Team

July, 1992

Summary Report Order

- Administration
- Agriculture
- Corrections
- Health
- Human Services
- Military Affairs
- Public Safety
- Public Service
- Transportation
- Pollution Control Agency
- Waste Management
- State University System
- Technical College System
- University of Minnesota
- Metropolitan Airports Commission
- Metropolitan Council
- Metropolitan Mosquito Control District
- Metropolitan Transit Commission
- Metropolitan Waste Control Commission
- Public Utilities Commission

MINNESOTA
DEPARTMENT OF ADMINISTRATION
POLLUTION PREVENTION
SUMMARY REPORT
JULY 1, 1992

MINNESOTA DEPARTMENT OF ADMINISTRATION
POLLUTION PREVENTION SUMMARY REPORT

Table of Contents

<u>Topic</u>	<u>Page</u>
INTRODUCTION.....	1
POLLUTION PREVENTION INTEGRATION INTO POLICY AND ACTIVITIES.....	1
<u>Policy and Integration into Activities</u>	1
<u>Policy on Environmental Materials Management</u>	3
<u>Priorities for Environmental Materials Management</u>	4
<u>Team Activities</u>	5
<u>Other Current Pollution Prevention Activities</u>	5
<u>Purchasing Policies and Specifications</u>	8
PLANS FOR FUTURE POLLUTION PREVENTION ACTIVITIES.....	10
<u>Future Activities and Implementation Schedule</u>	10
<u>Future Procurement Action and Implementation Schedule</u> ..	11
ENVIRONMENTAL AND ECONOMIC BENEFITS.....	12
CONCLUSION.....	13

**MINNESOTA DEPARTMENT OF ADMINISTRATION
POLLUTION PREVENTION SUMMARY REPORT
JULY 1, 1992**

INTRODUCTION

The Minnesota Department of Administration (Admin) has incorporated pollution prevention activities within its workplaces, has adopted a policy stating pollution prevention to be a top priority in the Department's environmental materials management, and is working to improve existing pollution prevention awareness and achievement.

This summary report addresses pollution prevention at the source of the hazardous material or toxic chemical use, waste or release. Admin activities which avoid the generation of discards are summarized in this report. Admin's materials management techniques which recover discarded materials for reuse off-site, recycling, or energy recovery are not pollution prevention techniques and are not addressed in this summary. However, Admin policy encompasses resource conservation and recovery, recycling, and other materials and other state recommended waste management techniques in addition to pollution prevention.

The integration of pollution prevention into policy and activities is presented in this summary, as are team activities, current pollution prevention activities, purchasing policies, specifications, and state business data management systems. Future pollution prevention activities will be summarized and associated environmental and economic benefits will be discussed.

POLLUTION PREVENTION INTEGRATION INTO POLICY AND ACTIVITIES

Policy and Integration into Activities

Prevention of pollution is a top priority of the "Department of Administration Policy on Environmental Materials Management" and the "Minnesota Department of Administration Priorities for Environmental Materials Management". The policy guides the application of interrelated environmental concepts to be considered during the acquisition, use, maintenance and discard of materials by state agencies.

The "Minnesota Department of Administration Priorities for Environmental Materials Management" integrates pollution prevention and other environmental concepts into two sets of management options: resource conservation options and resource discard options. The acquisition, use, maintenance and discard

of materials should first maximize any of the resource conservation options to avoid and reduce waste toxicity and volume. Then, resource discard options should be maximized in consecutive priority order whenever possible.

Resource conservation options include reliance upon renewable resources; reuse & waste reduction; and pollution prevention. These options are of equal top priority, to be applied when most appropriate in specific situations.

After the potential for resource conservation has been maximized, resource discard options can be considered in descending order of priority: 2nd, waste recycling; 3rd, yard and food waste composting; 4th, municipal solid waste composting and incineration, 5th, hazardous waste management; and 6th, hazardous waste disposal.

These priorities for environmental materials management are displayed as an inverted triangle, emphasizing increased reliance upon resource conservation options such as pollution prevention, over the discard options.

MINNESOTA DEPARTMENT OF ADMINISTRATION
POLICY ON
ENVIRONMENTAL MATERIALS MANAGEMENT

WHEREAS,

The Department of Administration recognizes that environmental attention during the management of materials can conserve resources, prevent pollution, increase efficiency and result in cost savings during the purchase, inventory, use, maintenance, treatment and disposal of goods.

Minnesota Statutes, Chapter 593 mandates that state purchases of commodities and services shall apply and promote the preferred waste management practices listed in Chapter 115A.02, with special emphasis on reduction of the quantity and toxicity of materials in waste. Bid specifications also shall consider the product's durability, reusability, and ability to be recycled and marketed through the state's resource recovery program.

Minnesota Statutes, Chapter 115D specifies that it is the policy of the state to encourage pollution prevention. Pollution prevention includes, but is not limited to, "eliminating or reducing at the source the use, generation, or release of toxic pollutants, hazardous substances and hazardous wastes."

THEREFORE, BE IT RESOLVED THAT

The Department of Administration has established "Priorities for Environmental Materials Management" to conserve resources and to avoid and minimize waste and pollution during the acquisition, use, maintenance, and discard of goods.

All Divisions shall provide administrative and managerial support to integrate the attached "Priorities for Environmental Materials Management" into all programs and shall designate a representative to the Department of Administration's Environmental Coordinators Committee. Facilitated by the Resource Recovery Office, this committee will communicate and encourage the implementation of resource conservation, waste reduction, pollution prevention and other environmentally-preferred activities associated with the acquisition, use, maintenance and recovery of materials for reuse, recycling and composting.

Dana B. Badgerow

Dana B. Badgerow
Commissioner
Department of Administration

July 1, 1992

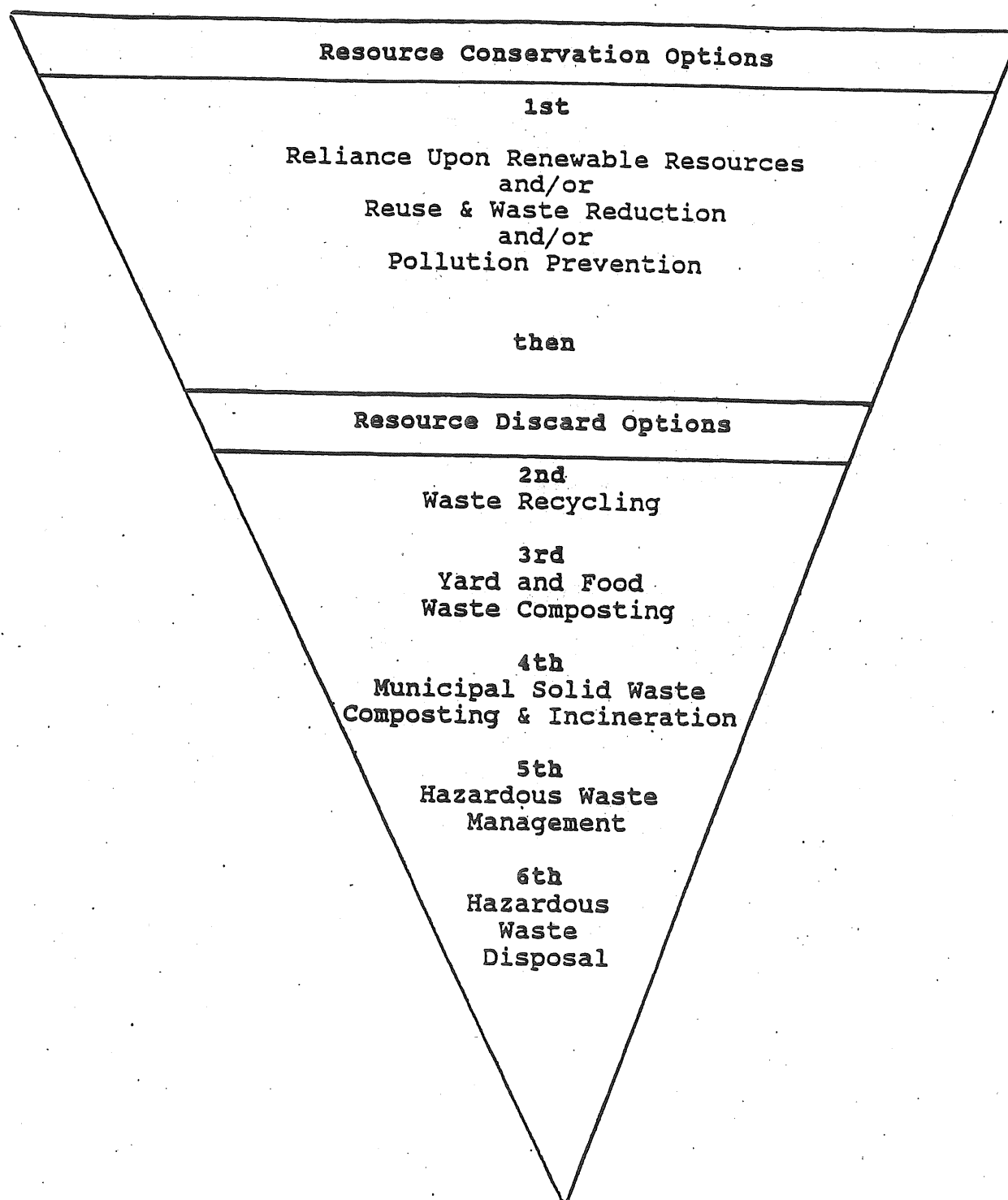
Date

MINNESOTA DEPARTMENT OF ADMINISTRATION

PRIORITIES FOR

ENVIRONMENTAL MATERIALS MANAGEMENT

The acquisition, use, maintenance and discard of materials should first maximize resource conservation options to avoid and reduce waste quantity and volume. Then, resource discard options should be maximized in the order of priority.



Team Activities

Team activities include intradepartmental pollution prevention efforts, which also can involve outside agencies and industry representatives.

- * Materials Management Division's (MMD) Purchasing Section and Resource Recovery Office have been coordinating with the Minnesota Department of Transportation (MnDot), U.S. Department of Transportation and Federal Highway Administration, the Department of Natural Resources, and the plastic industry to create tests and specifications for recycled-content plastic lumber to replace cromated copper arsenic (CCA) and creosote treated wood products.
- * The Print Communications Division (PrintComm) and MMD collaborated in the development of two pollution prevention grants which were awarded to PrintComm by the Office of Waste Management. Grant activities will be discussed later in this summary report.
- * MMD's Contracts and Technical Services and MnDot have been researching the use of an on-site reverse osmosis system to clean and reuse old antifreeze.
- * Contracts and Technical Services has also established contracts for various deicers in accordance with MnDot testing needs. MnDot is conducting tests to identify products having lower levels of toxicity and rates of application on Minnesota's icy roads.
- * MMD's Resource Recovery Office has coordinated with state purchasing officials, state agency recycling coordinators and metropolitan county purchasers to compile a policy and to design guidance materials to assist with environmentally-sound purchases.

Other Current Pollution Prevention Activities

Activities to reduce the generation of hazardous waste and the use of toxic chemicals have been instituted in working areas which routinely handle toxic materials.

The Micrographic Services Unit in Admin's Intertechnologies Group has identified the following ongoing activities to reduce the generation of hazardous waste:

- * Current pollution prevention methods used to handle anhydrous ammonia involves extensive employee safety

training on the proper use and handling of the chemical.

- * Silver recovery occurs during processing procedures to reduce excess amounts of silver waste.

The Materials Management Division promotes pollution prevention by encouraging client agencies to acquire and handle materials to achieve pollution prevention:

- * Development of Environmental Materials Management Policy, Priorities and guidance materials by the Resource Recovery Office provides direction for state agencies and others participating in materials management. Internal communication within Admin regarding pollution prevention activities and Admin liaison with the Interagency Pollution Prevention Team occurs via the Resource Recovery Office.

- * Contracts have been developed for the purchase of reduced mercury batteries by state agencies.

- * Use of a parts cleaning tank at Arden Hills Materials Distribution Center has been eliminated to avoid generating hazardous wastes.

- * Solvents, paints, varnishes, and grease-type materials with hazardous properties are no longer acquired by surplus operations for distribution at Arden Hills Materials Distribution Center.

The Plant Management Division has instituted a number of pollution prevention activities as part of their standard operating procedures:

- * Used oil filters are collected and drained per federal and state regulations so that they are a solid waste and no longer a hazardous waste.

- * The management of turf and landscape plants is routinely adjusted per current manufacturer recommendations and state regulations to minimize the use of horticultural products.

- * The use of cleaning products is managed to avoid leaving excess residue on hard surfaces.

- * Contractors are monitored to ensure that they use materials efficiently to reduce waste.

- * The use of water is conserved, minimizing the application of toxic products which are mixed with water.
- * Products containing toxic compounds are drained and reused to avoid toxic discharges to sewers.
- * Low toxicity herbicides and pesticides are used and they are applied in minimum concentrations to reduce the application of toxic compounds.
- * Instruments, such as sprayers and spreaders are regularly checked for proper calibration to ensure correct application of products.
- * Supervisors actively monitor activities to ensure that products are managed in accordance with the manufacturer's recommended procedures to minimize overuse or waste. For example, temperature-dependant, or seasonal products are used only under the appropriate conditions.

The Division of Print Communications has identified a number of pollution prevention activities relevant to their print shop:

- * Two pollution prevention proposals received funding from the Office of Waste Management to find alternatives to using isopropyl alcohol and to remanufacture laser printer cartridges.
- * Vegetable oil inks are used to reduce the amount of hazardous waste resulting from 100% petroleum oil inks.
- * State agencies are encouraged to order commonly used inks, to prevent the waste associated with ink evaporation from supplies of seldom requested inks.

The Division of Travel Management participates in pollution prevention by instituting procedures in their automotive shop:

- * Travel Management staff reviewed the number of automotive chemicals they use and reduced the number of chemicals purchased for use.
- * Staff designed a filter drain system for used oil filters. The effort successfully drains used filters of oil so that they are a solid waste per federal and state regulations, and no longer a hazardous waste.
- * A freon recovery unit has been purchased and is used to avoid the release of CFC's into the atmosphere

during the servicing of state automobiles. This can help to reduce the depletion of the earth's protective layer of atmospheric ozone.

* State vehicles serviced by Travel Management have been provided with ethanol fuel since 1984. For every 20 gallons of ethanol-enhanced fuel used, 2 gallons is non-oil dependant and reduces petroleum related pollution.

* Only non-asbestos brake linings are purchased for state automobiles.

* Emissions testing specifications from the Minnesota Pollution Control Authority are being used to ensure motor pool compliance with air quality standards.

Purchasing Policies and Specifications

The "Minnesota Department of Administration Priorities for Environmental Materials Management" provides a conceptual framework that interrelates Minnesota's environmental requirements. This framework facilitates the application of environmental concepts in state programs, including purchasing and contracting.

"Priorities for Environmental Materials Management" was developed in response to needs expressed by procurement officials for help in applying Minnesota's environmental statutes. Procurement specifications must address environmental concepts such as "buy for pollution prevention", "buy recycled content", "buy for recyclability", "buy for compostability", "buy for durability and repairability", and "buy for reuse and waste reduction". Sometimes these terms are incorrectly substituted for each other and are not recognized as having specific meanings. For example, development of specifications to purchase a recycled-content paper might be thought of as pollution prevention, which is incorrect for purchasing purposes, but is a meaning which might be used by the general public. Therefore, the "Priorities for Environmental Materials Management" and the guidance materials being developed to go with them are primary tools needed by procurement officials to develop specifications which comply with Minnesota's statutes and the ethics behind them.

Statutes set forth that procurement activity by the state (and under state delegated authority) "shall apply and promote the preferred waste management practices...with special emphasis on reduction of the quantity and toxicity of materials in waste". Admin's set of priorities rely upon the current solid waste management hierarchy to also prioritize reliance upon renewable resources, pollution prevention, and hazardous waste management

and disposal options. These materials management options are applicable to the acquisition, use, maintenance and discard of products and are further defined as "resource conservation" or "resource discard" options. Agency policies and specifications should be developed in accordance with these priorities and Admin will encourage and work with agencies to routinely integrate pollution prevention into purchasing policies and specifications.

The Resource Recovery Office is developing a guidebook to environmental materials management for state agencies which includes purchasing guidance based upon the Minnesota statutes and Admin's environmental materials management policy and priorities. The information to assist purchasing and contracting staff is also being considered as a model or may be used directly by metropolitan county purchasers and the Solid Waste Management Coordinating Board's Procurement Standards Group.

Information on environmental materials management also will be included in the "Manual Bulletin No. 9-01, Authority for Local Purchase and General Purchasing Procedures" compiled by the MMD Purchasing Section. This manual is provided to all state departments and agencies.

Admin is coordinating with the metropolitan counties via the Solid Waste Management Coordinating Board Procurement Standards Group. It is developing environmentally-sound procurement policies and resource materials to aid metropolitan county purchasers and participants in their cooperative purchasing programs. The Resource Recovery Office is working with metropolitan counties to facilitate the development of compatible state and county purchasing policies. The Resource Recovery Office participated in the planning and presentation of information at a procurement workshop conducted on June 24, 1992 with county purchasers.

As previously discussed, some of the ongoing work in specifying products includes: 1) coordination among Materials Management Division's Purchasing Section and Resource Recovery Office, MnDot, the U.S. Department of Transportation and Federal Highway Administration, the Department of Natural Resources, and the plastic industry to create tests and specifications for recycled-content plastic lumber to replace cromated copper arsenic (CCA) and creosote treated wood products; 2) joint efforts by Materials Management Division's Contracts and Technical Services and MnDot to specify contracts for use of a reverse osmosis system to clean and reuse old antifreeze on-site; and 3) coordination between MnDot and Contracts and Technical Services to establish numerous contracts for testing various road deicers for effectiveness and levels of toxicity.

Admin staff will coordinate with other agency purchasers to identify further pollution prevention opportunities, to improve the measurement of pollution prevention and to quantify environmental and economic benefits. Interdepartmental efforts will include the development of specifications to encourage the use of nontoxic products and products which do not create hazardous waste. Purchasing specifications have been shared between agencies via the Interagency Recycling Coordinators Task Force. Agency recycling coordinators are routinely encouraged to communicate with their agency's pollution prevention contact person.

PLANS FOR FUTURE POLLUTION PREVENTION ACTIVITIES

Future Activities and Implementation Schedule

Admin's Print Communications Division has been awarded two pollution prevention grants. One project will research, plan and promote a laser cartridge remanufacturing program which will serve as a model for other offices. Another project is to identify a less toxic alternative to the isopropyl alcohol which is being used in the printing process. Implementation schedules are currently being developed with the OWM.

Admin's Environmental Coordinators Committee, facilitated through MMD's Resource Recovery Office will promote intradepartmental communication about environmental issues. The Committee will encourage the implementation of resource conservation, waste reduction, pollution prevention and other environmentally-preferred activities associated with the acquisition, use, maintenance and recovery of materials for reuse, recycling and composting. Key pollution prevention activities it may consider includes: 1) purchase and disposal costs; 2) high risks to health and the environment; 3) potential liabilities due to endangering workers, public health, or the environment; 4) high use or release rates, and 5) high potential for successful pollution prevention results. Each Division will establish timeframes for their activities to be shared with the Environmental Coordinators Committee. Pollution prevention information received from the Interagency Pollution Prevention Advisory Team meetings will be forwarded to agency coordinators serving on the committee to share in their workplace.

Micrographics within Admin's Intertechnologies Group plans pollution prevention activities which include:

- * Discussion of workplace policies, regulations, and procedures appropriate to specific workplaces will be shared at Environmental Coordinator meetings.

- * Management and staff will meet to implement compliance with new regulations and policies, and procedures.

- * Efforts will be made to work with vendors to use alternative chemicals that are more environmentally sound.

- * Solicitation of suggestions and ideas from other sources for implementation in our workplaces.

- * Meetings with staff regarding the cost's associated with rework and the waste it generates.

- * Coordination with industry trade associations to reduce the toxic content in products and packaging and promote pollution prevention will continue.

Future Procurement and Implementation Schedule

Development of procurement guidance materials for state employees regarding Environmental Materials Management will encompass pollution prevention and refer to related services and materials available from the agencies such as the Minnesota Technical Assistance Program, the Office of Waste Management, and the Pollution Control Agency. These materials are expected to be available to agency recycling coordinators by September 1993 from the Resource Recovery Office. Sharing of agency purchasing specifications via the Interagency Recycling Coordinators Task Force will also continue as information is available.

Intraoffice identification of pollution prevention opportunities has been initiated and will be encouraged. For example, Micrographics in Intertechnologies has invited the Resource Recovery Office to visit its offices to discuss pollution prevention options.

Admin coordination with metropolitan counties regarding environmentally-responsible purchasing guidance and specifications will continue in 1993 with the Solid Waste Coordinating Board's Procurement Standard's Group. County procurement policies will be recommended by this group in August 1993. Current discussion indicates their interest in using the Department of Administration's "Priorities for Environmental Materials Management" as a model. Other guidance materials being developed by the Resource Recovery Office for state agencies are also being considered as a model for use and distribution by the counties this year.

Pollution Prevention will be integrated into other Admin environmental activities when it is appropriate. Resource

Recovery Office promotion of Minnesota's "Buy Recycled Campaign" includes participation in planning recycling conferences and workshops sponsored by DPRA Incorporated, the State and Local Policy Program at the Hubert H. Humphrey Institute of Public Affairs, and Waste Alternatives Consulting, Inc. The pollution prevention benefits resulting from the substitution of recycled content products for products containing toxic materials (e.g. use of recycled plastics in place of CCA or creosote-treated lumber) may be considered.

Many state agency pollution prevention functions potentially could be tracked through accounting and purchasing data, if statewide business systems were designed to identify this information. The Minnesota Statewide Systems Project allows for the redesign of data tracking and reporting for state agencies. The Resource Recovery Office is providing input to the Statewide Systems Project regarding the tracking of environmental materials management, the environmentally-concerned acquisition, use, maintenance, and discard of products. The Statewide Systems project is co-sponsored by the departments of Finance, Employee Relations and Administration to improve statewide accounting, human resources, payroll and purchasing systems. Input will be provided throughout FY 93 for the projected completion of accounting systems in July 1994 and the projected completion of purchasing systems in July 1995.

ENVIRONMENTAL AND ECONOMIC BENEFITS

Current activities to improve the State's business data systems, via the Statewide Systems Project, as previously discussed, will have a significant impact upon the ability to calculate environmental and economic benefits related to pollution prevention activities. The ongoing Minnesota Statewide Systems Project will allow better identification of product purchases and changes in purchasing and inventory management. Admin is actively involved in the development of these business systems.

Once changes in product purchases are identified as part of new business systems, the quantification of pollution prevention and its benefits can be calculated. Technical assistance staff in the Office of Waste Management and/or staff in individual agencies will be able to calculate benefits for a greatly expanded universe of state activities than is now possible. Acquisitions and inventory management by Admin and other agencies for purchases from contracts, non-contract purchases, surplus property, and auctions can be analyzed for their environmental and economic benefits. Admin will continue to promote design of the Statewide Systems Project to facilitate pollution prevention tracking objectives.

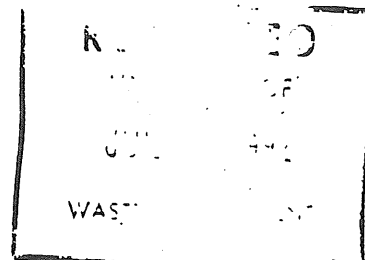
CONCLUSION

Admin supports the implementation of pollution prevention and identifies it as top priority of environmentally-aware materials management. The "Minnesota Department of Administration Policy on Environmental Materials Management" was established to provide a conceptual framework that interrelates all of Minnesota's statutory environmental priorities for purchasers and other handlers of materials. This policy sets forth the "Minnesota Department of Administration Priorities for Environmental Materials Management" to provide direction as products are acquired and managed by state agencies.

This set of priorities has been favorably reviewed by metropolitan county purchasers and by members of the Solid Waste Management Coordinating Board Procurement Standards Group, who are using it as a model for their ongoing procurement policy development. They have also expressed interest in the guidance materials being developed by the Resource Recovery Office to support these priorities. By facilitating uniform development of state and county procurement policies and guidance materials, increased use of innovative product specifications and cooperative purchasing programs can result.

Admin will continue to work with agencies to promote pollution prevention awareness, to develop appropriate procurement specifications and to implement prudent material handling procedures that support pollution prevention.

MINNESOTA DEPARTMENT OF AGRICULTURE



POLLUTION PREVENTION PROGRAM

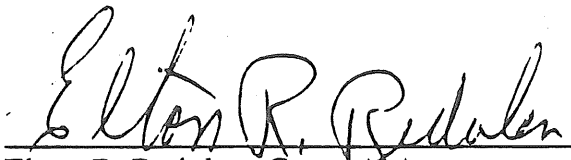
DEVELOPED BY:
MDA POLLUTION PREVENTION TASK FORCE

JULY 1, 1992

POLICY STATEMENT

In compliance with Executive Order 91-17, pollution prevention is a priority for the Minnesota Department of Agriculture. The department's objective is to undertake activities to reduce the generation of hazardous waste and use of toxic solvents and pesticides. The primary goal is to prevent pollution at its source and reduce waste and emissions, that can have an adverse impact on the environment.

This Program will be implemented and revised on an annual basis by the Minnesota Department of Agriculture Pollution Prevention Task Force with the guidance and leadership of the commissioner.



Elton R. Redalen, Commissioner

7-1-92

Date



William L. Oemichen, Legal Counsel

July 1, 1992

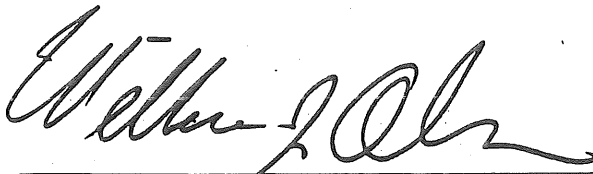
Date



Ed M. Chromey Jr., Task Force Chairperson

July 1, 1992

Date



William J. Olson, Safety and Health Officer

6/30/92

Date

INTRODUCTION

The Minnesota Department of Agriculture is recognized as a leader in the area of environment protection. By working in cooperation with the agricultural community, it is clear that we must continue to work toward preserving our soil, ground water, and air so that generations in the future can enjoy the benefits of the states resources. Pollution prevention is the major goal in enforcing regulations that protect the environment. However, we must look at our department's internal structure and the daily operations that are conducted here at 90 West Plato Boulevard in St. Paul, MN in regards to pollution prevention also.

In this report, we investigated the internal operations of the department and the external regulatory and promotional activities by our divisions to identify areas in which we can reduce, reuse, and recycle. The department realizes the overall economic and environmental benefits that can be achieved through a pollution prevention program.

In compliance with the policy statement endorsed by the Commissioner of the Department of Agriculture, the Pollution Prevention Task Force submits the following summary report.

SUMMARY

A task force was established, as recommended by Commissioner Redalen, to look into the area of pollution prevention within the department. The purpose of the task force was to identify problem areas, current programs in place, and examine future activities which would enhance pollution prevention within our agency. One item to note, however, is the Department of Agriculture currently is a small quantity generator of hazardous materials. It is imperative that the agency continue to look into ways to reduce the amount of generated waste in the future.

Pollution prevention areas were identified in six divisions within our agency. Internal - Laboratory Services, Agricultural Statistics, and Personnel and Office Management. External - Agronomy Services, Planning and Development, and Marketing.

LABORATORY SERVICES DIVISION

1. The Food Lab Section currently uses the hazardous chemical Tetrachloroethylene in fat extractions. They have ordered an extraction system which will eliminate this hazardous solvent.

2. The Environmental Analysis Section has reduced the amount of the hazardous chemical Methylene Chloride through recovery methods and reuses it between two work units. Continuous liquid extractions have further reduced the overall use of Methylene Chloride. Solid phase extraction is currently being researched as an alternative to organic extractions.
3. The Seed Section accumulates significant quantities of pesticide treated seed. The majority of the seeds are utilized by planting. The remainder are lab packed and disposed of properly.
4. The Microbiology laboratory utilizes *hazardous materials*. Before disposal they are disinfected or sterilized and then properly disposed of.

AGRICULTURAL STATISTICS DIVISION

The Agricultural Statistics Division utilizes a print shop for printing the majority of their documents. Areas that we investigated were with the possible use of toxic inks and cleaning chemicals. We found that they utilize soy ink for their printing, water based cleaning agents for cleaning machinery, and recycled paper for printing.

PERSONNEL AND OFFICE MANAGEMENT DIVISION

The Personnel and Office Management Division uses re-manufactured toner cartridges which saves the department about \$6,000 per year. They also recycle batteries and office paper as well as aluminum cans.

AGRONOMY SERVICES DIVISION

Agronomy Services Division current regulatory and policy activities include the collection and disposal of discontinued pesticides, the rinsate container, and Ground Water and Precipitation Monitoring Programs. Brochures of pertinent programs are attached for review.

PLANNING AND DEVELOPMENT DIVISION

The Planning and Development Division's current activities include the development of sustainable agriculture. In addition, they coordinate the Integrated Pest Management Program. Brochures of pertinent programs are attached for review.

MARKETING DIVISION

The Marketing Division currently promotes the Minnesota State Ethanol Promotion Program with guidance from the Minnesota Ethanol Commission. Ethanol fuel is promoted for automobile use to reduce carbon dioxide emissions.

FUTURE POLLUTION PREVENTION PLANS

Several ideas for future pollution prevention measures at the Minnesota Department of Agriculture are under consideration.

1. Currently, the Laboratory Services Division purchases \$6,000 of organic solvents and pays approximately \$2,000 a year for hazardous waste disposal of used solvents. The purchase of solvent distillation apparatus and use of super critical fluid extraction would reduce the expenses associated with organic solvents. These steps would also greatly reduce solvent waste stream to the environment.
2. The Feed and Fertilizer Section of the Laboratory Services Division could virtually eliminate the use of concentrated sulfuric acid through the purchase of a Nitrogen Analyzer.
3. The Seed Section of the Laboratory Services Division is looking at measures to eliminate the hazardous waste disposal costs for their excess pesticide treated seed samples.
4. Agronomy Services Division will continue to set up informational and educational materials for the public and the agricultural community in regards to environmental protection.
5. Planning and Development Division will continue to improve and maintain current programs.
6. Personnel and Office Management is looking into the feasibility of rechargeable batteries which will reduce the amount of batteries entering landfills.
7. The Marketing Division's current efforts have been directed towards technical and promotional support for ethanol-blended fuel marketers, and efforts to gain wider acceptance of ethanol-blended fuels within the small engine industry.

CONCLUSION

The Department of Agriculture is committed toward the prevention of pollution. We are exploring every avenue to ensure that the department is able to reduce waste at the source, reuse materials in areas such as laboratory analysis procedures and recycle materials such as paper and cartridge toners so that we can do our part in the protection of the environment. In addition, the department will continue, through regulations, to enforce environmental laws that are established to protect the environment from harmful hazardous materials. The agency realizes that there are environmental and economic benefits that are realized by establishing a pollution prevention program.

MINNESOTA DEPARTMENT OF CORRECTIONS
Management Memo

Volume 16 - Number 1

January 23, 1992

SUBJECT: Pollution Prevention

INTRODUCTION

Governor Arne H. Carlson's Executive Order 91-17 provides for the implementation of pollution prevention by state government.

POLICY

In compliance with Executive Order 91-17, pollution prevention is a priority for the Minnesota Department of Corrections. The department's objective is to undertake activities to reduce the generation of hazardous waste and use of toxic chemicals. The primary goal is to prevent pollution at its source and reduce waste and emissions, minimizing their adverse impact on air, water and land.

All department units are encouraged to identify and implement pollution prevention procedures and substitute nonhazardous materials in all operations whenever possible.

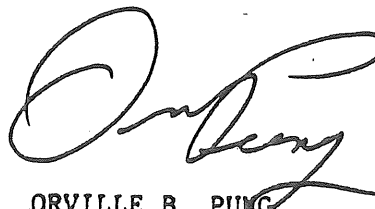
The department supports cooperation and coordination with other agencies for the purpose of promoting pollution prevention, including participation on the state Interagency Pollution Prevention Advisory Team.

ADDITIONAL INFORMATION

Questions regarding this policy should be directed to the department's coordinator of industries, safety and worker compensation at 612/642-0243.

EFFECTIVE DATE

Immediately.



ORVILLE B. PUNC
COMMISSIONER

DEPARTMENT: CORRECTIONS

STATE OF MINNESOTA
Office Memorandum

TO : Chair, Interagency Pollution
Prevention Advisory Team

DATE: April 15, 1992

FROM : Donald G. Tomsche
Correctional Administrator

PHONE: 642-0243

SUBJECT: Pollution Prevention Summary Report

The following is the status of the Pollution Prevention Program as established and maintained by the Minnesota Department of Corrections.

In compliance with your request for an annual report - due July 1, 1992, I shall utilize the format prescribed in your guidelines. Since the Department of Corrections is not a regulatory agency, only items 1.A and 1.B will be addressed.

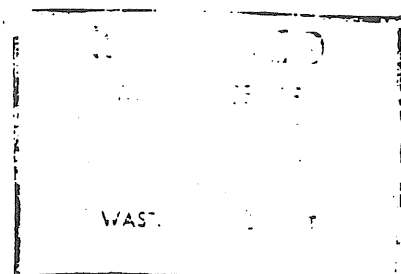
DESCRIBE STEPS TAKEN TO INTEGRATE POLLUTION PREVENTION INTO AGENCY ACTIVITIES.

- See policy statement attached.

This policy was used as a model for all agencies represented on the Interagency Pollution Prevention Advisory Team. Our policy became effective on January 23, 1992.

DESCRIBE ACTIVITIES UNDERTAKEN TO REDUCE GENERATION OF HAZARDOUS WASTE AND USE OF TOXIC CHEMICALS.

- Appointed a representative to serve on the interagency advisory team in December, 1991.
- Developed a departmental policy statement dated January 23, 1992, which addresses pollution prevention, the reduction of hazardous waste, and the use of toxic chemicals.
- Pollution control managers have been appointed at each of our ten institutions.
- Institution policies in compliance with the departmental policy, have been prepared and are on file at each correctional facility.



- Copies of institution action plans developed in conjunction with the above policies are on file in the Office of Waste Management.
- Copies of the buyers guide developed by the Department of Administration, Procurement Division outlining substitute items for the reduction and/or prevention of pollution and hazardous waste have been sent to each departmental pollution control manager.
- The Department of Corrections is the first agency to hold a pollution/waste management training seminar. This training was held at the Department of Corrections Central Office on 4-10-92. Items included:
 1. Introduction to pollution prevention.
 2. Planning for pollution prevention at your facility.
 3. Reducing waste in our correctional industries program.
 4. Update on hazardous waste management issues.

This training was conducted by Mr. Paul Moss, Office of Waste Management, Ms. Donna Peterson, Paul Pagel, Binh Tran from the Minnesota Technical Assistance Program, and Ms. Nancy Ellefson from the Minnesota Pollution Control Agency. Approximately 20 Department of Corrections employees were in attendance.

The Department of Corrections will continue to operate within existing policies and procedures, this includes monitoring institution activities to ensure compliance with our departmental policy. We will also maintain active membership on the Interagency Pollution Prevention Advisory Team.

cc: Orville B. Pung
Frank Wood
Institution Heads
Department Pollution Control Managers
Industry Directors
Director of Office of Waste Management



Minnesota Department of Health
717 Delaware Street Southeast
P.O. Box 9441
Minneapolis, MN 55440-9441
(612) 623-5000

IPPAT Summary Report
June 30, 1992

I. Steps taken to integrate pollution prevention into agency activities.

- a. Attached is a copy of the policy statement recently issued within the Department.
- b. The Department has undertaken a program to identify waste streams and identify/implement activities which will decrease the amount of waste generated and increase our efforts to recycle those wastes which are amenable to recycling.

In support of this effort the Department pursued and was granted funding through the Office of Waste Management.


- c. In addition to the effort noted in item b the funding will be used to inform the laboratories participating in the Department's certification program of potential pollution prevention activities for their use.

II. Plans for future activities to prevent pollution.

- a. Identify pollution prevention team members and identify specific goals, establish a schedule to meet these goals.
- b. Disseminate team information throughout the Department specifying selected areas of activities as necessary.

Office Memorandum

DATE : 7-6-92

TO : Division Directors, Assistant Division Directors and
Executive Office StaffFROM : Marlene E. Marschall
Commissioner 

PHONE : 623-5460

SUBJECT : Pollution Prevention Policy

In compliance with Governor Arne H. Carlson's Executive Order 91-17 providing for the implementation of pollution prevention by state government, the Minnesota Department of Health (MDH) makes pollution prevention a priority. The MDH objective is to undertake activities to reduce the generation of hazardous wastes and use of toxic chemicals. The primary goal is to prevent pollution at its source and reduce waste emissions, minimizing their adverse impact on air, water and land.

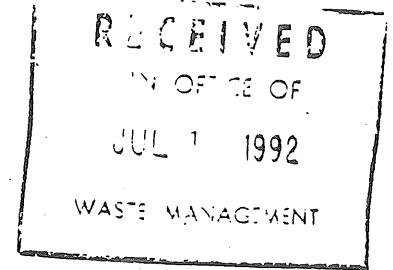
Please notify your staff of this policy, all employees are encouraged to identify and implement pollution prevention procedures and substitute nonhazardous materials in all operations whenever possible.

The MDH supports cooperation and coordination with other agencies for the purpose of promoting pollution prevention, including participation on the state Interagency Pollution Prevention Advisory Team.

This policy is effective immediately.

MEM:AT

DRAFT



POLLUTION PREVENTION SUMMARY REPORT
MINNESOTA DEPARTMENT OF HUMAN SERVICES
JULY 1992

Interagency Pollution Prevention Advisory Team

POLICY STATEMENT

The Department of Human Services is committed to excellence and leadership in protecting the environment. In keeping with this policy, our objective is to reduce waste at its source. We strive to minimize the adverse impact on the air, water and land through excellence in pollution prevention. By successfully preventing pollution at its source, we can achieve cost savings, increased operational efficiencies, improve the quality of our services and maintain a safe and healthful work place for our employees.

The Department of Human Services' environmental guidelines include the following:

Environmental protection is everyone's responsibility. It is valued and displays commitment to the Department.

Preventing pollution by reducing and eliminating the generation of waste at the source is a prime consideration in operations. The Department is committed to identifying and implementing pollution prevention opportunities through encouragement and involvement of all employees.

Technologies and methods which substitute non-hazardous materials and utilize other source reduction approaches will be given top priority in addressing all environmental issues.

The Department seeks to demonstrate its citizenship by adhering to all environmental regulations. We promote cooperation and coordination between government, industry and the public toward the shared goal of preventing pollution at its source.

B.

The Department of Human Services Central Office, the administrative branch of the department, has focussed its attention on the reduction of paper use and its disposal. Two plans are being implemented.

The first plan is the requirement to copy both sides of paper whenever feasible. The requirement is posted in all copy areas and was announced through the internal newsletter.

The second involves the exchange of information using electronic transfer instead of the printed page. Sending documents over phone lines or on disk has the potential to eliminate the production of waste paper, not to mention the savings in mail processing and transportation costs.

A new area being studied that will have a pollution prevention impact is the use of interactive satellite technology. The Department of Human Services is experimenting with a two-way video link to other agencies in metropolitan and non-metropolitan Minnesota. An experimental link with the University of Minnesota, Duluth was conducted during the spring of 1992. By fall 1992, a link will be established with human service agencies in Duluth, Moose Lake, Virginia and St. Louis County, Minnesota. The goal of the plan is to connect all regions of Minnesota into a video-conference communication network. This satellite technology will reduce vehicle travel time, vehicle use and its subsequent pollution and also provide the opportunity for a paper-less exchange of ideas.

Central Office has a vendor contract to rebuild and recharge laser printer cartridges. The rebuild contract will eliminate the disposal of up to eight cartridges during a cartridge life cycle.

A department wide Hazardous Waste seminar was conducted during July 1992. Representatives from each Regional Human Services/Treatment Center received information regarding:

1. Hazardous Waste Identification
2. Sampling and Analysis
3. Profiling
4. Manifesting and Transportation
5. Disposal

The seminar provided information needed to successfully utilize the state hazardous waste contract.

Regional Treatment Center training has included training for the housekeeping staff in the proper mixing and use of cleaning products. The goal is to reduce the amount of cleaner mixed and disposed of and to reduce the employee exposure to improperly mixed and potentially toxic chemicals.

Housekeeping procedure changes at Fergus Falls calls for the use of water based floor refinishing products which replaces the solvent based strippers and finishes.

C.

Regional Human Services Centers are in the process of changing their policies to incorporate pollution prevention into their standard operating procedures. Pollution prevention committees are being established to draft guidelines for hospital wide pollution prevention measures. The committees plan to develop a means of documenting pollution generation and devise methods of prevention. Committee activities will include the drafting of waste management plans for pollutants that cannot be eliminated.

D.

Purchasing policies are being reviewed to find alternatives to products that are non-recyclable or hazardous. Brainerd RHSC has worked with its vendors to replace plastic packaging with recyclable cardboard. Brainerd has also virtually eliminated the purchase of styrofoam cups and has banned the use of plastic trash bags in parts of the facility.

The Fergus Falls Materials Control Department is attempting to find pollution free substitutes for its solvent based cleaners and spray cans.

AH-GWAH-CHING Center has changed its solvent based degreaser to a water based degreaser. Batteries are being collected and brought to the Central Office collection site. HCFCs are being isolated before equipment repair. If the repair requires the removal of the HCFCs, a local contractor is hired to reclaim the material.

Cambridge is in the process of replacing their incandescent lighting with energy saving fluorescent tubes. The elimination of aerosol cleaning solvents is being studied. An oil filter compactor, to remove excess oil from the filter medium, is also being studied.

All facilities are collecting their fluorescent bulbs until there is a reprocessing facility developed within the state.

II.

Waste audits will be conducted to identify the sources of pollution generation and the probability of their release to the environment.

Future pollution prevention activities will focus on the identification of substitutes for toxic or harmful materials. Pollution prevention committees will be working with the facility material control departments to change purchasing policies and rewrite contracts to specify non-polluting products.

One goal is the elimination of solvent based paints with a water based replacement. Cleaning products used throughout the facilities are being evaluated and replaced with less hazardous materials or eliminated without replacement.

III.

A.

The environmental benefits of the Central Office pollution prevention plan centers around the reduction of material sent to the waste disposal facilities. From our disposal records, Central Office has prevented about 200 tons of paper from reaching the waste processor in 1992. This represents a 25% increase in the amount of paper diverted from disposal compared to 1991. In addition to the above amounts, our separation of high quality papers from lower grades has allowed Central Office to put 100 tons (FY 1991) of high grade paper into the Resource Recovery program.

The laser cartridge recharge plan has enabled Central Office to reuse 75 of the formerly discarded cartridges. The plan calls for the cartridges to be recharged 6 to 8 times before disposal. To date, the cartridges are in their third recharge.

B.

The economic benefits of the Central Office pollution reduction plan have been substantial. The paper disposal reduction has saved \$13,358 in disposal fees (FY 1992). The savings, however, were realized by the lease holder because the cost of trash disposal is included in the lease. An additional \$5,500 was collected by Resource Recovery from the high quality paper separation program.

The laser cartridge rebuild/recharge plan has already saved \$2,475 at the third recharge stage and, if the cartridges last through 6 recharges, could save nearly \$10,000.

Figures for facility cost savings are not available at this time. A preliminary report from Brainerd RHSC has a \$137.50/month savings from its solid waste disposal fee.



MINNESOTA

DEPARTMENT OF MILITARY AFFAIRS

**POLLUTION PREVENTION
SUMMARY REPORT**

JULY 1992



STATE OF MINNESOTA, DEPARTMENT OF MILITARY AFFAIRS

POLLUTION PREVENTION SUMMARY REPORT

Submitted to the State of Minnesota, Office of Waste Management to meet the requirements of the Governor's Executive Order 91-77.

INTRODUCTION

Department of Military Affairs defines pollution prevention as the reduction or elimination of pollution producing activities at the source. The Department of Military Affairs implementation and monitoring of this program will be looked at specifically with this in mind.

The Department of Military Affairs presently oversees operations of two Air National Guard (MNANG) facilities located in Minneapolis and Duluth, one Army Aviation Support Facility (AASF) located in St. Paul, 59 Minnesota National Guard (MNARNG) armories, 11 (MNARNG) Organizational Maintenance Shops (OMS) and six additional waste producing facilities located on the Camp Ripley Training Site.

The Department of Military Affairs has incorporated pollution prevention strategies throughout all its activities performed and views pollution prevention as a necessary portion of its overall waste management policies. It benefits the environment as well as the Guard by reducing the amount of waste produced at pollution sources, reducing the amount of waste to be treated and in turn decreasing the amount of funds expended on disposal.

This report shall address the requirements of the Governor's Executive Order 91-17. It will cover some of the pollution prevention activities initiated by the Department of Military Affairs in past years as well as outline future direction and activities. More detailed documents are prepared for numerous other regulatory agencies both internal and external having overview authority of these activities. Copies of these reports shall be forwarded to the Office of Waste Management (OWM) as requested or incorporated into future (OWM) reporting requirements.

I. INTEGRATION OF POLLUTION PREVENTION INTO DEPARTMENT OF MILITARY AFFAIRS WASTE PRODUCING ACTIVITIES

A. Department of Military Affairs Pollution Prevention Policy Statements

The Department of Military Affairs and members of the Minnesota National Guard are committed to excellence and leadership in protecting the environment as they accomplish their missions. The Department of Military Affairs is aware that state government has an important role to play in providing leadership in protecting the environment and performing these activities to reflect this.

Minnesota Guard (Army) Regulation 200-1 titled Environmental Protection and Enhancement, Item 8-5, Waste Minimization, states the generation of waste by the Department of Military Affairs activities poses both short and long term liability in terms of cost, environmental damage and mission performance. Waste can be minimized by using methods such as, but not limited to, hazardous materials substitution, closed loop recycling, process change, proper waste identification, delisting and waste segregation (Attachment 1).

Minnesota Guard (Army) Regulation 420-47 (Attachment 2) titled Hazardous Waste Management, Chapter 2, Policies, Item 22, Waste Minimization States:

It is the policy of the Minnesota Army National Guard to minimize to the extent practical, the amount and toxicity of hazardous wastes generated as a result of its activities.

Waste minimization practices for the Minnesota Army National Guard are as follows:

- a. Re-use of materials whenever and as long as possible before determining they are wastes.
- b. Recycling of degreasing solvents through a qualified and permitted contractor.
- c. Segregation of waste streams to avoid contamination of non-hazardous wastes.
- d. Minimization of the use of degreasing solvents for activities other than parts cleaning in tanks.
- e. Substitution of less hazardous products (degreasing compounds and paints), where feasible.

The waste minimization policies stated in regulation 420-47 may not meet the most recent definitions of pollution prevention but certainly indicate the Department of Military Affairs leadership and commitment to addressing pollution potential before it is created.

Minnesota National Guard Environmental Policy (Attachment 3) also reflects the state's pollution prevention goals. Policy states that technologies that will reduce or eliminate pollution or other harm to the environment will be fully incorporated in guard activities.

National Guard Environment Policy also requires the incorporation into their programs and activities the implementation of the following specific objectives:

- a. Minimize the creation of waste, especially hazardous waste and, wherever possible, recycle materials.
- b. Use commercially available products or services that minimize adverse environmental impacts and which are safe when commonly used.

Department of Military Affairs also sees employee involvement as an essential element of the Minnesota Guard's Pollution Prevention Policy. All Guard personnel will be responsible for assisting in the identification, reduction and elimination of pollution at its source. Methods for this activity to occur are addressed later in this report.

B. Department of Military Affairs Activities Undertaken to Reduce Generation of Hazardous Waste and the Use of Toxic Chemicals.

1. Committees: The Department of Military Affairs has four working Environmental Quality Control Committees consisting of Guard commanders and State supervisors assuring the integration of sound environmental principals in all facets of Guard activities. These committees oversee all environmental policies as well as most projects (environmental) which the Guard is performing or involved with.

The Environmental Quality Control General Officers Steering Committee (EQCGOSC) composed of commanding officers of both Air and Army Guard (Attachment 3A--EQCGOSC Duty Appointment) coordinate and direct joint missions (environmental) of Air and Army Guard and generates policy.

The two Environmental Protection Committees (EPC) (Air Guard) operating at the Duluth and Minneapolis air base, and the Environmental Quality Control Committee (EQCC) (Army Guard) apply these environmental policies to their particular areas and projects.

The Army Guard's EQCC (Attachment 4--EQCC Charter) recently chartered a Pollution Prevention Process Action Team (PAT). The PAT charter was prepared utilizing Total Quality Management principles (Attachment 5). Total Quality Management stresses total involvement of the process operators, as well as supervision and management in promoting system change yet assuring clients needs are addressed and satisfied. The strategic goal for this committee is to comply with state, federal and Department of Military Affairs pollution prevention/waste minimization mandates. PAT will review processes in the Department of Military Affairs that generate waste, monitor pilot projects that should reduce the amount of waste these processes produce, prepare findings, and monitor reduction of waste generated as required by mandates.

2. Shop Towels: The MNARNG generates approximately 2,000 pounds of shop towels (rags) per year in performing its missions. These rags were managed as a hazardous, special waste requiring disposal through a hazardous waste contractor. The Department of Military Affairs Environmental Quality Control Committee evaluated this issue with waste minimization/pollution prevention as its goal (Attachment 6). Staff studies of pertinent regulations, cost summaries, risk reduction and liability issues were performed. EQCC recommended to contract with a linen service to address the Guard's shop towel needs. This service has discontinued the need for the Guard to handle its towels as a hazardous waste. The Guard has reviewed this program change periodically and has found it satisfactory. The Guard plans to continue use of this program until other factors such as improved technology, regulations, cost or liability lead the Guard to reevaluate its decision.

3. Training: Department of Military Affairs provided two days of hazardous waste management training on October 8 and 17, 1991. This training was provided to all Department employees responsible for hazardous waste management activities including employees performing processes that generate hazardous waste. An instructional block of this training addressed waste reduction and how it is everyone's responsibility. This curriculum (Attachment 7) stressed improved housekeeping, material substitution, waste concentration, process redesign, recycling and reuse.

4. Leak Detection: The Troop Issue Subsistence Activity Center (TISA) administers a large number of refrigeration and freezer space utilizing various refrigerants. The Guard operators of this facility have put in place a leak detection management plan with the assistance of leak detection equipment purchased in 1990. This activity has provided for a substantial reduction of CFC loss to the environment. The ability to detect small leaks that in the past sometimes went unnoticed has been a sound investment in preventing pollution.

5. Solvent:

a. Department of Military Affairs performed a number of pilot projects throughout its maintenance systems substituting a non-hazardous material Citric Kleen. The citrus-based solvent was employed in parts cleaning operations that previously used various hazardous materials to perform the tasks. These pilot projects ceased when process operators viewed excessive corrosion of their machines affecting their integrity. When the used citrus cleaning agent was evaluated for disposal, lead and cadmium levels of the solution meet the definitions of a hazardous waste even though the flash point was above 140°F. The MNARNG returned to the use of stoddard solvent through contracting a toll service company providing clean material as needed and recycling the used material.

b. While performing the maintenance of Guard weapons and vehicles, many types of chlorinated and nonchlorinated cleaning solvents have been used. Having a multiple number of solvents being used generated many waste streams, more volume and higher disposal costs. In 1990, the Department of Military Affairs contracted with Safety Kleen to provide a solvent recycling service that would provide one non-halogenated solvent that met the specifications of the process operators. This eliminated separate waste streams. A noticeable reduction of volume of material used and requiring disposal was noted by the Department.

c. The Minnesota Air National Guard has put into operation a stoddard solvent reclaimer. In the past, the Minnesota Air Guard disposed of 800 gallons/year of stoddard solvent. The stoddard solvent reclaimer has decreased the volume of waste to less than 200 gallons/year of solvent, a reduction of 600 gallons/year.

d. The Minnesota Air National Guard has replaced many of its solvent-based parts washing operations in their aircraft and ground vehicle maintenance operations. They have replaced their solvent systems with systems that use hot water and biodegradable detergent. This operation has produced no hazardous waste to date.

6. Department Rules and Regulations:

The Department of Military Affairs generates policy and regulations directing its employees on the requirements and expectations of the duties they perform. Some of these regulations have been referenced in the policy portion of this report. These regulations are continually being reevaluated and updated to reflect changes in federal, state and local authority requirements yet allow department personnel to efficiently and safely accomplish their missions.

II. FUTURE ACTIVITIES TO PREVENT POLLUTION

1. Department of Military Affairs Pollution Prevention Process Action Team will continue to meet monthly evaluating existing department pollution prevention pilot projects and activities. This team is also responsible for reviewing technologies and proposals and assisting in the implementation of the team's pollution prevention goals and proposed activities.

2. The Air National Guard is in the process of purchasing one hundred thousand dollars worth of pollution prevention technology (Attachment 8) to operate at their Duluth and Minneapolis facilities. This equipment includes, but is not limited to:

- a. Waste water purification system
- b. Freon reclaimer
- c. Leak detection detector
- d. Solvent recovery unit
- e. Antifreeze recycler
- f. Aqueous parts cleaners
- g. Bead blasting unit

3. The Department of Military Affairs has entered into an interagency agreement with the Office of Waste Management (Attachment 9). The agreement describes a pollution prevention project at Camp Ripley.

a. The project is to promote the reduction and eventual elimination of chlorine to disinfect the Camp's waste water stream prior to discharge into the Mississippi River. This project will use ultraviolet (UV) light as a bacterial controlling agent rather than addition of chemicals (Attachment 9).

III. ENVIRONMENTAL AND ECONOMIC BENEFITS

The principal environmental benefit to date is the heightened awareness of the department's process operators and commanders in the reduction of waste solvents and heavy metal laden waste disposed of by the Minnesota National Guard. Solvents enter the environment through evaporation with resulting impacts to air quality. Heavy metals enter the environment through paint abrasion, wear and equipment cleaning, and all may impact soils and water quality. The movement of these spent solvents and heavy metal laden waste to a proper handling facility still result in potential environmental impacts and potential department liability.

environment through evaporation with resulting impacts to air quality. Heavy metals enter the environment through paint abrasion, wear and equipment cleaning, and all may impact soils and water quality. The movement of these spent solvents and heavy metal laden waste to a proper handling facility still result in potential environmental impacts and potential department liability.

Reducing and eliminating hazardous waste and particular waste streams will ultimately have economic benefits for the Department of Military Affairs. Transporting these waste materials is in itself expensive and carries with it a future economic liability in the case that the receiving facility has subsequent environmental problems. There may be short term economic cost increases, but the Department is confident that the long term benefits will outweigh these costs.

E/CORR/pollprevention

ATTACHMENTS

- #1 Minnesota Army National Guard Regulations Environmental Protection and Enhancement 200-1, 8-5 Waste Minimization
- #2 Minnesota Army National Guard Regulations Hazardous Waste Management 420-47, 2-2 Waste Minimization
- #3 Minnesota National Guard Environmental Policy
- #3A Environmental Quality Control General Officers Steering Committee
- #4 Department of Military Affairs Environmental Quality Control Committee (EQCC) Charter
- #5 Department of Military Affairs Environmental Quality Control Committee (EQCC) Pollution Prevention Team Process Action Team Charter (PAT)
- #6 Hazardous Waste Minimization Project Shop Towels EQCC Position Papers
- #7 Hazardous Waste Training/Waste Reduction Curriculum
- #8 Department of Military Affairs, Minnesota Air Guard Waste Minimization Purchase Requests
- #9 Department of Military Affairs, Office of Waste Management Interagency Agreement for Camp Ripley Waste Minimization Projects

ATTACHMENT 1

MNGR-200-1 (ARMY)

15 October 1991

compliance with this regulation, the Facility Hazardous Waste Management (HWM) Plan required by MNGR 420-47, and the Facility Spill Contingency Plan (FSCP).

(3) Report contact or correspondence by the Minnesota Pollution Control Agency or by any other waste regulatory authority IMMEDIATELY to MNAG-FMO or Camp Ripley Commander as appropriate.

(4) Maintain a current facility Hazardous Waste Management Plan, a Solid Waste/Recycling Management Plan, and an Infection Waste Management Plan, if appropriate, available for inspection by regulatory agencies and for use by employees.

(5) Operate in compliance with facility permits or licenses.

(6) Ensure that all wastes produced during operations are identified and listed in the appropriate plan and that all operational changes are reported to MNAG-FMO or Camp Ripley Commander as appropriate.

(7) Properly package, store, manifest for transport and (when directed by USPFO) transport hazardous wastes according to MN ARNG regulations, the facility Hazardous Waste Management Plan and applicable federal, state and local regulations.

d. The Camp Ripley Commander along with the responsibilities assigned in c. above will:

(1) Manage, in coordination with MNAG-FMO, the waste disposal program at Camp Ripley.

(2) Report identified wastes from Camp Ripley to MNAG-FMO.

(3) Obtain, in coordination with the MNAG-FMO, waste disposal permits for Camp Ripley.

8-5. WASTE MINIMIZATION:

The generation of waste by MN ARNG activities poses both short and long term liability in terms of cost, environmental damage, and mission performance. Wastes can be minimized by using methods such as, but not limited to, hazardous materials substitution, closed loop recycling, process change, proper waste identification, delisting and waste segregation.

8-6. WASTE CLASSIFICATION:

a. Minnesota Rules require that "anyone who produces or manages a waste must evaluate that waste". This evaluation determines whether the waste is hazardous or non-hazardous. Guidance for waste evaluation is found in Appendix 8.

b. Solid wastes will be classified into one of the following major

ATTACHMENT 2

POLICIES

2-1 HAZARDOUS WASTE MANAGEMENT

It is the policy of the Minnesota Army National Guard to manage hazardous wastes in an environmentally acceptable manner and in accordance with all Federal, State and Local requirements.

2-2 WASTE MINIMIZATION

It is the policy of the Minnesota Army National Guard to minimize to the extent practical, the amount and toxicity of hazardous wastes generated as a result of its activities.

Waste minimization practices for the Minnesota Army National Guard are as follows:

- a. Re-use of materials whenever and as long as possible before determining they are waste.
- b. Recycling of degreasing solvents through a qualified and permitted contractor.
- c. Segregation of waste streams to avoid contamination of non-hazardous wastes.
- d. Minimization of the use of degreasing solvents for activities other than parts cleaning in tanks.
- e. Substitution of less hazardous products (degreasing compounds and paints), where feasible.

2-3 PLANS, RECORDS AND REPORTS

- a. It is the policy of the Minnesota Army National Guard to maintain the plans and records for each hazardous waste generator at the facility as required by law and report to regulatory agencies through the Facilities Management Office. Hazardous waste generator facilities will:
 - (1) Keep records required by law on site.
 - (2) Report necessary information to Facilities Management Office for submission to regulatory agencies.
 - (3) Maintain a Facility Hazardous Waste Management (HWM) Plan.
- b. A summary of reports required in this regulation and due dates is found in Chapter 11-6.

ATTACHMENT 3

MINNESOTA NATIONAL GUARD ENVIRONMENTAL POLICY

It is the policy of the Minnesota National Guard to fully incorporate

- environmental protection - the technologies that will reduce or eliminate pollution or other harm to the environment
- environmental management - the practices that will sustain or preserve the environment, and
- environmental awareness - the methods that will educate and create an appreciation for the environment

into the programs and activities of the Minnesota National Guard. This policy will be implemented by our efforts to achieve the following specific objectives.

1. Protection of Habitat

We will minimize and strive to eliminate the release of any pollutant that may cause environmental damage to the air, water, or earth or its inhabitants. We will safeguard habitats in rivers, lakes and wetlands and will minimize contributing to the greenhouse effect, depletion of the ozone layer, acid rain, or smog.

2. Sustainable Use of Natural Resources

We will minimize the creation of waste, especially hazardous waste, and wherever possible recycle materials. We will dispose of all wastes through safe and responsible methods.

4. Wise Use of Energy

We will make every effort to use environmentally safe and sustainable energy sources to meet our needs. We will invest in improved energy efficiency and conservation in our operations.

5. Risk Reduction

We will minimize the environmental, health and safety risks to our employees and communities in which we operate by employing safe technologies and operating procedures and by being constantly prepared for emergencies.

6. Utilization of Safe Products and Services

We will use commercially available products or services that minimize adverse environmental impacts and that are safe as they are commonly used.

7. Environmental Restoration

We will take responsibility for any harm we cause to the environment by making every effort to achieve full restoration.

8. Disclosure

We will disclose to our employees and to the public incidents relating to our operations that cause environmental harm or pose health or safety hazards. We will disclose potential environmental, health or safety hazards posed by our operations and we will not take any action against employees who report any condition that creates a danger to the environment or poses health or safety hazards.

9. Environmental Management

One member of the Adjutant General's Staff will be a person qualified to represent environmental interests and that staff member will report directly to the Adjutant General regarding implementation of National Guard environmental policies.

10. Self-evaluation and Annual Compliance Audit

We will conduct an annual self-evaluation of our progress in implementing these Policies. We will conduct environmental compliance audits on National Guard installations and make the documents available to appropriate regulatory agencies and to the public.

MINNESOTA NATIONAL GUARD ENVIRONMENTAL COMMITTEES

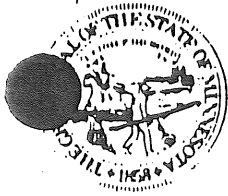
ENVIRONMENTAL QUALITY CONTROL

GENERAL OFFICERS STEERING COMMITTEE

**ENVIRONMENTAL
QUALITY CONTROL
COMMITTEE (ARMY)**

**ENVIRONMENTAL
PROTECTION
COMMITTEES (AIR)**

**CAMP RIPLEY AD HOC
COMMITTEES**



STATE OF MINNESOTA, DEPARTMENT OF MILITARY AFFAIRS
MINNESOTA ARMY AND AIR NATIONAL GUARD
OFFICE OF THE ADJUTANT GENERAL
Veterans Service Building
Saint Paul, Minnesota 55155-7098

MNAG-TAG

1 June 1991

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Duty Appointment

1. Effective 1 June 1991, you are appointed as the Environmental Quality Control General Officers' Steering Committee (EQCGOSC) for the Minnesota National Guard.

Lueck, David H. (Vice Chair)	MG	468-28-4660	HQ 34th Inf Div St. Paul, MN 55101
Andreotti, Eugene R. (Chairman)	Brig Gen	472-48-1905	HQ, MN ANG St. Paul, MN 55155
Broman, John D. (Member)	Brig Gen	473-36-8828	HQ, 133rd TAW Mpls/St Paul IAP 55111
Delgehausen, Roger D. (Member)	BG	473-36-8828	HQ STARC MN ARNG St. Paul, MN 55155
Hannula, Rodney R. (Member)	BG	389-38-0002	HQ STARC MN ARNG St Paul, MN 55155
Hovda, Clayton A. (Member)	BG	72-07-3917	HQ 34th Inf Div St. Paul, MN 55101
Kazek, Joseph A. (Member)	Brig Gen	322-28-0265	HQ, MN ANG St. Paul, MN 55155
Burque, Verne P. (Member)	Col	474-46-3866	HQ, MN ANG St. Paul, MN 55155
Le Blanc, Gary E. (Member)	COL	475-48-8420	HQ STARC MN ARNG St. Paul, MN 55155
Ebert, John F. (Advisor)	MAJ	484-52-8806	STARC (DET 2) Cp Ripley MN 56345
Leonard-Mayer, Patricia J (Recorder)	CPT	391-56-0253	HQ STARC MN ARNG St. Paul, MN 55155

2. Authority: Verbal Orders of The Adjutant General.

3. Period: Until officially relieved by proper authority.

ATTACHMENT 4

STATE ENVIRONMENTAL QUALITY CONTROL COMMITTEE (EQCC)

The State Environmental Quality Control Committee will:

- (1) Consist of the following members (appointed on orders):
 - a. Chief of Staff (COS), Chairman
 - b. Executive Director (EX-DIR)
 - c. Staff Judge Advocate (SJA)
 - d. Public Affairs Officer (PAO)
 - e. U.S. Property and Fiscal Officer (USPFO)
 - f. Director of Plans, Operations and Training (DPT)
 - g. Director of Support Personnel Management (SPM)
 - h. State Safety Officer (SSO)
 - i. Director of Army Aviation (ASF)
 - j. State Maintenance Officer (MMO)
 - k. Facilities Management Officer (FMO)
 - l. Environmental Coordinator, Secretary
 - m. Representative, HQ 34th ID
 - n. Representative, HQ Troop Command
 - o. Camp Ripley Commander (CRC-2)
- (2) Convene at the call of the chairman, usually monthly.
- (3) Assist the Adjutant General in policy formulation and coordination of programs requiring environmental consideration. The Secretary will maintain minutes of all meetings for reporting purposes.
- (4) Serve as MN ARNG Hazardous Waste Management Board required by Paragraph 6-6, AR 420-47.
- (5) Serve as MN ARNG Natural Resources Conservation and Beautification Committee required by Paragraph 2-7, AR 420-47.
- (6) Serve as MN ARNG Historic Preservation Committee required by Section 2, TM 5-801-1.
- (7) Serve as MN ARNG Installation Compatible Use Zone (ICUZ) Committee required by Paragraph 505c, this regulation.
- (8) Review and recommend changes of environmental policies, programs, regulations, budget and staffing as needed.
- (9) Monitor statewide environmental programs and activities.
- (10) Ensure that environmental considerations are included in all plans and regulations developed by MN ARNG.
- (11) Provide guidance to the commanders requesting environmental program assistance.
- (12) Review plans as requested to include hazardous waste management, spill control and countermeasure, spill contingency and natural and cultural resources.
- (13) Review environmental awareness and public affairs program as needed.

ATTACHMENT 5

MINNESOTA ARMY NATIONAL GUARD ENVIRONMENTAL QUALITY CONTROL COMMISSION (EQCC) POLLUTION PREVENTION/WASTE MINIMIZATION PROCESS ACTION TEAM (PAT) CHARTER

STRATEGIC GOAL

The Minnesota Army National Guard's (MNARNG) Environmental Quality Control Commission (EQCC) goal is to be a model of cooperation among its members as well as assure the protection of their health, safety and welfare. The EQCC strives to conserve our natural resources, demonstrate leadership in environmental protection, and assure that the environment is an integral part of MNARNG decision making. The EQCC will also initiate aggressive action to comply with all environmental quality laws and support programs for the recycling and reuse of materials to continue the preservation of natural resources, prevent pollution and minimize the generation of waste.

PROBLEM STATEMENT

The MNARNG performs activities that generate hazardous and non-hazardous waste streams. To meet EQCC goals to initiate aggressive actions assuring full compliance with environmental quality laws including the prevention of pollution and minimization of waste produced. The EQCC is requesting the Process Action Team (PAT) designated by this charter to address the requirements of:

- 1) The Minnesota Toxic Pollution Prevention Act, Minnesota Statutes 115.02, subdivision 8.
- 2) Title 40 CFR Part 262.41 and the Appendix thereto detailing Hazardous Waste Minimization requirements.
- 3) Pollution Prevention Act of 1990 of the Superfund Amendments and Reauthorization Act.
- 4) AR 200-1, Environmental Protection and Enhancement, April 1990.
- 5) Minnesota National Guard Regulation number 420-47, March 1988.

Pollution prevention/hazardous waste minimization will be best achieved by the MNARNG by "eliminating or reducing at the source", the use, generation, or release of toxic pollutants, hazardous substances, and hazardous wastes. The key phase for the Process Action Team to note is at the source. Pollution prevention aims at eliminating toxic pollutants before they are created, preventing pollution; a waste or emission is not generated in the first place. Hazardous Waste Minimization (HAZMIN) is reducing the volume and toxicity of these wastes. Both are to minimize the transfer of toxic pollutants from one environmental medium to another.

The PAT is asked to address pollution prevention/HAZMIN from simple methods and techniques to advanced technologies.

Simple preventative applications may include, but be not limited to, such alternatives as:

- 1) Covering exposed containers of volatile chemicals.
- 2) Repairing loose and leaking pipe connections.
- 3) Housekeeping/management practices.
- 4) Inventory control practices (monitoring).
- 5) Personnel training.

More sophisticated or comprehensive pollution prevention applications may include, but be not limited to, such activities as:

- 1) Substitution (switching hazardous organic-based solvents to water-based or aqueous materials).
- 2) Process modification (redesigning what is being done, not to use or produce waste of concern).
- 3) Increasing the efficiency of production.
- 4) Redesigning or reformulating products used.

CUSTOMER REQUIREMENTS

The "customer" in this case, is the troops that perform the functions generating waste, as well as the troops that have quality standards for the machine used that the process was performed on.

To understand the process requirements, data collection is needed on the customer requirements. The quality is also defined by customer needs.

A set format of interview questions should be discussed, converse with the customer to learn what their needs are. This could also be accomplished by making a select portion of the customers part of the PAT. This activity should help the PAT gain knowledge of the desired quality of the product and develop customer-based standards for the process.

The PAT will review the organizational structure to identify personnel in the process chain who represents key functions and functions at various levels of responsibilities. These individuals will be interviewed, surveyed, or asked to participate in a specific PAT activity.

The PAT will consider this the first step of formulating a Customer Dialogue Plan. These are the (who) Target Sources.

If the PAT requires more data than what PAT itself can provide, an interview protocol will be required. PAT will design questions to gather meaningful data and information expressed in terms ready for comparative analysis. Focus on generating responses that include quality standards, benefits or values, and performance assessment.

PAT will utilize one of the three recommended or combination of methods to obtain customer's need and meet the goal in the most cost effective and timely manner. Recommended methods could include:

- 1) Interviews
 - Focus groups
 - Personal (one to one) interviewing
 - Surveying
- 2) Documents (working papers) review
- 3) Professional/Industrial literature.

PAT shall analyze all data collected to differentiate between facts that help measure quality and attitudes, which help measure satisfaction. Quality criteria will be monitored by PAT to measure pollution prevention (HAZMIN) goals versus time of processing, frequency of actions, and length of activities. PAT will recommend to EQCC if perceived pollution prevention/HAZMIN goals outweigh troop activity changes and the product they produce. Quality criteria will require group discussion, and group decision making to draw the appropriate conclusions.

PROJECT GOALS

Recommendations to reduce the amount of waste produced by the MNARNG by 50% in the next 5 years. Promote individual troop involvement to reach this goal.

SUCCESS FACTORS

Track waste generation amounts, document trends.

E/CORR/charter_1

MNARNG (Environmental Quality Control Commission) EQCC

DRAFT

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Hazardous Waste Reduction Process Action Team (PAT) Commissioning

1. You have been selected to help improve the MNARNG systems that generate waste. Your team has been established to solve the problem of excessive waste generation.
2. The MNARNG faces the challenge of meeting state and federal mandates to reduce the volume and install program changes to processes that generate waste.
3. The MNARNG is asked to report annually these changes and monitor and report results to the various regulatory bodies.
4. We are supplying you with a PAT team facilitator trained in TQM management.
5. Please coordinate your study activities and implementation of changes to the process with the EQCC. The EQCC will provide you with needed authorizations, resources and further guidance.
6. Determine if the composition and training of the PAT are adequate for the task. Advise EQCC if additional people or training is required.
7. You are expected to meet bimonthly for the next year. Further commitments of time will be arranged as needed. All communication with EQCC should be through your PAT team chairperson to be selected by the PAT.
8. I look forward to your observations and improvement recommendations to meet our goals and state and federal mandates to reduce waste generation.

Encl

GARY E. LEBLANC
COL, GS MNARNG
Chairman, EQCC

DISTRIBUTION:

EQCC/mf0619_1

TOM

DRAFT

Pollution Prevention/Hazardous Waste
Process Action Team (PAT)

CHARTER

STRATEGIC GOALS

- Comply with state, federal and MNARNG pollution prevention/waste minimization mandates.
- Review processes in MNARNG that generate waste. Recommend and monitor pilot projects that will reduce the amount of waste these processes produce.
- Prepare findings of project's merits and draw backs, monitor reduction of waste generated as required by mandates.

PROBLEM STATEMENT

- The MNARNG performs activities that generate hazardous/non-hazardous waste streams.
- The MNARNG is to meet the requirements of the:
 1. Minnesota Toxic Pollution Prevention Act MN statues 115.02 sub.8
 2. Title 40 CFR part 262.41 and appendix thereto
 3. Pollution Prevention Act of 1990 of SARA
 4. AR 200-1 Environmental Protection and Enhancement April 90
 5. MNARNG number 420-47 March 1988
- Pollution Prevention/HAZMIN should be achieved by eliminating or reducing at the source. The use, generation or release of toxic pollutants, hazardous substances and hazardous waste.

CUSTOMER REQUIREMENTS

- Maintain quality to assure customer satisfaction for any process modification or the substitution of any non-toxic or less toxic material in the process.

ATTACHMENT 6

Revision Date: 4 FEB 91
Submitted Date: 22 OCT 90
Author/Office: John Ebert, FMO-E

ENVIRONMENTAL QUALITY CONTROL COMMITTEE

SUBJECT: Hazardous Waste Minimization (Oily Rags) (90-4)

1. PROBLEM: Oily rags are currently disposed as hazardous waste. The MNARNG is under mandate to reduce hazardous waste volume.
2. ASSUMPTIONS: MNARNG will comply with Environmental regulations in the most cost efficient manner.
3. FACTS BEARING ON PROBLEM:
4. DISCUSSION:
 - a. Maintenance of ARNG equipment has generated 1827 pounds of oil contaminated rags in FY 90 that were disposed of as hazardous waste. Cost is \$4.00 per pound for disposal not counting handling and transportation costs and generator license fees.
 - b. The Minnesota Pollution Control Agency (MPCA) has indicated that oily rags are not considered a hazardous waste if they are rung out and do not contain free liquid. If properly rung out, oily rags may be disposed of in a landfill. To insure free liquid is removed, a ringer would be required at each facility.
 - c. LTC Kropuenske indicated at a Hazardous Waste Handlers Course that shops have complained of the quality of rags currently provided. They are not absorbent, which creates an excessive amount of rags for disposal.
 - d. MPCA has indicated that rags returned to a laundry or rag recycler are not considered a hazardous waste. Therefore, another alternative to rag disposal is to contract for rag supply and cleaning.
 - e. We are under a mandate to minimize hazardous waste. Reducing disposal of hazardous rags is a good place to start.
 - f. At meeting to discuss problem on 14 Sep 90 between USPFO, SMO and FMO it was decided to investigate laundry contract for rags:
5. CONCLUSION: See Cost Analysis - Shop Towel Service 10 Dec 90
6. RECOMMENDATIONS: See Cost Analysis - Shop Towel service 10 Dec 90

7. COMMITTEE ACTION:

a. 22 OCT 90

(1) USPFO provided data on shop towel service. The SMO is conducting a study on towels required by location and number.

(2) The USPFO was directed to research availability and cost of drum wringers.

(3) Subject tabled until next meeting.

b. 10 DEC 90

(1) A cost analysis for Shop Towel Service was presented by COL LaForce (see attachment).

(2) Spec on Hand Wringer was provided by PFO (see attachment).

(3) Motion was made to contract Shop Towel Service on a six month trial basis with evaluation at the completion of the fourth month. APPROVED.

(4) USPFO and MMO were directed to coordinate contract and to issue guidance to the field to reduce usage of other rags and paper products.

c. 4 FEB 91

(1) USPFO has issued contract. SSMO and AASF will analyze contract and revisit issue at August 91 meeting.

SUBJECT: Cost Analysis - Shop Towel Service

1. PROBLEM. At the 22 October 1990 meeting, the Environmental Quality Control Committee tasked the SSMO to conduct a cost comparison between the current rag procedures and a shop towel service.

2. ASSUMPTIONS.

a. Funds to support a shop towel service would be made available from a miscellaneous logistics account.

b. Comparison would address the following:

- (1) Cost of current rags.
- (2) Cost of disposal of rags that become hazardous waste.
- (3) Contract costs for shop towel service.
- (4) Handling and transportation costs of current rags cannot be quantified and although certainly a cost, will not be included in the comparison.

3. FACTS BEARING ON PROBLEM.

a. Disposal costs for oily rags in FY 90 was \$7,308. This was 1,827 pounds at \$4.00/pound.

b. 21,000 pounds of rags were ordered and received within the State at a cost of \$14,544. The approximate cost of the 1,827 pounds disposed of as hazardous waste was approximately \$1,400.

c. Total considered FY90 annual costs of current procedure was approximately \$8,708.

d. Surface maintenance activities would require approximately 2,000 rags every week.

e. AASF would require approximately 500 rags every week.

f. Initial desposit per towel would be approximately 23 cents per towel. Laundry service would be approximately 7 cents per towel per cleaning.

g. Based on f. above, the approximate annual cost for surface maintenance activities would be \$7,740; approximate annual cost for AASF would be \$1,935. Projected total annual cost would be \$9,675.

h. Presently, surface maintenance activities use a mix of the cloth rags and paper products; the AASF uses all paper products.

i. Contract service would be available at all locations.

4. DISCUSSION.

a. Current rags are considered substandard and contribute to an ever increasing waste stream. Paper products are acceptable but also contribute to the solid waste problem and in some cases may be disposed of improperly.

b. Wringer systems are available at a cost of \$120 each. These could be used to convert saturated rags into dry rags that could then be placed into the land fill. This may be the most economical in terms of disposal costs but would require some diversion of labor and wouldn't decrease the solid waste stream.

c. Although 1,827 pounds of cloth rags were disposed of through hazardous waste channels, it begs the question of what happened to the other 19,000 pounds of cloth rags and all the paper products that may have become saturated with hazardous materials.

d. Control of contract shop towels has been a challenge for management wherever they have been used in the past. They would appear as controllable as hand tools provided there would be some form of relief for towels lost/destroyed during use as there is with hand tools.

e. CPT Fowler, AASF, expressed the opinion that contract shop towels were of limited value in their operation and much preferred the paper products.

5. CONCLUSION.

a. Current cloth rags are inadequate and cost for acquisition and disposal as hazardous waste in the surface maintenance activities is more expensive than a contract shop towel service.

b. If wringers were placed in each shop, it would negate the hazardous waste disposal problem but the rags would still be inadequate.

c. Regardless of the process used for cloth rags, paper products would still be desirous for some uses in most shops, i.e. cleaning glass.

d. Any form of disposable rags or paper towels contribute to the hazardous waste or solid waste streams and the continued use of these products makes us questionable stewards of the environment.

6. RECOMMENDATIONS.

a. That a contract shop towel service be instituted on a six month trial basis and be evaluated at the completion of the fourth month.

b. That the use of other rags and paper products in the performance of maintenance activities be discouraged and efforts made to reduce use of these products.

Water or in the Workplace

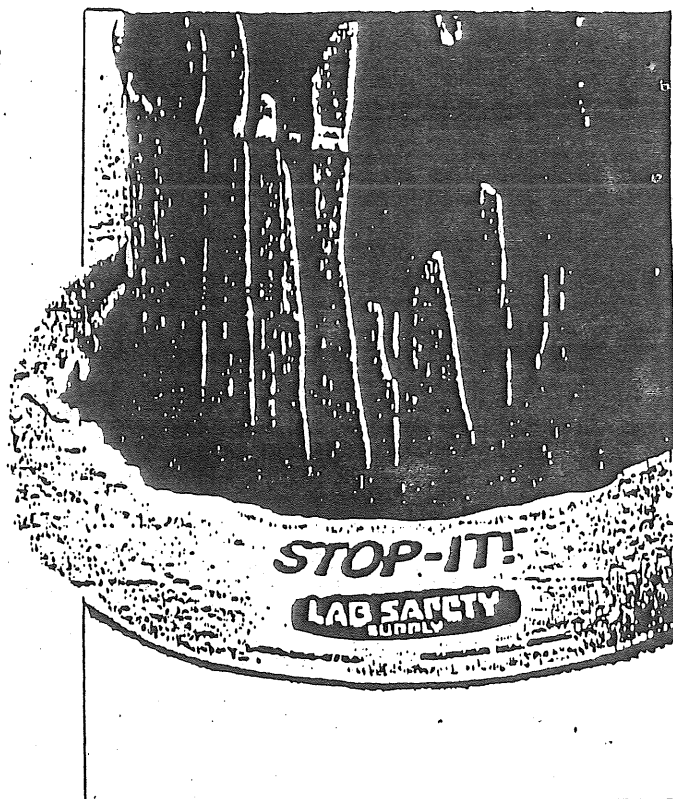


NEW Spill Wringer

Reuse sorbent mops, pillows or booms for more economical cleanups. Hand wringer is mounted on a 55-gallon drum lid; action squeezes liquid out directly into drum, ready for disposal. Transfer wringer/lid unit from one drum to another by releasing leverlock ring. Use for non-corrosive cleanups only. Galvanized steel. 23½" dia. x 3½" H.

MA-10318

364.35

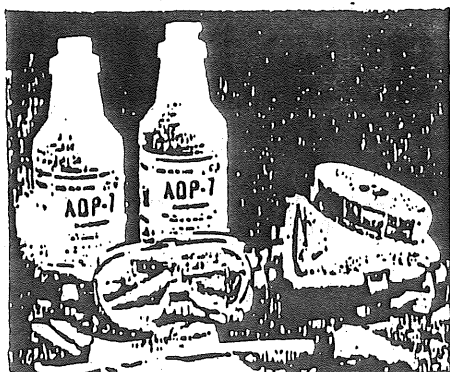


LAB SAFETY Stop-It™ Dike

Stops Leaks from Spreading

Moldable, sausage-shaped dike soaks up fluid without the mess of loose absorbents. Simply pick it up and throw away when saturated. Each Stop-It is 46"L. Case of 40.

No.	1-5	Each Case	12-Ug
MA-6986C	\$2.50	83.25	74.95



ADP-7 Oil Dispersant Spray

Fast-acting, water soluble surfactant dissipates oil, speeding up natural biodegradation. On land, it moves oil to the topmost soil layer where it quickly biodegrades. On water, a fine spray safely disperses oil over a large area. For heavier concentrations, premix surfactant with water and pour spray directly on spill. Ideal for boat owners, marinas, garages or any other area where oil spills may occur. One-quart bottle complete with sprayer.

MA-10782

15.90

Need Technical Assistance?
Call Our Safety TechLine™
1-800-356-2501

Hand Wringer Squeezes Out the Oil So Sorbent Products Can Be Re-Used

Rustproof, all-steel frame hand wringer lets you manually remove oil-based liquids from sorbent products. Ideal for extending sorbent life at spill sites. Or keep in drum storage areas, alongside sorbents, for added spill preparation. Wringer attaches easily to stationary or portable drums. Hard maple bearings never need oiling. 12" x 17½" rolls clamp open to 1½".

MA-9133

123.10



MA-9133

1-800-356-0783

LAB SAFETY

305

1. The Air Guard Bases at Minneapolis and Duluth both have shop towel service. Both contracting offices stated that the service was alright but there does not seem to be any way to control loss of towels. They both stated that it is an administrative nightmare. They have been obtaining this service for years and still don't have it under control.

The 133rd TAW procures their towels on a BPA and the 148th FIG procures their towels on a purchase order.

2. American Linen Supply Co, Minneapolis has service that would include the approximate 12 locations of the OMS shops. The service can be every week, every other week or once a month pickup and replacement of towels, what ever the need is. Each towel would cost approx. .22 cents to purchase and approx. .07 cents to have picked up, cleaned and delivered. American Linen Supply Co has several locations throughout the state.

3. Leaf Fargo Laundry, Fargo, ND has service that would include all locations except Cloquet and Hibbing. Leaf has pickup and delivery on an as need basis. Each towel would have a deposit of .23 cents and approx .05 - .07 cents to pickup, clean and deliver.

4. Huebsch Linen Service, Mendota Heights, is the company that the 133rd TAW uses but they are only available for service to the Metro area. Towels are .22 cents each and .055 cents to pickup, clean and deliver.

5. Unitog, plants in Duluth and Minneapolis, is the company that the 148th FIG uses in Duluth. Unitog can service all OMS shops except Rochester, Appleton, Austin, Tracy and Detroit Lakes. Towels are approx .24 cents each and .07 cents to pickup, clean and deliver. Service is available once a week, once every other week or once a month.

6. Names of Companies:

American Linen Supply Company
Minneapolis, MN
Frank Sanders or John Niemi
(612) 331-1600

Huebsch Linen Service
Mendota Heights, MN
Joe Vaudreaul
(612) 452-5588

Leaf Fargo Laundry
Fargo, ND
Bart Kosen
(701) 235-5381

Unitog
Duluth & Minneapolis
Tom and Chuck
(218) 727-2954 & (612) 588-2701

ATTACHMENT 7

WASTE REDUCTION

Avoiding the creation of hazardous waste is an important national goal. Federal hazardous waste regulations require that large quantity generators certify that they are making a concerted effort to reduce the amount of waste they generate. In Minnesota, all companies required to report toxic chemical releases under the Community Right to Know Act (SARA 313) are also required to develop a Toxic Pollution Prevention Plan. Information about these plans can be obtained from the Minnesota Office of Waste Management. Waste reduction is important for conserving our nation's resources and for protecting the environment, but it can also save your company time and money. For small quantity generators (SQGs), a waste reduction program, though not required, can reduce your paperwork and disposal fees. Waste reduction is good business and is good for the environment.

In-plant waste reduction can only be accomplished if there is a commitment made throughout the organization. All staff members, from upper management to the plant worker, should be educated in waste reduction techniques and encouraged to work on reducing the amount of waste being created. Incentives such as bonuses or awards may foster ideas for a waste reduction program and encourage use of those techniques that have a practical application.

WHAT CAN MY COMPANY DO?

The first step in reducing or eliminating the amount of waste generated is to identify all types of waste, and determine which processes create these wastes. When the waste types have been identified, you can evaluate how each type might be minimized or eliminated by making one or more of the following changes.

a. Improved Housekeeping

Sloppy housekeeping can result in more waste being generated than is necessary. To reduce excess waste production:

1. Buy only the amount of raw material you need. Buying in quantity may initially save money, but often leaves your company with excess material which may exceed shelf life, and require expensive disposal.
2. Use only as much raw material as is needed so that excess waste is not generated.
3. Use raw materials in correct proportions so that excess waste is not generated by making defective products or formulations.
4. Make sure equipment (e.g. parts cleaning tanks and painting equipment) is working properly. Be sure to check for faulty valves or pipes to make certain that the product is not being lost from the system or unintentionally contaminated.

5. Ensure that all product and waste is inventoried, clearly labeled and properly stored. Inadequate labeling may make it hard to identify wastes later, and necessitate expensive testing prior to disposal. Proper labeling also helps to prevent contamination of materials. Improper storage can result in accidental contamination of a non-hazardous waste, which must then be disposed of through more expensive hazardous waste methods.

B. Material Substitution

Substituting non-hazardous or less hazardous products for hazardous materials you currently use can reduce or eliminate some hazardous waste streams. (For example, solvent-based, metal-containing paints have been replaced by non-metallic, water-based paints for many applications). As the demand for non-hazardous raw materials and products increases and a market develops, more non-hazardous alternatives will become available.

C. Waste Concentration

Some hazardous wastes contain such large volumes of water that transportation, treatment and disposal becomes impractical. Commercially available equipment such as sludge dryers or filter presses remove the water content of a pretreatment sludge, thus reducing the weight and volume of the hazardous waste requiring disposal.

D. Process Redesign/Modernization

Replacing existing machines with more efficient equipment for the same operation can significantly reduce waste generation. In the coating industry, for example, the replacement of conventional air-atomized spray paint equipment (transfer efficiency 30-60 percent) with more efficient electrostatic equipment (65-80 percent efficient) or powder coating equipment (90-99 percent efficient) results in a substantial reduction of waste.

E. Recycle/Reuse

Closer evaluation of the way wastes are handled can sometimes result in opportunities for recycling. For example, waste solvent from one operation may be clean enough to be used in a different application. Keeping waste streams separate can make it easier to reuse materials in other processes or reclaim materials from a waste. Small distillation units may be purchased to reclaim solvents on-site. Many wastes have potential for reclamation off-site. Waste exchange programs promote possibilities of linking companies generating waste with companies that can reclaim or use the spent materials.

ATTACHMENT 8



MINNESOTA AIR NATIONAL GUARD
HEADQUARTERS 133RD TACTICAL AIRLIFT WING (MAC)
MINNEAPOLIS - ST. PAUL IAP, MINNESOTA 55111-4098

EPY TO
FTN OF:

133AW/EMO (Lt Hubert)

22 July 1992

SUBJECT:

Waste Minimization on the 133 Airlift Base, MNANG

TO: Mr. Scott Elbers
Minnesota Army National Guard
Camp Ripley
Facilities Management Office
P.O. Box 348
Little Falls, MN 56345-0348

1. In reference to our conversation of 21 July 1992, the following is a list of waste minimization and pollution efforts currently being implemented at the 133 Airlift Wing Base of the Minnesota Air National Guard:

a. Freon Reclaimer: This unit was purchased for approximately \$8000.00 and is expected to eliminate Chlorofluorocarbon (CFC) emissions on the base.

b. PD-680 (Stoddard Solvent) Reclaimer: This unit was obtained in 1991 through USAF procurement and has reduced the amount of PD-680 disposal from 700-800 gal/yr to less than 200 gal/yr.

c. Silver Reclamation: Photographic negatives, paper, fixer and activator are all sent to a recycler to have their silver reclaimed.

d. Water-Based Parts Washers: Solvent-based parts washers in our aircraft and ground vehicle maintenance shops have been replaced with systems which use hot water and biodegradable detergent.

e. Used Oil/Filters: Used oil and oil filters are being recycled through a MPCA-approved contract.

2. Additionally, the following items are intended to be implemented as waste minimization efforts in the future:

a. Aircraft Deicing Process Change: Beginning in the FY93, the 133AW will replace ethylene glycol with propylene glycol for aircraft deicing. The base will also be implementing a new deicing process to reclaim a majority of the deicing fluid for recycling.

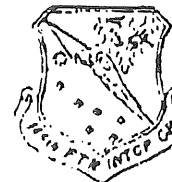
b. Bead Blasting Unit: A bead-blasting unit has been ordered through USAF procurement which will eliminate or significantly reduce the need for solvent-based paint stripping of aircraft parts.

3. If you have any questions or require any additional information, please contact me at DSN: 825-5038 or commercial (612)725-5038.

A handwritten signature in black ink, appearing to read "Loren M. Hubert", is located below the text of the letter.

LOREN M. HUBERT, 2Lt, MNANG
Environmental Program Manager

HEADQUARTERS 148TH FIGHTER INTERCEPTOR GROUP
MINNESOTA AIR NATIONAL GUARD
DULUTH INTERNATIONAL AIRPORT
DULUTH, MINNESOTA 55811-5000



27 May 1992

REPLY TO: 148TH FG/RMS/LGSME
ATTN OF: Duluth IAP, MN. 55811
SUBJECT: Pollution Prevention Program Execution

TO: ANGRC/CEVP (Mr. Robert Butler)
Andrews AFB MD. 20310

As per your message R 092100Z APR 92 the following equipment items are being submitted for consideration under the PPP priority funding program:

4330 01 140 5941	1 Ea	Waste Water Purification Sys.	\$ 9,400.00
4910 01 107 8161	1 Ea	Freon Reclaimer	3,300.00
4940 00 994 1803	1 Ea	leak Detector	500.00
4940 01 199 0568	1 Ea	Solvent Recovery Unit	14,300.00
4940 01 319 8800	1 Ea	Anti-Freeze recycler	5,000.00
4940 01 338 7138	3 Ea	Parts Cleaner	40,800.00
Total			\$73,300.00

Please see attached copies of AF form 2005's and DD form 1348-6 for requested NSN's.
POC at Duluth regarding validity of authorizations and requirements is MSgt. Magnuson, DSN 825-7237.

[Signature]
JOHN W. MAGNUSON, MSgt, MANG
Equipment Management Technician

See Attach: 1 AF 2005
2 DD 1348-6

*1 Sept - all
will be reviewed
Fickel notified
17 July 92*

A Proud Tradition

ATTACHMENT 9

August 10, 1992

INTERAGENCY AGREEMENT
BETWEEN
THE MINNESOTA OFFICE OF WASTE MANAGEMENT
AND
THE MINNESOTA DEPARTMENT OF MILITARY AFFAIRS

- A. This Interagency Agreement is entered into by and between the Minnesota Office of Waste Management (OWM) and the Minnesota Department of Military Affairs (DMA).
- B. In accordance with its statutory authority in Minn. Stat. Ch. 115D, the OWM is required to establish a pollution prevention assistance program to assist eligible recipients in preventing pollution. In addition, Governor's Executive Order 91-17 directs the OWM to provide assistance to state agencies in preventing pollution.
- C. Pursuant to Minnesota Statutes, Chapter 190, Military Forces, the Minnesota Department of Military Affairs (DMA) was established to support The Constitution of The United States and the State of Minnesota. The mission of the DMA is threefold: 1) To provide a ready military force; 2) To mobilize and deploy as directed by National Guard Authority to deter war and preserve peace; and 3) To mobilize and deploy as directed by the Governor to protect lives and property of citizens of Minnesota. In fulfilling this mission The Adjutant General is appointed by the Governor as trustee to ensure environmental protection and enhancement regarding DMA activities.
- D. In order to implement Governor's Executive Order 91-17, and because of its interest in preventing pollution, the DMA has applied to the OWM for pollution prevention funding for one project. The OWM Director intends to fund this project contingent on the signing of an interagency agreement between the DMA and the OWM.
- E. The proposed workplan and budget for the project follow as Attachment A which is made a part of this Interagency Agreement. The proposed project seeks to eliminate the use of chlorine in wastewater treatment at Camp Ripley.

NOW THEREFORE, The OWM and the DMA agree as follows:

1. This Interagency Agreement sets forth the tasks and obligations of the OWM and the DMA in implementing the project outline in Attachment A.

2. The OWM will award a total of \$15,000 to the DMA for Fiscal 1993 for the purpose of implementing the projects described in Attachment A.
3. The DMA agrees to:
 - a. Provide an in-kind match totaling \$50,000 or greater during Fiscal 1993 for the implementation of these projects.
 - b. Implement the specific activities and program elements as outlined in Attachment A.
 - c. Report and document work performed under this Interagency Agreement by keeping complete and accurate records of all dollars spent on this project, to be submitted to the OWM at the project's conclusion. This documentation should include, as appropriate:
 - 1) Daily timesheets submitted during normal pay periods;
 - 2) Invoices or supporting documents submitted by any sub-contractors;
 - 3) Request for Special Expense forms and Employee Expense forms for travel costs;
 - 4) Invoices for purchase of materials and equipment.
4. The OWM agrees to:
 - a. Provide technical assistance as needed for the implementation of the project.
 - b. Provide \$15,000 in funding to DMA within 30 Days of the signing of this Interagency Agreement.
5. The OWM and the DMA shall each appoint liaisons to coordinate activities conducted under this Interagency Agreement. The OWM liaison is Paul Moss; the DMA liaison is Marty Skoglund.
6. This agreement shall be effective when signed by the Director of the Office of Waste Management, the Adjutant General of the Department of Military Affairs, the Attorney General, the Commissioner of the Department of Administration, and the Commissioner of the Department of Finance and shall remain in effect until June 30, 1993.

Attachment A

Project Title: Chlorine Project

Project Description: Camp Ripley is currently operating a wastewater treatment facility which has been recognized by the Minnesota Pollution Control Agency for its outstanding performance for eight (8) consecutive years. The facility is operated in accordance with a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permit will expire on March 31, 1995. In order to renew the permit the effluent discharge must be improved in terms of a reduction in the concentration of residual chlorine.

Chlorine disinfection is the current method employed at the facility to control bacteria. This requires approximately 500 pounds of Chlorine per year. The residual chlorine resulting from this method of disinfection must be reduced to 0.1 mg/l by March 31, 1995. However, in order to accomplish a reduction to the permissible level the injection of another chemical (sulfur dioxide) is required.

The proposal calls for installing an alternative disinfection technique using Ultraviolet (UV) Light. The UV system can be incorporated into the treatment system and thereby eliminate further use of chlorine.

In order to proceed with the project the Minnesota Pollution Control Agency requires that the proposal be designed and certified by a registered professional engineer. This will require design fees in addition to equipment and installation fees.

Implementation Schedule:

<u>Task</u>	<u>Schedule</u>	<u>Cost</u>
1. Solicit proposals for engineering services	August 1992	----
2. Complete engineering and design	December 1992	\$15,000.00
3. Purchase UV system equipment	February 1993	\$40,000.00
4. Present interim report to the Interagency Pollution Prevention Advisory Team and the Pollution Prevention Task Force.	March 1993	----

In witness hereof, the parties have executed this agreement by their appropriate officers. APPROVED:

Adjutant General
Department of Military Affairs

Date

Director
Office of Waste Management

Date

Attorney General
State of Minnesota

Date

Commissioner
Department of Administration

Date

Commissioner
Department of Finance

Date

<u>Task</u>	<u>Schedule</u>	<u>Cost</u>
5. Install UV system	April 1993 to June 1993	\$10,000.00
6. Initiate monitoring of the UV disinfection system	May 1993	----
7. Present final report to the Interagency Pollution Prevention Advisory Team and the Pollution Prevention Task Force.	June 1993	----
8. Conduct routine monitoring of the UV disinfection system	Ongoing	----

Total \$65,000.00

Budget: As outlined above the total estimated cost for the proposal is \$65,000. Of this amount, the Minnesota Department of Military Affairs will be responsible for \$50,000 whereas the remaining \$15,000 will be secured as a Pollution Prevention Grant. The total cost including all in-kind expenses will be monitored and presented in the final report.

POLLUTION PREVENTION SUMMARY REPORT

Submitted on June 30, 1992 by:

Minnesota Department of Public Safety

TO:

Minnesota Office of Waste Management

On September 16, 1991, Governor Carlson signed Executive Order 91-17 which provided for the implementation of pollution prevention by state government. The order established an Interagency Pollution Prevention Advisory Team (IPPAT) consisting of representatives from over twenty state agencies and departments.

The Minnesota Department of Public Safety is represented by Steve Tomlyanovich, a Pollution Control Specialist with the Emergency Response Commission.

The Department of Public Safety has a very limited usage of toxic chemicals. The State Patrol, for example, does not have any vehicle maintenance or repair facilities of its own. All maintenance is handled through dealer service departments, Minnesota Department of Transportation Maintenance Shops, and local vendors such as service stations.

The Bureau of Criminal Apprehension (BCA) uses a variety of chemicals in its Forensic Science Laboratory. BCA staff have informed the Department of Public Safety that in recent years they have reduced the amount of waste being generated. Currently, less than twenty gallons of hazardous waste is generated in the lab on an annual basis. The BCA is licensed as a hazardous waste generator with Ramsey County and all waste is disposed of in a proper manner. Due to the complexity and variety of tests being run on a yearly basis, it will be extremely difficult to reduce the chemical usage or waste generation any further.

The BCA was interested in finding a way to properly manage wastes collected during the seizure of illegal drug labs. The Department of Public Safety applied for grant funding available through the Minnesota Office of Waste Management (Appendix A). The proposal was rejected because it did not meet the evaluation criteria. It is unknown at this time if the BCA will proceed with the project without any funding source.

The Department of Public Safety is limited in its pollution prevention opportunities. It will continue to explore all relevant opportunities in this area.

APPENDIX A

POLLUTION PREVENTION GRANTS TO STATE AGENCIES AND DEPARTMENTS

Submitted on April 20, 1992 by:

Minnesota Department of Public Safety

TO:

Minnesota Office of Waste Management

Section A: General Information

Project Managers:

Betty Rogers
Training and Safety Coordinator
Department of Public Safety
Bureau of Criminal Apprehension
1246 University Avenue
St. Paul, MN 55104
(612) 642-0700

Steve Tomlyanovich
Pollution Control Specialist
Department of Public Safety
Emergency Response Commission
175 Bigelow Building
450 North Syndicate Street
St. Paul, MN 55104
(612) 643-3542

Section B: Project Description

The Minnesota Bureau of Criminal Apprehension (BCA), in cooperation with the federal Drug Enforcement Administration (DEA), conducts criminal enforcement investigations on homes, businesses, and other establishments suspected of producing illegal drugs. The production of these drugs for sale and distribution involves a series of chemical processing steps. Chemicals used in the drug purification process pose a potential hazard to law enforcement personnel investigating these "drug labs". In addition, improper disposal can result in damage to the environment and risk to the community. For example, a recent case involved the disposal of waste chemicals into a septic system. Remediation of the site has been estimated at \$200,000.

The BCA, with assistance from the Emergency Response Commission (ERC), will develop a strategy to be used by all law enforcement personnel in the state to properly manage these chemicals. The closing of these labs will reduce the generation and improper disposal of hazardous waste and toxic chemicals. Waste that is recovered at the labs must be properly managed according to federal and state law. This will be accomplished through a hazardous waste management plan and waste exchange for usable product.

Currently, the DEA uses their own personnel to inspect, package, and arrange for transportation and disposal of the seized chemicals. This situation could change in the future with states assuming these responsibilities. This is already the case in the state of California. This project will assist the state of Minnesota in preparing itself for some of the related funding and legal issues it may face in the future.

In order to successfully complete this project, the following tasks will have to be accomplished:

- * Gather information on the types of chemicals used in these labs, the volumes expected at the time of seizure, and the type and condition of the containers at the time of seizure.
- * Work with other state agencies to acquire lists of hazardous waste transporters and disposal companies. In addition, develop a waste exchange program for usable product.
- * Develop a database to track precursor chemicals. This database would track those chemicals typically used in the drug trade from the suppliers to the ultimate customer. This source reduction effort will restrict the amount of chemicals reaching these labs. The BCA will work with the DEA to incorporate DEA's current data management system into its own.
- * Develop fact sheets and a training manual to be used by state agencies, county health departments, housing inspectors, fire departments, and law enforcement personnel.
- * Conduct training throughout the state.
- * Complete and publish a final report.

Section C: Implementation Schedule

* Information gathering	July 1992 - August 1992
* Lists/waste exchange	July 1992 - August 1992
* Develop database	July 1992 - June 1993
* Develop fact sheets/manual	Sept. 1992 - January 1993
* Conduct training	Jan. 1993 - June 1993
* Final report	June 1993 - July 1993

Section D: Proposed Budget

<u>Cost Category</u>	<u>Totals</u>	<u>OWM Share</u>	<u>Match</u>
Labor	\$8,500	\$6,500	\$2,000 (Public Safety)
Travel	\$1,500	\$1,500	
Equipment (Software)	\$1,000	\$1,000	
Supplies	\$3,000	\$3,000	
Other (Training Facilities)	\$1,000	\$1,000	
Totals:	\$15,000	\$13,000	\$2,000



MINNESOTA
Department of
Public Service

790 American Center
150 East Kellogg Boulevard
St. Paul, Minnesota 55101-1496
(612) 296-7107
FAX (612) 297-1959

July 1, 1992

Paul Moss
Office of Waste Management
1350 Energy Lane
St. Paul, Minnesota 55108



Dear Mr. Moss:

In accordance with Executive Order 91-17 and Minn. Stat. 115D, I am providing the Department of Public Service's first annual Pollution Prevention Report. As you can tell from the report, protecting the environment is an important part of our mission and a central goal of many DPS programs and activities.

If you need more information about our efforts to reduce environmental pollution or any of the activities described in the report, please contact Karen Santori at 296-0391.

Sincerely,


KRIS SANDA
COMMISSIONER

KS/CG/jl
Enclosure
c: Chris Gilchrist

POLLUTION PREVENTION REPORT

POLICY STATEMENT/INTRODUCTION

At the Department of Public Service, protecting the environment is a high priority. We provide leadership in developing, advocating and implementing equitable cost-effective policies regarding energy, telecommunications and standard for weights and measures. In the area of energy policy, protection of the environment through reduction of pollution associated with traditional energy use is a major goal of the Department. We are also pledged to lead by example by reducing energy use, the use of toxic pollutants and the generation of hazardous waste in our own Department.

In accordance with Executive Order 91-17 providing for implementation of pollution prevention by state government, and in conjunction with the Minnesota Toxic Pollution Prevention Act (MS 115D) specifying that it is state policy to encourage pollution prevention, the Department submits its annual pollution prevention report.

Recent Department activities to reduce generation of hazardous waste and use of toxic chemicals are presented in three major program areas: Energy Programs, Regulatory Programs, and Weights and Measures.

ENERGY PROGRAMS

The Energy Division has undertaken numerous projects to promote awareness of the environmental consequences of energy use, promote energy conservation and increase use of alternate forms of energy.

Photovoltaics Study

The Department recently completed a legislatively-mandated study of potential markets within the state for photovoltaic devices. A photovoltaic cell is a semi-conductor device that converts sunlight into direct current electricity. Cells can be combined to produce power for an application. The solar generated electricity is frequently stored in batteries for use during non-solar periods.

The study identified nine major applications for photovoltaics within Minnesota state government. All of these uses provide a cost-effective, non-polluting and renewable energy source without increasing demand for electricity or use of another fuel. A listing of these applications is provided below:

1. lighting for 300 public accesses to Minnesota lakes and waterways
2. lighting for state maintained cross country ski trails
3. lighting for buildings within state parks (restrooms, equipment facilities, picnic shelters, etc.)
4. traffic warning arrow boards
5. telecommunication repeating stations

6. emergency call boxes
7. water level monitoring stations
8. battery charging of seasonal use vehicles (snow plows, snow blowers, road repair vehicles and mowers)
9. battery charging of military vehicles

Building Code Energy Conservation Measures

As required by the 1991 legislature, the Department reviewed the energy code section of the building code as it pertains to the energy use of public buildings. Our findings indicate that greater efforts need to be made to inform architects, designers, and building officials of energy code provisions and implementation techniques. In areas where compliance is not met, there needs to be established a system to ensure enforcement. The report indicates that there is the potential to increase the efficiency of energy use in these buildings by 25 percent. DPS is actively working with the Department of Administration, and various professional organizations and associations to improve information availability, thus increasing the use of proven energy saving practices.

Grant and Loan Program for Schools and Local Government Buildings

This program helps schools and local governments finance measures that increase energy efficiency in buildings, thereby reducing pollution associated with traditional energy use. Department Staff estimate that the program saves Minnesotans an estimated \$4.5 million per year in energy costs.

Carbon Tax

The Minnesota Legislature directed the Department of Public Service to study the need for and impact of a tax ranging from \$1 to \$75 per ton of carbon emissions. The study considered the effect of a tax on the sources and use of energy in the state and on the economy of the state.

Preliminary findings conclude that a \$75 per ton tax on carbon emissions beginning in 1993 would reduce annual emissions in 2010 by 18 percent. Nonetheless, the reduced 2010 emissions would be 15 percent higher than the current emissions.

The study found that, in addition to reducing carbon emissions, a tax would also reduce other pollutants, most notably sulfur dioxide, and a \$75 per ton carbon tax would reduce energy consumption in Minnesota by roughly 13 percent per year. The economic findings show that a \$75 per ton tax would lower Minnesota's Gross State Product by about 2.6 percent by the year 2010, with the most significant impact on the chemical, paper and primary metals industries.

REGULATORY PROGRAMS

Working within the guidelines established by the legislature, the Department's regulatory programs balance various directives ranging from the conservation of resources to establishing and ensuring reasonable rates for service by regulated public utilities.

Conservation Improvement Programs

The Minnesota Legislature requires all natural gas and electric public utilities to invest in programs designed to reduce energy use. Electric utilities must spend 1.5 percent of annual revenues and natural gas utilities must spend 0.5 percent of annual revenues on these Conservation Improvement Programs (CIP). The programs include a variety of activities, including rebates on energy lighting, low-interest loans for replacing industrial motors, and home energy audits. The Department is responsible for reviewing and approving these programs. As a result of these programs, energy use and resulting air pollution are reduced. For example, since 1990, Northern States Power's CIP efforts have saved 385,885 Megawatt-hours of electricity and reduced carbon dioxide emissions by 290,000 tons, sulfur dioxide emissions by 535 tons, nitrogen oxide by 267 tons, and mercury by 182 pounds.

Integrated Resource Planning

The state's four largest electric utilities are required to submit resource plans that include:

- a demand forecast.
- a plan for meeting the needs of its customers that considers all resources, including measures to reduce demand.
- information to support the chosen plan over other options for meeting customers needs.

The process is structured to allow all parties -- utilities, regulators, ratepayers and others -- to express their views. The Department of Public Service reviews these resource plans, noting particularly whether the plans accurately estimate the full cost of future supplies -- including environmental costs -- and whether they consider all conservation potential and the possible role for renewable energy resources. The Department publicly comments on these plans.

Integrated Resource Planning ensures that conservation and renewable resources are accurately and adequately considered in future resource selection and provides all interested parties the opportunity to express views while there is time to modify the plan without high cost to the utility or its ratepayers.

Funding the Clean-Up of Manufactured Gas Sites

The Department is working with gas utilities to enable them to clean-up contaminated soil resulting from the manufacturing of natural gas from coal in the early 1900s. Although the manufacturing of gas ended in 1950, this clean-up is needed to prevent further soil and ground water contamination.

NSP's Request to Increase Nuclear Storage Capacity at Prairie Island

The Department recommended the Public Utilities Commission limit NSP's request and allow them to store 14 casks, enough to store nuclear waste only until the year 2000. The company's request sought permission for 48 additional casks, sufficient for handling waste until the year 2020. Studies conducted by the Department indicate a far greater potential for reducing energy demand through conservation than NSP recognized in its request. Increased investment in conservation would place us in a better position in the future, should we find the risks of continued operation of Prairie Island are too great.

WEIGHTS AND MEASURES DIVISION

The Weights and Measures Division of the Department of Public Service inspects approximately 4,000 gasoline and fuel oil outlets annually. The inspections include tests on petroleum storage tanks. The division inspectors test for possible water and foreign sediment contamination in these storage tanks. The sale of petroleum products containing this type of contamination is prohibited.

The inspections result in the removal of approximately 400 storage tanks a year. The contaminated product is considered a hazardous waste. The investigators also issue warnings of possible contamination of petroleum products caused by poorly designed or maintained storage tanks to approximately 500 locations a year.

At this time, requests for contaminated product removal, tank maintenance, and the need to dispose of product properly are received orally and in writing. The Department has been awarded a grant from the Office of Waste Management to prepare a pamphlet giving detailed information on the proper removal of the contaminated product and on tank maintenance and design to prevent future contamination.

Distribution of this pamphlet is expected in October 1992. The Department will expect to see a drop in the number of locations that must dispose of contaminated petroleum in 1993.

The Weights and Measures Division tests samples of fuel collected from various refineries. Sample sizes have been cut to reduce the product necessary for disposal. Some of the samples are added to the tanks of the Weights and Measures fleet of vehicles and the remainder is returned to the refinery. Fuel that is returned is added to the overflow product at the refinery and is typically returned for further processing.

Oil Recycling

Weights and Measures Division, working with the Pollution Control Agency, posts information for consumers regarding proper disposal sites for waste oil. This activity increases the collection of waste oil and reduces the chance that oil will become a hazardous waste.

Oxygenated Fuels Program

Provisions of the Federal Clean Air Act will require that oxygenated blended gasoline be sold in the ten county metropolitan area and St. Louis County starting November 1, 1992. Refiners will blend ethanol into their gasoline to reduce carbon monoxide emissions. The Weights and Measures Division will be responsible for enforcement of the program. DPS will work cooperatively with the Pollution Control Agency and the Departments of Agriculture and Transportation to inform the public about the environmental benefits of using oxygenated fuels.

INTERNAL DEPARTMENT ACTIVITY

The Department has actively pursued the goal of reducing office-generated waste. By receiving strong management support, the DPS Recycling Committee has ensured that the Department meets or exceeds all recycling standards for state agencies. The Department presently recycles beverage cans, glass, plastic, batteries, laser toner cartridges and several grades of paper. In addition, DPS serves as an active member of the inter-agency recycling coordinators task force. This group provides valuable feedback on the effectiveness of the state's recycling program, as well as technical assistance in implementing new and innovative programs.

PLANS FOR THE FUTURE

Regarding regulatory policy, the Department will continue to advocate positions that evaluate resource options based on their social costs. Although these costs are difficult to estimate, any plan that attempts to maximize societal welfare is incomplete without them.

The Department will continue to be active in programs that promote energy conservation and renewable resources throughout the state and in our own Department and other state agencies. We will continue to lead the Energy/Environmental Planning effort, a major interagency initiative to conserve energy throughout state government.

The Department will make major energy policy recommendations to the Legislature in its Report to the Legislature in its Quadrennial Report to the legislature this year. It is expected that several specific programs will be designed and implemented to achieve these recommendations.



Minnesota Department of Transportation

Transportation Building, St. Paul, MN 55155

June 25, 1992

Ms. Laurie Hutchinson
Minnesota Office of Waste Management
1350 Energy Lane
St. Paul, Minnesota 55108

Dear Ms. Hutchinson:

Enclosed find the First Annual Pollution Prevention Summary Report submitted by the Minnesota Department of Transportation. As you will note, no formal policy statement is included. A formal policy statement is currently being developed and is expected to be released in the near future. We will forward a copy of the policy to your office as soon as it has been issued.

As you know, Mn/DOT has been an active participant in the Pollution Prevention Task Force, as well as participating in the Interagency Pollution Prevention Advisory Team (IPPAT), formed by the Governor's Executive Order.

We believe that the IPPAT has made substantial progress in defining a charge and mission over the last several months. Over the course of the next year and beyond, Mn/DOT and other state agencies will continue this good beginning. Pollution Prevention is really more an attitude and orientation than a discrete program. As a result, we are confident that as pollution prevention is increasingly integrated into the thought process at Mn/DOT, more and more ways of preventing pollution will be discovered and implemented.

Yours truly,

John E. Sandahl
Assistant Commissioner
Engineering Services Division

Enclosures

JES:gl:hs

Minnesota Department of Transportation
Pollution Prevention Summary Report
First Annual Report
July 1, 1992

This report is submitted pursuant to State of Minnesota Executive Order 91-17, providing for the implementation of pollution prevention by state government, signed by Governor Arne Carlson September 16, 1991. Part 6 of that order states:

State agencies, subject to (4) and (5) above, shall prepare summary reports annually on their progress in prevention pollution with the first reports to be completed by July 1, 1992. At a minimum, these reports shall include a description of steps taken to integrate pollution prevention into agency activities, a summary of plans for future activities for prevention pollution, and an estimate of environmental and economic benefits, when applicable, which have resulted from preventing pollution.

Pursuant to the Executive Order, Mn/DOT has been a participating member of the Interagency Pollution Prevention Advisory Team (IPPAT) since its inception. The agency members of this team have made significant progress in identifying ways through which the goals of the Executive Order may be reached.

To meet the goals of the Executive Order, the Minnesota Department of Transportation has undertaken a number of acts to reduce the generation and/or use of pollutants.

Mn/DOT has two sign shops, one in Detroit Lakes and one in Oakdale. Each of these shops has used substantial amounts of methyl ethyl ketone (mek) as a solvent. The mek is used in cleaning the silk screens used in the traffic sign production process. In the past 10 months Mn/DOT has halted the use of mek as a solvent in these shops. A citrus based solvent is being employed and is undergoing evaluation at this time.

In the paint striping area, Mn/DOT has recently undertaken a number of pollution prevention measures. Mn/DOT constituted a "Striping Task Force" to consider this, and other striping issues, within MN/DOT. The work of the striping task force has been completed. Toluene is used as a constituent of road alkyd and rubber based striping paints. It is also used as a solvent and thinner for these paints. The pollution prevention recommendations of this task force are as follows:

1. **The use of alkyd and rubber based paints should be phased out.** Latex striping paint should replace these paints. One Mn/DOT district is currently using 100% latex paints.
2. **Mn/DOT should convert to "airless" paint guns.** These spray guns use substantially less solvent. We believe this will reduce toluene use within Mn/DOT by a significant amount. A comparison between one district now using airless guns and one still using air paint sprayers shows that the airless district used at least 1,000 gallons less solvent than did the air district in a year.
3. **Mn/DOT should request the legislature to allow Mn/DOT to spend higher amounts of initial capital which would be required to use yellow striping paint which does not contain heavy metals.**

Mn/DOT is testing parts washers which do not use chlorinated solvents and therefore reduce both the volumes of hazardous materials used and those disposed of as waste.

Mn/DOT has developed a "Hazardous Waste Taskforce" to develop a more formal hazardous waste management structure.

Staff have not yet identified ways in which pollution prevention may be encouraged through our purchasing policies or specifications. This shall be a priority for the upcoming year, as it has the potential for pollution prevention benefits.

Future Activities

Mn/DOT is committed to eliminate or reduce at the source the use, generation, or release of toxic pollutants, hazardous substances, and hazardous wastes in agency activities. This will be accomplished through ongoing activities and efforts to identify sources of hazardous materials and wastes and to identify ways through which their use can be minimized or eliminated.

Environmental and Economic Benefits

Environmental

The principal environmental benefit from activities to date will be the change in solvent and/or reduction of waste solvent and heavy metals. Solvent often enters the environment through the evaporative process, with resulting impacts to air quality. Heavy metals enter the environment through paint abrasion, wear, and equipment cleaning, and all may impact soils and water quality. Alternatively, shipping spent solvent and heavy metals to a hazardous waste handling facility still results in a potential environmental liability.

Economic

Reducing the magnitude of hazardous and/or toxic materials used and/or shipped will have economic benefits to Mn/DOT. Shipping these materials to a licensed facility is in itself expensive, and carries with it a future economic liability in the case that the receiving facility has subsequent environmental problems. There may be short term economic cost increases, but we are confident that the long term benefits will outweigh these costs.

Minnesota Pollution Control Agency (MPCA)
Pollution Prevention (P2) Summary Report
July 1, 1992

I. Steps Taken to Integrate P2 into Agency Activities

A. Policy Statement - Attached Policy Statement was adopted by the P2 Staff Team in November of 1991.

B. Activities Undertaken to Reduce Generation of Hazardous Wastes and Use of Toxic Chemicals - Not Applicable. Our activity is primarily field inspections and office work. The agency's use of hazardous chemicals is quite minimal. Vehicle maintenance is provided by Central Motor Pool or other state facilities. We do no manufacturing, other industrial type activity, or spraying of chemicals.

C. Efforts to Integrate P2 into Regulatory and Policy Activities

1. Progress Reports - The MPCA has primary responsibility for implementing the regulatory aspects of the Toxic Pollution Prevention Act (TPPA) of 1990. As such, the MPCA will review Progress Reports submitted annually on 1 October by facilities that are required to prepare P2 plans.

a. MPCA has developed a recommended P2 Progress Report form, instructions to accompany the form, and a draft "Citizen's Q & A" intended to assist members of the public in understanding their options as related to the provisions of the TPPA. These documents have been distributed to the P2 task force. A fourth document, a "Q & A" for persons filling out the P2 Progress Report, will be completed in early July. All documents will be distributed to the list of TRI reporters in early July.

b. MPCA has participated in eight MnTAP training workshops and in two briefing sessions held during the Second Annual P2 Conference. These workshops provided information as to P2 Progress Report requirements.

2. MPCA established the P2 Staff Team in October of 1990

The P2 Staff Team (P2ST) consists at minimum of one senior professional employee and one program manager from each division of the Agency. Composition can vary as a function of ongoing projects or issues, with staff members being added as the situation justifies it. The P2ST advises the P2 Program Coordinator regarding matters pertaining to the implementation of the TPPA and the integration of P2 strategies into the regulatory fabric of the MPCA. P2ST Meetings are open to other agency personnel, and have been attended by representatives of MnTAP, OWM, and the Western Lake Superior Sanitary District (WLSSD).

3. The Lake Superior Partnership

The P2ST Initiated planning in late 1990 for what later became the

Lake Superior Partnership Multimedia/P2 Inspection Program. The inspection program is a coordinated inspection by the Western Lake Superior Sanitary District and the four program divisions of the MPCA. Inspected facilities include several major manufacturing facilities in the Duluth area, including a kraft pulp mill, a super-calendar paper mill, a chemical manufacturer, a tool manufacturer, a machinery manufacturer, a steam generation plant, and manufacturers of hardboard, matches, and ceiling tile.

4. The staff team has devised a P2 policy (attached) for dissemination to the entire agency.

D. Efforts to Investigate Opportunities to Encourage P2 through Purchasing Policies

1. The MPCA is completing a relamping of its Central Office facility with higher efficiency fluorescent bulbs.
2. All office paper is now recycled paper, as is all copy machine paper.
3. The MPCA strongly encourages bicycle commuting and car-pooling.

II. Summarize Plans for Future Activities

A. Steps to Implement P2 in Agency Activities - The activities described above will continue.

B. Steps to Encourage Implementation of P2 through Agency Regulatory Activities - The MPCA expects to continue its present activities. The Agency will develop training materials and guidelines for implementation to enable staff to incorporate P2 strategies into permitting and enforcement activities. The Multimedia Inspection Program will be extended to other industries and areas of the state.

C. Steps to Investigate Opportunities to Encourage P2 through Purchasing Policies

1. The MPCA is interested in obtaining information regarding toxicity and life cycle accounting of items which it purchases. The MPCA encourages the development of this information by the Department of Administration and other appropriate agencies.
2. The MPCA would support the inclusion of purchasing information in subsequent training programs offered by OWM and MntAP.

III. Estimate Environmental Benefits - The amount of pollution prevented as a direct result of Minnesota's TPPA is exceedingly difficult to document. While the TRI showed a significant decrease between 1989 and 1990, it is impossible to distinguish between economic pressures of the recession and real P2. Moreover, the significance of any reduction to environmental quality will be dependent on the toxicity and environmental fate of the pollutants in question. Information pertaining to this issue is presently not readily available.

THE ROLE OF POLLUTION PREVENTION AT THE MINNESOTA POLLUTION CONTROL AGENCY

Pollution prevention is defined in the Toxic Pollution Prevention Act (TPPA) of 1990 as "eliminating or reducing at the source the use, generation, or release of toxic pollutants, hazardous substances, and hazardous waste." Pollution prevention is a technique which can and should be applied as well to pollutants which are not toxic or hazardous. The term "waste reduction" has been used synonymously with pollution prevention. Methods of pollution prevention (P2) include industrial process modification, feedstock or ingredient substitution, housekeeping and management practices, and improved efficiency in machinery. The preferred means of pollution prevention are techniques and processes that minimize the transfer of toxic pollutants from one environmental medium to another.

For society as a whole, pollution prevention is the preferred technique in a hierarchy of environmental protection which includes pollution prevention, recycling and reuse, treatment, and disposal. It makes sense to avoid pollution by not using a toxic substance in the manufacturing process, rather than expending dollars and time controlling a pollutant after the fact.

For regulatory agencies like the MPCA, pollution prevention is one of several tools available to implement the main objective, environmental protection. Pollution prevention can be enhanced if integrated into the existing regulatory system, and the regulatory system will be substantially improved if it enables and incorporates pollution prevention principles. It is also essential that existing regulatory activities incorporate a heightened awareness of the potential for cross media transfer of pollutants.

It is the policy of the Minnesota Pollution Control Agency that pollution prevention principles will be integrated as fully as possible into the Agency's programs of environmental review, permit issuance, facility inspection, enforcement, and rules promulgation.

INTEGRATION OF POLLUTION PREVENTION INTO THE EXISTING PROGRAMS OF THE MPCA.

ENVIRONMENTAL REVIEW

1. Environmental Assessment Worksheets (EAWs) should include an assessment of potential or actual cross media transfers associated with projects. EAWs should also include an identification of opportunities for implementation of P2 strategies.
2. Environmental Impact Statements (EISs) should include an evaluation of alternative techniques and processes which will result in the reduction or prevention of the generation of pollution at the source. A recent example of this is consideration of alternative pulpwood bleaching processes which is occurring during the preparation of the EIS on the Potlatch Paper mill Expansion

PERMITTING

1. Permit applications should be reviewed in the context of cross media impacts and potential opportunities for pollution prevention.
2. Permits should be drafted, where applicable, to encourage and allow for use of pollution prevention strategies to meet existing regulatory requirements. Where pollution prevention techniques are being proposed to achieve compliance at a facility, compliance schedules may allow additional time for implementation, especially if the technique is expected to result in permanent reductions below existing compliance levels.
3. Further, permitting staff should encourage and allow for planning and implementation of pollution prevention strategies which will result in reductions of emissions beyond those levels required to attain compliance with existing regulations. Permits may be negotiated to include compliance with pollution prevention goals.

INSPECTION

1. Facility inspections by respective divisions should be coordinated where such coordination is appropriate. Inspections should include an identification and assessment of existing or potential cross media transfers of pollution. If cross media transfers are identified, coordination between effected divisions will be required.
2. Facility inspections should include the assessment of opportunities for the facility to implement pollution prevention strategies, and inspectors should suggest areas where pollution prevention might be further investigated. At the very minimum, inspectors should inform operators about the services of the Minnesota Technical Assistance Program (MnTAP).

ENFORCEMENT

1. Enforcement actions undertaken by the Agency should reflect a multimedia perspective. Where cross media transfer issues have been identified, coordination of enforcement settlements between respective Divisions will be required.
2. Enforcement settlements (negotiated stipulation agreements, consent orders or

consent decrees) should, where appropriate, include pollution prevention planning and implementation as part of the compliance schedule. Where pollution prevention techniques are being proposed to achieve compliance at a facility; compliance schedules may allow additional time for implementation, especially if the technique is expected to result in permanent reductions below existing compliance levels. Settlement agreements may also provide for stipulated penalties in the event the violation is not ultimately corrected or the compliance schedule is exceeded.

RULES PROMULGATION

All current and future agency rules developments or amendments should reflect pollution prevention goals. Rules should be drafted so as to:

1. discourage cross-media transfer of pollutants. Coordination with all Divisions should be accomplished early in the process of rules promulgation to assure that cross-media impacts will not result; and
2. assure that pollution prevention strategies are not precluded as a result to the rule.

Rules may include requirements for mandatory pollution prevention planning. An example would be the requirement for the identification of mercury sources in the draft municipal solid waste combustor rules.

The rules of the Environmental Review Program should be revised to include a requirement to evaluate potential cross media impacts as well as pollution prevention opportunities in connection with a process.

Some existing rules may require revision to allow greater application of pollution prevention strategies.

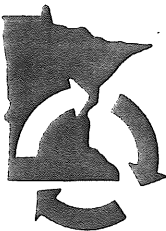
INSTITUTIONALIZING POLLUTION PREVENTION

The above objectives will need to be institutionalized throughout the Agency. Training of staff will be necessary to allow them to note during inspections, permit reviews, and environmental review where opportunities for pollution prevention might be further explored. Revisions of job descriptions, procedures and checklists, and forms may be required. It may be appropriate to devise performance indicators which emphasize pollution prevention.

Moreover, it will be highly desirable to develop indicators to measure program success. One such indicator will be the number of inspections, permits, and enforcement actions which have included multimedia/pollution prevention aspects. Another indication of program success might be the reduction in Toxic Chemical Release Inventory (TRI) reported releases as adjusted to reflect any changes in production volumes. Ultimately, success of pollution prevention and environmental protection efforts in general must be measured by the elimination of discharges of toxic substances and other pollutants to the environment.

Endorsement of pollution prevention goals does not imply a mandate for unquestioning implementation of pollution prevention. Incorporation of pollution prevention strategies into enforcement settlements and permits should be done in a manner consistent with existing rules. The inclusion of specific conditions or extension of compliance schedules is subject to negotiation

between staff and regulated parties, and it will depend upon the staff's assessment of the ability and willingness of the regulated party to achieve compliance.



1350 Energy Lane
St. Paul, Minnesota 55108
(612) 649-5750
MN Toll Free
1-800-652-9747

Pollution Prevention Policy Statement

The Minnesota Office of Waste Management (OWM) is committed to excellence and leadership in protecting the environment. In keeping with this policy, it is the responsibility of all OWM staff to encourage prevention of generation of wastes and pollutants at the source. By preventing wastes and pollutants at their source of generation, significant environmental and economic benefits can be realized.

OWM will:

- give priority consideration to source reduction strategies in its policies and programs.

- identify opportunities to further minimize its impact on the environment through energy and water conservation, car pooling, procurement and purchasing activities, and excellence in preventing waste and use of toxic chemicals.

OWM seeks to promote cooperation and partnerships with others who share these goals in carrying out this policy statement.

Dottie Rietow
Director

Minnesota Office of Waste Management

Pollution Prevention Summary Report

July 1, 1992

PURPOSE: Governor Carlson's Executive Order 91-17 directs state agencies and departments, including the Minnesota Office of Waste Management (OWM), to prepare annual summary reports. These reports should summarize efforts to prevent pollution. Through its policies and programs, OWM can positively contribute to preventing pollution at its source.

I. STEPS TO INTEGRATE POLLUTION PREVENTION INTO AGENCY ACTIVITIES

A. Development of policy statement (see attachment)

B. Activities to date

1. OWM helped pass the Minnesota Toxic Pollution Prevention Act of 1990. This new state law establishes a strong framework for pollution prevention programs in Minnesota. The law promotes preventative strategies to environmental protection by emphasizing multi-media efforts to stop toxic pollutants from being generated in the first place.

Program and activities include: the Minnesota Technical Assistance Program (MnTAP), an annual conference on pollution prevention, seminars and workshops, a federal "Pollution Prevention Incentives for States" project on air toxics, and annual Governor's Awards for Excellence in Pollution Prevention.

OWM is building partnerships to prevent pollution. These include a special "Pollution Prevention Task Force" involving representatives from all of Minnesota's program stakeholders (e.g., industry, environmental and citizen groups, labor) and the Minnesota-50 Project, Minnesota's implementation of the U.S. Environmental Protection Agency's 33/50 Program.

In 1991, OWM worked in partnership with other state agencies and the Governor office to develop Executive Order 91-17. OWM chairs the Interagency Pollution Prevention Advisory Team created by the order.

OWM is actively integrating source reduction strategies into its solid waste policies and programs. Activities include grants for solid waste source reduction projects, technical assistance for source reduction activities, consumer education, and creation of a special video on solid waste reduction. Case studies of successful source reduction projects have been developed and the OWM is actively pursuing source reduction strategies for emerging problem material issues.

2. OWM has in place several teams to advance the integration of source reduction into its policies and programs. Three special source reduction teams in the areas of solid waste, problem materials and industrial pollution have been active over the past several years. Major activities include:

Solid Waste: Development of proposed new state policies for advancing the importance of source reduction as a strategy in addressing Minnesota's solid waste management problem;

Problem Material: Identification of source reduction as the preferred means of addressing management of problem materials that present environmental and safety concerns during the management of municipal solid wastes; and

Pollution Prevention: Major achievements in implementing the Minnesota Toxic Pollution Prevention Act and development of new policies and programs to advance Minnesota's efforts in preventing pollution at its source.

II. PLANS FOR FUTURE ACTIVITIES TO PREVENT POLLUTION

1. Pollution Prevention: Future plans include recommendations to the Minnesota Legislature regarding future directions for advancing pollution prevention in the state (mandated Pollution Prevention Evaluation and Toxic Pollutant Use Reports due December 15, 1992, and January 1, 1993, respectively). Other major activities include sponsoring Third Annual Minnesota Conference on Pollution Prevention, administration of the Governor's Awards for Excellence in Pollution Prevention program, and management of the Minnesota-50 Project.

2. Solid Waste: OWM is responsible for development of the state's Solid Waste Policy Report. This legislative report will make strong recommendations to significantly increase activities to promote and achieve source reduction of solid wastes generated in Minnesota.

3. Problem Materials: OWM's problem material staff have placed priority attention on source reduction as the preferred means of addressing problem materials in the solid waste stream. Problem material staff are developing policy recommendations that emphasize source reduction and program implementation activities will be carried out in a manner that promotes source reduction.

III. ESTIMATE ENVIRONMENTAL AND ECONOMIC BENEFITS

OWM is convinced that pollution prevention is the most environmentally and economically beneficial strategy to employ through its policies and programs. Numerous program evaluation and project case studies underscore the significant benefits

achieved through the implementation of source reduction activities. OWM seeks to quantify on a project-by-project and program-level basis the environmental and economic benefits of its activities.

Specific OWM resources that illustrate environmental and economic benefits achieved as a result of pollution prevention include:

1991 and 1992 Governor's Awards for Excellence in Pollution Prevention; award recipient brochure;

Save Money and Reduce Trash (SMART) public education campaign; research results on packaging;

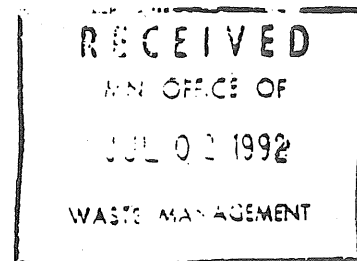
Pollution Prevention: Numerous case studies, final grant project report and MnTAP intern reports detailing benefits achieved; and

Solid Waste Source Reduction: Hospital, county government and business case studies.

MINNESOTA
STATE
UNIVERSITY
SYSTEM

230 Park Office Building/555 Park Street, St. Paul, Minnesota 55103 (612) 296-2844
FAX (612) 296-3214

AKITA CAMPUS, JAPAN
BEMIDJI
MANKATO
METROPOLITAN
MOORHEAD
ST CLOUD
SOUTHWEST
WINONA



July 2, 1992

TO: Laurie Hutchinson
Office of Waste Management
1350 Energy Lane
St. Paul, Minnesota 55108

FROM: Douglas Kelley 
Assistant Director of Facilities Management

SUBJECT: Pollution Prevention Progress Summary Report

As required by Executive Order 91-17, I write to report progress to date:

- I. Minnesota State University System has attended all Interagency Pollution Prevention Advisory Team meetings sponsored by the Office of Waste Management.
- II. The individuals listed below have been designated by the administration at each of the 7 Minnesota State Universities to manage each campus' source reduction of hazardous wastes:

Bert Clark, Physical Plant Director, Bemidji State University
1500 Birchmont Drive N.E., Bemidji, MN 56601 (218/755-3988)

Dick Markiewicz, Assistant to the Vice President for University Operations,
Box 105, Mankato State University
P.O. Box 8400, Mankato, MN 56002 (507/389-2270)

Bill Ryan, Facilities Director, Metropolitan State University
700 East Seventh Street, St. Paul, MN 55106-5000 (612/772-7605)

Dennis Mathiason, Chemistry Department Chairman, Moorhead State University
411A Hagen Hall, Moorhead, MN 56560 (218/236-2138)

Barbara Keller, Assistant Director of Buildings and Grounds Management,
St. Cloud State University
720 4th Avenue South, St. Cloud, Minnesota 56301 (612/255-2267)

Cyndi Holm, Assistant to the Administrative Vice President,
Southwest State University
1501 State Street, Marshall, Minnesota 56258 (507/537-6258)

Lyndall Halliday, Director Physical Plant, Winona State University
Winona, Minnesota 55987 (507/457-5045)

Pollution Prevention Progress Summary Report

July 2, 1992

Page 2

- III. All (with one excused exception) campus managers have attended the 5/14/92 workshop on pollution prevention sponsored by the Office of Waste Management. Following the workshop, campus managers were asked to identify source reduction projects, the initial cost and the comparative savings. Efforts reported to date by these campus managers follow as Attachment I.
- IV. The policy statement indicating that pollution prevention is a priority is being developed and will be forwarded when completed.

DK:1hl

Attachment I

cc w/Attachment I: David Hardin
Campus Pollution Prevention Managers

Minnesota State University System
CAMPUS POLLUTION PREVENTION REPORTS

Mankato State University
Dick Markiewicz

Spirit Duplicators

By July 1, 1992, twenty spirit duplicators (ditto machines) will be removed from service throughout the campus. The harmful methyl alcohol vapor concentrations in the air during the use of duplicators will be eliminated and will no longer be vented directly into the atmosphere. It is estimated that the source reduction will be 200 gallons annually.

PCB Transformer and Ballast Abatement

Last year we replaced all PCB transformers and replaced PCB ballasts in the residence halls. The replacement ballasts are 20% more energy efficient, and extend life of the lamp which is considered hazardous material after use.

Freon and Silver Reclamation

We have purchased two freon reclaimer units--one in M&E and one in Residential Life which allows us to recycle freon instead of releasing it into the atmosphere. We have reclaimed silver from our used photo developer chemicals for several years which permits safe sewer disposal.

Recycling

Mankato State University operates a comprehensive recycling program to recover aluminum cans, used office paper, newspapers, scrap metals, used motor oil and metal parts cleaning solvents. This program makes a significant contribution towards the reduction of pollution in waste streams. We are currently storing used fluorescent lamps until a Minnesota recycling facility is operational.

Abatement of Leaking Oil Tanks

Four 75,000 gallon underground storage tanks containing #6 fuel oil were removed and replaced. The contaminated soil was appropriately removed and disposed as required by the MPCA. Replacement tanks are non-corroding materials to prevent leaks.

Utility Plant Burner Upgrade

This afternoon at 2:00 p.m. we will open bids for the replacement of burners in the Utility Plant. The new burners are estimated to operate 5% more efficiently and will reduce the pollutants released into the atmosphere with exhaust smoke. Estimated savings to the State of Minnesota is \$32,500 annually.

Cleaning Chemicals

Following a period of extensive testing and evaluation of new products, our Building Services Department recently converted (100%) to the use of biodegradable cleaning products and chemicals.

REM/dlh

Moorhead State University
Dennis Mathiason

4/13/92 draft - DRM

Chemistry

- microscale lab experiments now being introduced - less waste chemicals produced as a result
- waste reagents collected, stored and shipped
- hazardous reagents have been removed from stockroom and laboratories
- recycling of materials, chemicals
- recovery, storage and proper disposal of biohazards, and radiochemicals

Industrial Studies

- removal of chemicals
- program emphasis redirected - less woodworking and metal forming activities
- metal recycling activities

Art

- examining substitute chemicals
- collecting waste chemicals, fixer solution, solvents, pigments

Biology

- proper disposal of biohazards
- reduction of chemicals used in laboratories

Print Shop

- adopting newer technology that uses less chemicals
- recovery and proper disposal of waste chemicals
- recycling of photo plates, film

Photo Labs

- recovery of silver from used fixer solutions
- proper disposal of waste solutions
- recycle used film

Building Maintenance, Vehicular Operations

- used oil recovery
- paint and solvent recovery
- paper recycling
- battery recovery
- florescent lamp recovery
- use of chemicals posing less risk to society and environment
- use of more energy efficient vehicles

Other noteworthy items

- Departmental review of chemical usage
 - 1) conducted by department members
 - 2) conducted by D. Mathiason and students
- Indoor air quality studies to identify chemical use problems
- up front review of chemical P.O.'s
- employee training has been commenced (not as widespread as it should be)
- use of polyolefin air filters instead of fiberglass - extend use period
- investigation of grounds activities that potentially could reduce fertilizer, pesticide and water usage. e.g. use of Buffalo grass
- institutional aluminum can and paper recycling program
- investigation of district heating possibility
- have brought in chemical safety consultant to examine numerous university activity areas

St. Cloud State University
Barb Keller

Photo Processing

Silver reclamation units have been purchased that de-silver our spent photo chemicals. This process renders the chemicals non-hazardous and non-polluting, allowing an estimated 800 gallons of chemicals to safely be sewered.

The cost of hazardous material disposal for untreated photo chemicals would be \$5,120 annually for the 800 gallons.

Freon Reclamation

When servicing refrigeration units we now have a process where we can reclaim freon and then re-use it, rather than allowing it to be discharged into the atmosphere. This reduces the amount of freon we must purchase as well.

The equipment costs \$1,700. The freon recovered annually (200 lbs. of R-12 and 75 lbs. of R-22) is currently valued at \$1,000. Labor cost to reclaim and maintain the unit reduce the savings to \$320 annually. Thus at current freon prices, annual payback is 5.3 years.

Swimming Pool Filtering Systems

In years past the methods used to chlorinate our swimming pools was not very sophisticated, sometimes causing leaks or excess chemicals to be used. The new system utilizes a sand filter rather than diatomaceous earth, which emits large quantities of dust with potential lung damage. The chlorinators which have now been installed are under a negative air pressure system which makes chemical leaks virtually non-existent and they are self-monitoring, only using the required amount of chemical. The old system required over chlorination to be safe.

The equipment cost \$88,000. Reduction in chemical saves an estimated \$9,300 annually, thus a 9.5 year payback period.

Chemical Safety Day Program

Annually St. Cloud State University participates in a University of Minnesota program to get rid of hazardous materials that are no longer being used. A feature of this program is the redistribution/recycling of chemicals that can be used by other agencies. It's estimated that disposal via a private contractor would cost \$10,200.

Along these same lines, in the development of a chemical hygiene plan for the university it was discovered that a certain amount of training would be required in order to use some chemicals. The university has opted to dispose/recycle those chemicals requiring training and then discontinue their use or find safer alternative products.

Electric Hand Dryers

In an attempt to reduce the amount of paper towels being used, the University has installed electric hand dryers in our dormitory buildings.

Water Saving Shower Heads

Several years ago the University began the replacement of regular shower heads with water-saving shower heads in our dormitory buildings and locker rooms.

Floor Stripper

In recent months we have switched to a "green" floor wax stripper. We have found that this product doesn't work as well as the old type of stripper we had been using and it is more costly, but its use will be continued.

Along the same lines, we have also begun using a "green" gym floor finish. We have found that this product does not last as long and is more expensive, but, again, we will continue to use it.

Printing Press Cleaner

Our print shop has been researching several different biodegradeable press cleaners, but has yet to find a satisfactory substitute. They continue to look at new products on the market in the hopes of finding a suitable alternative. I have been informed, though, that they have taken steps to reduce the amount of press cleaning products. In previous years the print shop used between four and five five-gallon containers of cleaner per year; they now use only three.

Southwest State University
Cyndi Holm

Freon Reclamation

The University is purchasing a freon (CFC) reclamation unit. The initial cost of the unit is \$2,800. The annual savings from reclaimed CFC is estimated to be \$1,000/year. Payback is estimated to be 3 years.

Latex Based Paint

To reduce waste, handling and disposal costs latex based paint is being used in place of oil based paint in many applications.

DK:lh1

cc: Campus Pollution Prevention Managers

STATE OF MINNESOTA

MINNESOTA TECHNICAL COLLEGE SYSTEM

State Board of Technical Colleges
Capitol Square Building, 550 Cedar Street
St. Paul, Minnesota 55101

OFFICE MEMORANDUM

TO: Laurie Hutchinson
Office of Waste Management
1350 Energy Lane
St. Paul, Minnesota 55108

FROM: Tony Shirvani
Facilities System Manager

DATE: July 31, 1992

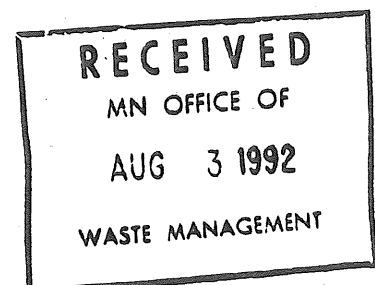
PHONE: 296-9443

SUBJECT: Pollution Prevention Progress Summary Report

As required by the Governor's Executive Order 91-17, I am writing to report progress to date:

- I. A representative from State Board of Technical Colleges (Tony Shirvani) has attended most of Interagency Pollution Prevention Advisory Team meetings and workshops sponsored by the Office of Waste Management.
- II. On June 18, 1992 we invited a representative from the Office of Waste Management to the annual workshop for Plant Operators and Facility Managers in the Technical College System. The presentation was an overview of the executive order and focused on the importance of Waste Control at the source.
- III. A draft policy statement, Planning and Objectives for the Technical College System has been developed and will be presented at the next scheduled presidents meeting for an open discussion. After this committee has reached some consensus, changes and additions will be made. The new draft will be presented to the Board members for their final approval. This process is in accordance with our policy development guide lines.

A copy of the proposed Draft Policy Statement, planning action and objectives for the Presidents Committee is attached.



The State Board of Technical Colleges is a service organization and consumes minimal amounts of hazardous material. However, our plan is to organize a Life & Safety Team for monitoring the various activities including pollution prevention and recycling within our agency and Technical Colleges.

A main objective and focus of this team will be to organize and set policies on the safety issues and pollution prevention, and also to help our Technical Colleges to organize their own planning committee. For the Technical Colleges with existing safety teams, we would ask them to start addressing the pollution prevention as part of their on-going activity.

The State Board Safety Committee will have the responsibility to compile the reports from each Technical Colleges and submit a report to the Office of Waste Management by July-1 of each year. The reports from individual colleges to the State Board of Technical College are due no later than June-1 of each year.

The policy statement and the SBTC's Safety & Planning Committee are in the draft form at this time. The SBTC's plan of action for compliance with the Governor's Executive Order 91-17 to organize the planning team ASAP and to work on a policy statement. Also we will ask the planning team to come up with a long and short terms goals.

Example:

Long Term Goals:

- 1- Conduct an assessment of hazardous products (chemical or procedure) which are being used at various programs, and find a possible alternative (chemically or mechanically) for replacement of Hazardous Chemicals.
- 2- To review a certain number of programs per year for the use of various products that are being used by them.
- 3- Make standards and regulations for the use of those hazardous chemicals, where an alternative has been identified throughout the system.
- 4- Plan and conduct an awareness seminar, handouts and publication for all staff within the system.

Short Term Goals:

- 1- Conduct a survey of all products and procedures used at state agency level.
- 2- Set-up a reporting format for the colleges to report to the State, and train staff to stay within the guide lines.

The State Board of Technical Colleges is a service organization and consumes minimal amounts of hazardous material. However, our plan is to organize a Life & Safety Team for monitoring the various activities including pollution prevention and recycling within our agency and Technical Colleges.

A main objective and focus of this team will be to organize and set policies on the safety issues and pollution prevention, and also to help our Technical Colleges to organize their own planning committee. For the Technical Colleges with existing safety teams, we would ask them to start addressing the pollution prevention as part of their on-going activity.

The State Board Safety Committee will have the responsibility to compile the reports from each Technical Colleges and submit a report to the Office of Waste Management by July-1 of each year. The reports from individual colleges to the State Board of Technical College are due no later than June-1 of each year.

The policy statement and the SBTC's Safety & Planning Committee are in the draft form at this time. The SBTC's plan of action for compliance with the Governor's Executive Order 91-17 to organize the planning team ASAP and to work on a policy statement. Also we will ask the planning team to come up with a long and short terms goals.

Example:

Long Term Goals:

- 1- Conduct an assessment of hazardous products (chemical or procedure) which are being used at various programs, and find a possible alternative (chemically or mechanically) for replacement of Hazardous Chemicals.
- 2- To review a certain number of programs per year for the use of various products that are being used by them.
- 3- Make standards and regulations for the use of those hazardous chemicals, where an alternative has been identified throughout the system.
- 4- Plan and conduct an awareness seminar, handouts and publication for all staff within the system.

Short Term Goals:

- 1- Conduct a survey of all products and procedures used at state agency level.
- 2- Set-up a reporting format for the colleges to report to the State, and train staff to stay within the guide lines.

**University of Minnesota
Pollution Prevention Summary Report
July 1, 1992**

Prepared By
Department of Environmental Health and Safety
University of Minnesota
410 Church Street
Minneapolis, Minnesota 55455
(612) 626-6281

I. Steps Taken To Integrate Pollution Prevention Into University Activities

A. Policy Statement

**UNIVERSITY OF MINNESOTA
BOARD OF REGENTS' POLICY**

Page 1 of 1

**CONSERVATION
Pollution Prevention and
Waste Abatement
Adopted: June 11, 1992
Supersedes: Waste
Abatement Policy 12/13/85**

CONSERVATION

Pollution Prevention and Waste Abatement

The University of Minnesota is committed to excellence and leadership in protecting the environment. Our objective is to reduce all types of waste and emissions. We strive to minimize adverse impact on the air, water, and land through excellence in pollution prevention and waste abatement. By preventing pollution at the source, we can save resources, increase operational efficiencies, and maintain a safe and healthy work place for our students and employees. By abating those wastes that cannot be eliminated at the source, we can recover useful resources and reduce the environmental and economic burden of waste disposal.

We believe that environmental protection is everyone's responsibility. Its manifestation is valued and displays commitment to the University.

The University of Minnesota will achieve pollution prevention and waste abatement under the following guidelines. We will:

- Include the reduction of both hazardous and non-hazardous wastes and emissions at the source as a prime consideration in teaching, research, service and operations. The University is committed to identifying and implementing pollution prevention opportunities through encouragement and involvement of all students and employees.
- Give top priority to technologies and methods which substitute nonhazardous materials and utilize other source reduction approaches in addressing all environmental issues.
- Vigorously pursue waste abatement programs such as recycling, reuse, and purchase of recycled materials to reduce the need for disposal of waste that cannot be reduced at the source.
- Encourage pollution prevention and waste abatement through changes in purchasing policies and specifications.

The University of Minnesota seeks to demonstrate its leadership role in the State of Minnesota by aggressively adhering to all environmental regulations. We promote cooperation and coordination among higher education, industry, government, and the public toward the shared goals of preventing pollution and abating waste.

Therefore, be it resolved, that the Board of Regents directs the President to establish effective pollution prevention and waste abatement programs and to develop policies, plans and resources to achieve that goal.

**B. Activities Undertaken to Reduce Generation of Hazardous Waste and Use of Toxic Chemicals,
Efforts to Integrate Pollution Prevention into Regulatory and Policy Activities, and
Efforts to Investigate Opportunities to Encourage Pollution Prevention Through University
Purchasing Policies and Specifications**

Excerpts from "Implementation of Waste Minimization Strategies", presented at the 203rd American Chemical Society National Meeting Symposium on Pollution Prevention and Waste Minimization in Laboratories. April 7, 1992.

Introduction

The University of Minnesota waste minimization (pollution prevention) program has developed gradually since 1980, primarily in response to economic and regulatory compliance concerns. The methods used by the University parallel those suggested in the "Guides to Pollution Prevention: Research and Educational Institutions", prepared under contract for the Risk Reduction Engineering Laboratory and Center For Environmental Research Information, Office of Research and Development, U.S. EPA, Cincinnati, OH, (EPA/625/7-90/010, June 1990) (USEPA, 1990), with the exception that the University has traditionally used one-on-one interviews with department administrators and lab managers for gathering information, rather than using questionnaires. As mentioned in the EPA "Guides", there are obstacles in academic settings, not found in industry, which hinder waste minimization. University management structures are often decentralized which diffuses commitment to waste minimization goals. Decentralization makes it difficult to track the movement of chemicals through the system, and educational systems produce small quantities of a great variety of wastes, rather than a few large waste streams as found in industry.

Waste Minimization Methods

The waste minimization methods listed here, while not all-inclusive, provide examples of methods that are applied to many research hazardous waste streams. The University of Minnesota waste minimization program, approved by the U.S. EPA Region V, contains the following elements:

- Assessment and Evaluation of Waste Streams (Preliminary Audit)
- Economic Assessment, Planning and Administrative Support
- Segregation and Characterization
- Source Reduction Methods (Product Substitution and Process Modification/Down-Sizing)
- Recycling or Waste Exchange
- Reclamation
- Distillation, Neutralization and Deactivation
- Management (Audit and Inventory Control)
- Training
- Review and Readjustment of Pollution Prevention Goals

Assessment and Evaluation

Waste chemical streams at the University of Minnesota were analyzed for volume, regularity of production, and ease of reduction. The larger, easier to reduce waste streams were tackled first. Examples of the "easier" to reduce waste streams are the use of biodegradable scintillation solutions instead of xylene or toluene based solutions and the reclamation of silver from waste photofixer. The assessment was performed by the Environmental Protection and Radiation Protection Divisions in the

Department of Environmental Health and Safety (DEHS), with input from affected generators. Even though these waste streams are easier to reduce, it still took several years to educate all the generators as to proper management techniques.

After waste reduction procedures were put in place, an evaluation was made of their effectiveness. In evaluating the effectiveness of the new biodegradable scintillation cocktails, it was found that researchers were reluctant to give up xylene and toluene based cocktails out of fear that they would lose resolution in their studies. To address this concern, the Radiation Protection Division had a leading University researcher test the effect of using biodegradable cocktails on resolution in scintillation studies. The researcher determined that there was no loss of resolution and the publication of these results helped persuade many researchers to make the switch to biodegradable materials. For those researchers who refused to make the switch, the University started charging a \$60/gallon surcharge for the pickup of these materials. This surcharge further eliminated the use of solvent based cocktails. Use of solvent based cocktails is now limited to those researchers who absolutely require it for their research.

Economic Assessment, Planning and Administrative Support

The University of Minnesota administration is becoming more cognizant of waste reduction issues. In 1990, the Senior Vice President of Finance and Operations at the University of Minnesota formed a multi-departmental Waste Abatement Advisory Committee whose short-term goal (Fall 1990) was to "develop a plan to cap or decrease waste flow" not just for hazardous and LLR waste, but also solid waste (campus and hospital), bio-infectious waste, small animals, large animals, fly ash, and debris. The committee must provide options not only for reducing the waste, but also the cost of waste handling. Another energy conservation division, the University Building Energy Efficiency Program (UBEEP), was formed to look at energy conservation in the design of new facilities and remodeling of existing facilities. These two groups work closely together, as some waste reduction techniques result in the net increase in energy usage. For example, energy costs and power plant emissions must be taken into account whenever using a distillation recovery method on solvent wastes.

[The energy conservation division is replacing existing fluorescent lights and ballasts throughout the University (at a cost of 4.8 million dollars) with new energy-efficient models. The pay back period on this project is approximately three years. Although this replacement will have energy conservation benefits, the PCB ballasts and fluorescent bulbs from these old lights must be handled as hazardous waste. Estimated disposal cost is \$900,000 over a two year period. Neither the PCB ballasts nor the light bulbs are being recycled.]

Independent of the above committees, the Department of Environmental Health and Safety (DEHS) at the University of Minnesota has been seeking solutions to growth of hazardous and LLR waste streams for the past decade. Success in reducing waste growth in the past has largely been due to cooperative work directly with generators, rather than by administrative mandate.

A key to receiving administrative support for waste minimization activities in 1989 and 1990 was DEHS's cost analysis for various chemical and LLR waste streams. This cost analysis is provided as Appendix 1. Due to this analysis, DEHS is able to show the administration the cost per kilogram reduction if waste minimization techniques are applied. These cost savings can be used in traditional financial analyses to determine rates of return and net present value of investments for waste minimization equipment or alternative non-toxic substitutes.

A centralized purchasing program for chemicals is strongly recommended by the U.S. EPA and other agencies for control and tracking of chemical emissions, waste minimization and management of hazardous waste. The University of Minnesota in 1990, however, decentralized the purchasing program, in order to shift the administrative cost burden and accountability to individual departments. The new

system was not implemented for waste minimization reasons. The purchasing system does shift inventory control to the individual departments and the tracking of chemicals should be easier for the smaller, departmental units. In practice though, the accounting duties were added to departmental staff with full work loads, and a successful tracking program has not been implemented as of April 1992, due to time and budget constraints.

Obtaining data on the amount and type of chemicals purchased by the University may be eased by a new (January 1, 1992) prime vendor contract for laboratory supplies and equipment established with Fisher Scientific. The contract is potentially worth \$2.5 million and is estimated to save the University between \$500,000 to \$750,000 annually. Because of the substantial price savings University laboratories will receive under this contract, it is expected that most chemicals will be ordered through this system, allowing for better data on purchases.

Overall planning for waste minimization is performed jointly by the Waste Abatement Advisory Committee and DEHS. DEHS also targets two specific waste streams a year for an in-depth study for pollution prevention opportunities. Already studied was the removal of the PCB capacitors from PCB fluorescent light ballasts, in hopes that the remaining ballast could be handled as non-PCB waste. Unfortunately, the study showed that the remaining tar material in the ballast was contaminated to a level that required the entire ballast to be managed as PCB waste. A second on-going study is the reduction of wastes from histology laboratories. Histology laboratories generate one-half (approximately 1,500 gallons) of the fuel blend waste solvents generated annually by the University of Minnesota. A combination of product substitution, equipment modification and distillation-recovery is being used to decrease the amount generated.

Segregation and Characterization

Generators are instructed to segregate all waste streams and accurately label waste containers as to their exact contents. This allows the University to recycle and redistribute reusable wastes or unused chemicals.

Source Reduction

Product substitution (substituting a non-hazardous material for a toxic or hazardous one) is the preferred method of reducing hazardous and LLR wastes. Already mentioned is the use of biodegradable scintillation solutions instead of xylene or toluene based solutions. The number of 30-gallon, xylene/toluene, scintillation vial drums shipped out for treatment has decreased from 536 in 1987 to 41 in 1991. This number is expected to drop to approximately 36 by 1995. Histology laboratories which process human and animal tissue for production of microscope slides have greatly reduced the amount of waste generated by substituting alcohol fixatives for formaldehyde fixers and substituting citric acid base solutions for xylene. Detergents, enzymatic cleaners, and "no-chromix" sulfuric acid cleaners have been substituted for potassium (and sodium) dichromate - sulfuric acid cleaning solutions or other chromium containing cleaning solutions in many laboratories and photography darkrooms. Peracetic acid is now used instead of formaldehyde for sterilizing kidney dialysis machines. In 1990, Duplicating Services substituted petroleum solvent-aromatic naphtha solvent-1,1,1 trichloroethane blanket wash for petroleum distillate-perchloroethylene-solvisol bright green gc blanket wash and triethanolamine-aromatic hydrocarbon-mineral spirits-dipropylene glycol monomethyl ether roller and blanket deglazer for methylene chloride deglazer (in both cases, this reduced the toxicity of the materials used by employees and the toxicity of the waste generated). Parts washers in machine shops which are not serviced by recycle vendors are using citric acid-based cleaning solutions.

Process modification is another method of source reduction used by the University of Minnesota. An example of process modification is the down-sizing of experimental equipment which results in smaller amounts of chemicals used and less waste produced. A classic example is the Kjeldahl apparatus which has been used for fifty years or more to determine the amount of nitrogen in biological samples. Micro and small-scale apparatus is now in common use, reducing from 10 to 100-fold the amount of corrosive and toxic waste produced. Sources discussing micro-scale techniques are listed in the References Section.

Another example of process modification is the use of instrumentation for chemical analysis, such as gas chromatography, spectroscopy and nuclear magnetic resonance. Use of automated techniques can substantially reduce the amount of waste generated over traditional wet chemistry techniques. A single lab on the St. Paul campus ran over 16,000 inductively coupled plasma (ICP) emission spectroscopy samples last year. Each run provided the sample concentration of 15 to 27 metallic ions. In previous years this lab has run as many as 32,000 ICP samples per year. Traditional wet chemistry analysis would have yielded thousands of liters of hazardous waste, rather than 32 liters of corrosive waste generated in 1991. These 32 liters are easily neutralized and sewered at the ICP lab (after testing to make sure metal concentrations are within discharge limits). While sophisticated equipment such as the ICP emission spectrometer is fairly common on larger campuses, the cost of such equipment is prohibitive to smaller, outstate University of Minnesota campuses and experiment stations. These smaller campuses and experiment stations must use traditional wet chemistry techniques or arrange to have samples analyzed on one of the larger campuses. With the cost estimates for waste disposal generated by DEHS, some of these smaller campuses may be able to justify the initial capital expense of automated equipment by the savings to the University in decreased waste disposal costs.

Purchase of newer generations of automated equipment can also result in waste reduction over older, less efficient automated equipment. This has been found to be the case in automated histological tissue processors (the processors purchased 10 years ago produce approximately twice as much waste as processors marketed today).

Modification to processes can also indirectly reduce pollutant emissions. Using the histology labs as an example once again, special exhaust enclosures were designed to reduce energy consumption and employee exposure to chemical vapors. Histology staining dishes require a large amount of bench space, and as a result, employees will remove staining dishes from cramped fume hoods. Down draft tables are typically installed to protect the employees from chemical fumes, but these tables require an air flow of approximately 2,000 cubic feet per minute (cfm) for proper operation. The air from the down draft tables can not be recirculated and must be exhausted directly to the roof vent. Make-up air must be tempered and supplied to the histology labs. The University of Minnesota designed modular exhaust enclosure boxes to protect employees from exposure to the histological chemicals and to reduce air flow energy use and solvent evaporation. These exhaust enclosure boxes reduce air flow requirements by 10 to 40 times over equivalent space used by down draft tables.

Chemistry Teaching Laboratories

An exciting approach to product substitution and source reduction is underway in the Department of Chemistry at the University of Minnesota. Professor Kent Mann, Director of Undergraduate Teaching Laboratories, is currently rewriting the undergraduate teaching laboratory experiments so that they either will not generate any hazardous waste or the experiment will include procedures to deactivate any hazardous residuals. For the two experiments that he has already redesigned, the teaching labs will produce approximately 6000 liters less of heavy metal and oxidizer waste per year (Mann, 1992). This is estimated to save the University approximately \$35,000 per year in waste handling, management and treatment costs. In addition, the labs will be a valuable tool for teaching students the chemical principles behind the deactivation procedures and the concept that chemicals must be responsibly managed from

"cradle to grave". Dr. Mann made two interesting comments on the behavior of undergraduate students in chemistry labs: first, students tend to take three to five times the amount of chemicals needed for an experiment if they are allowed to dispense their own solutions from stock bottles and second, many students are now questioning the morality of performing experiments that generate toxic wastes which may harm the environment, much like students who have argued in the past about the morality of performing experiments on animals. These new teaching lab experiments help to address these two concerns.

Steps taken in the past to reduce the amount of chemicals used in teaching labs have included predispensing stock chemicals or the use of very small diameter nozzles on stock bottles. The small diameter nozzles dispense very slowly, which discourages students from taking excess chemicals. With the rewritten experiments, students are further penalized for taking excess reagents in that they must deactivate the reagents to render them non-hazardous, lengthening the amount of time they must spend in the laboratory. Having to deactivate the reagents also helps to teach the students that they are responsible for all chemicals in their control.

A resource package for incorporating pollution prevention concepts in higher education curricula was developed under a grant by the Washington State Department of Ecology (1991). The package contains material put together for a two day seminar, the purpose of which was to show faculty how to incorporate pollution prevention into curricula for all academic disciplines, not just the hard sciences. The material in the package was developed by the Waste Reduction Institute (WRITAR), Minneapolis, Minnesota, which used University of Minnesota faculty to preview the package and comment on its content.

Books which may aid research laboratories in the treatment of hazardous waste are listed in the Reference Section.

Recycling

Waste chemicals that can be reused are redistributed free of charge to generators throughout the statewide system. Almost all of the recycled chemicals are unopened or unused portions of reagent grade chemicals. The program recycled 6570 kg of chemicals in fiscal year 1990-1991, saving the University an estimated \$155,000 in avoided disposal and purchase costs. Laboratory glassware and supplies are also redistributed, which saved the University an estimated \$14,000 in purchase costs. Parts washer solvents, carburetor cleaner solvents and lead acid batteries from garages and machine shops are all recycled and serviced through outside vendors. Unused portions of pesticides are redistributed through the statewide agricultural extension service. Fuel grade solvents are used for energy recovery.

Reclamation

Precious metals are collected and reclaimed. Mercury from broken thermometers and other laboratory equipment is collected and sent to a vendor for redistillation. In return, the vendor gives the University a price-break on the purchase of triple distilled mercury. Precious metals used in research are returned to the supplier. One researcher in the Department of Chemistry returns all his osmium and other reactive metals to the supplier at no cost. Silver is recovered from spent photofixer, negatives, and black & white prints.

Management

Generators are trained to inventory supplies and rotate older chemicals out first. They are instructed to order only the quantity of chemicals necessary for an experiment and not to buy large volumes at price discounts, because the cost of disposing of the excess material is greater than any cost savings they may receive. Generators are told to train their employees yearly in waste minimization techniques.

To date, the only incentive DEHS can offer generators for waste reduction is a letter of commendation to the generator's Department Head, which is copied to the generator, Dean of the College and the Waste Abatement Committee. The letter strongly encourages college and departmental support of the waste minimization activities.

Training

Generators are trained in the above waste minimization techniques through a number of mechanisms. The primary training method is the Hazardous Waste Management Guidebook which all generators must read before generating hazardous wastes. The Guidebook contains a chapter on waste minimization, the University recycling program and chemical spill response. [The sections on waste minimization and chemical recycling are included as Appendix 2.] The certification clause of the internal tracking document, used by the University for shipment of waste chemicals, states that the generator has read and understands the Hazardous Waste Management Guidebook and is following its guidelines.

Other training methods include the direct training of departments or subdepartmental groups. Annually, DEHS trains the faculty, staff, graduate students, and employed undergraduate students in the Department of Chemical Engineering and Material Science (over 180 people) in safety, regulatory and waste minimization concepts. The graduate students and faculty are strongly encouraged to add source reduction, neutralization or deactivation steps to their research projects and teaching labs, in order to eliminate hazardous wastes generated by these projects. Water chilling units are recommended to reduce water consumption in distillation setups and to prevent accidental water damage.

Training in waste minimization for other departments is given upon request and is not regularly scheduled due to lack of personnel and financing. Individual requests for information are usually handled over the phone or by mail. Waste minimization training is also given through the DEHS newsletter which is sent to all generators, and through the University Stores Open House and Product Show. The Open House is put on by the general supply storehouse and usually attracts several thousand University employees. DEHS has a display booth at the Open House and the the this April 1992 was waste minimization. Attendees are given information on waste minimization, the chemical recycling program, glassware recycling, battery collection and the Hazardous Waste Management Guidebook.

Low Level Radioactive Wastes (LLRW)

LLRW has been reduced through a number of management practices. Storing radioactive animal wastes which contain short half-life (<90 days) radionuclides in freezers and holding them till they are no longer regulated as LLRW has reduced the volume of radioactive animal waste shipped offsite by greater than 95 percent. Storage of short half-life solid waste has essentially eliminated the need for offsite shipment of nuclear medical wastes from the University Hospital and Veterinary Hospital. As mentioned earlier, the conversion to biodegradable scintillation solutions and the mechanical crushing of scintillation vials has resulted in a greater than 95 percent reduction in the volume of radioactive scintillation vial waste shipped to offsite facilities. Prior to recent restrictions on the disposal of LLRW, the supercompaction of solid radioactive waste drums has resulted in a greater than 50 percent reduction in the LLRW buried at NRC licensed disposal facilities. Future plans include the construction of storage

tanks to hold short half-life solvent and other liquid wastes. This project is projected to save the University \$105,000/year.

II. Plans for Future Activities to Prevent Pollution

The University of Minnesota Waste Abatement Committee will remain active. The committee is co-chaired by the Director of Business Services (Purchasing and Materials Management) and the Director of the Department of Environmental Health and Safety. The committee consists of faculty, graduate students, and staff from: Business Services, Campus Planning, Chemistry, Civil and Mineral Engineering, Environmental Health and Safety, Facilities Management, Graduate School (Humphrey Institute and Natural Resources), Hospital Facilities, Hospital Material Services, Minnesota Extension Service, Minnesota Technical Assistance Program (MnTAP), Policy and Compliance, Printing and Graphic Arts, and UBEEP.

The Waste Abatement Committee is working with students to develop a list of environmental projects which students can use for extra credit or plan B thesis projects. It is anticipated that these projects will benefit both the student and the University, as many of the projects will look at product life-cycle pollution reduction alternatives. The Committee and the Department of Independent Study will prepare the list of projects. The University of Minnesota Retirees Association has agreed to work with the Committee on this project. Retired faculty will be able to provide the extra time required with students for these involved, independent projects.

The University of Minnesota Department of Environmental Health and Safety will continue to explore source reduction opportunities for hazardous waste and toxic chemicals. Environmental Health and Safety will attempt to do two in-depth pollution reduction studies a year on University hazardous waste streams. A study on chemical and solvent reduction in histology laboratories is expected to be completed by December 31, 1992. A project devoted to increasing awareness levels of University of Minnesota employees in pollution prevention is scheduled to be completed by June 30, 1993.

The University is in the process of permitting and building an \$8 million Integrated Waste Management Facility, which will be built by the late Fall of 1993. This facility will allow the University to consolidate and enlarge its chemical recycling program (which is currently housed in four separate buildings) and will allow DEHS to neutralize or deactivate hazardous waste and use recovery techniques such as distillation. Presently, DEHS does not have the facilities or the necessary permits to treat hazardous wastes.

The new facility will also allow the 2,900 bottles that are received every month to be washed for glass recycling (presently, they are disposed of as solid waste). Solid waste segregation and recycling will also be fully implemented at the facility. Water chillers will be used on large distillation condensers to conserve water.

Business Services (Purchasing) and University Stores will continue to review policies and potential nonhazardous products with the Waste Abatement Committee. Business Services has implemented a policy where all solvent chemical purchases over five gallons and purchases of white goods containing Freon are submitted to Environmental Health and Safety for approval. Environmental Health and Safety works directly with the purchasing department on pollution prevention and safety issues.

III. Environmental and Economic Benefits

As mentioned earlier, the University has implemented pollution prevention strategies for over a decade. Baselines for many of the wastes generated were never recorded. Examples given below from a few of the better documented cases.

Environmental and Economic Benefits

University of Minnesota Chemical Recycling Program

<u>Fiscal Year</u>	<u>Pounds of Chemicals Recycled</u>	<u>Cost Savings*</u>
1989-1990	4,200	\$56,550
1990-1991	7,100	\$73,700
1991-1992	14,500	\$155,00

*Cost savings includes avoided disposal and purchase costs. An informal survey at the 203rd National Meeting of the American Chemical Society Meeting, April 7, 1992, indicated that the University of Minnesota has the largest academic chemical recycling program in the country, three times the size of the University of Illinois at Urbana-Champaign program.

Flammable Low Level Radioactive Scintillation Cocktail Solution Generation

<u>Fiscal Year</u>	<u>Gallons Generated</u>	<u>Cost Savings</u>
1987-1988	16,080	\$0 (Baseline)
1991-1992	1,230	\$123,700

Aqueous Based Low Level Radioactive Waste Long Term Decay

<u>Fiscal Year</u>	<u>Gallons Shipped Offsite</u>	<u>Cost Savings</u>
1990-November 1991	820/year	\$0 (Baseline)
November 1991-1992	180/year	\$44,800/year*

*Decay tanks and construction cost \$188,700. Payback period is estimated to be four years.

Kidney Dialysis Machine Sterilizer Solution

<u>Calendar Year</u>	<u>Gallons Generated</u>
1989	160 gallons Formaldehyde
1990	330 gallons Peracetic Acid (Less Toxic Product Substitution)
1991	6 gallons Peracetic Acid

Metallic Mercury Recycling

<u>Fiscal Year</u>	<u>Pounds Recycled</u>	<u>Dollars Paid to University by Recycling Co.</u>
1989-1990	200	\$60
1990-1991	200	\$60
1991-1992	400	\$120

Photofixer Recycling (Silver Recovery)

<u>Calendar Year</u>	<u>Gallons Generated and Recycled</u>
1988	17,000
1989	17,260
1991	10,597

Waste Oil Recycling

<u>Fiscal Year</u>	<u>Gallons Generated and Recycled</u>
1989 (Calendar Year)	4,015
1990-1991	5,340
1991-1992	5,790

References

- Armour, M.A., L.M. Browne and G.L. Weir. 1984. *Hazardous Chemicals Information and Disposal Guide. Second Edition.* Department of Chemistry, University of Alberta, Edmonton, Alberta, Canada, T6G 2G2.
- Armour, M.A., L.M. Browne, P.A. McKenzie and D.M. Renecker. 1986. *Potentially Carcinogenic Chemicals (Including Some Antineoplastic Agents) Information and Disposal Guide.* Department of Chemistry, University of Alberta, Edmonton, Alberta, Canada, T6G 2G2.
- Backus, B.D. 1989. "Photodeveloping Wastes." Presented at the Seventh Annual College and University Hazardous Waste Conference, Ames, Iowa, July 30 - August 1, 1989.
- Backus, B.D. and F.M. Thompson. 1990. "University of Minnesota Waste Minimization Strategies." Presented at the Eighth Annual College and University Hazardous Waste Conference, Coeur d'Alene, Idaho, September 30 - October 3, 1990.
- Backus, B.D. 1992. "Implementation of Waste Minimization Strategies." Presented at the 203rd American Chemical Society Meeting. Symposium on Pollution Prevention and Waste Minimization in Laboratories, San Francisco, California, April 5-10, 1992.
- Bergstrom, W. and M. Howell. 1988. *Inorganic Chemistry Laboratory Experiments.* St. Paul Technical Institute. Produced by Independent School District #625 with the Minnesota Technical Assistance Program, University of Minnesota and the Environmental Protection Agency.
- Bergstrom, W. and M. Howell. 1988. *Hazardous Waste Reduction for Chemistry Instructional Laboratories.* St. Paul Technical Institute. Study conducted through the Minnesota Waste Management Board, Minnesota Technical Assistance Program and the Environmental Protection Agency.
- Brauer, G. 1963. *Handbook of Preparative Inorganic Chemistry. Second Edition.* Academic Press, New York.
- Fosnacht, J. 1992. Leadership in Waste Minimization and Pollution Control. *American Laboratory* March 1992. Pp. 37-40.
- Hawkey, S.A. 1992. An Algorithm for Setting Priorities and Selecting Target Wastes for Minimization. *Am. Ind. Hyg. Assoc. J.* (53) / February 1992. Pp 154-156.
- Hered, G.R. 1984. *Basic Laboratory Studies in College Chemistry with Semimicro Qualitative Analysis. Seventh Edition.* D.C. Heath and Company, Lexington, Massachusetts.
- Karam, J.G., C. St. Cin, and J. Tilly. 1988. Economic Evaluation of Waste Minimization Options. *Environmental Progress* Vol. 7, No. 3. (Waste Minimization Issue.) August 1988. Pp 192-197.
- Kaufman J.A. (Editor). 1990. *Waste Disposal in Academic Institutions.* Lewis Publishers, 121 East Main St., Chelsea, Mich. 48118.
- Lagowski, J.J. and M.D. Hampton. 1991. *Introduction and Semimicro Qualitative Analysis. Seventh Edition.* Prentice Hall, New Jersey.
- Lunn, G. and E.B. Sansone. 1990. *Destruction of Hazardous Chemicals in the Laboratory.* John Wiley & Sons, 605 Third Ave., New York, 10158.

MacLean, R.W. May 10, 1989. Economics of Waste Minimization. Presented before the *Waste Minimization Conference*, sponsored by the New Jersey Department of Environmental Protection, Division of Hazardous Waste Management, New Brunswick, NJ, May 10, 1989.

MacLean, R.W. May 30, 1989. "Motivating Industry Toward Waste Minimization and Clean Technology." Presented at the Waste Minimization and Clean Technology: Moving Toward the 21st Century, ISWA and EPA Conference, Geneva, Switzerland, May 30, 1989.

Mann, K.R. 1991. *Pollution Prevention in Chemical Laboratory Instruction*. Minnesota Office of Waste Management, 1350 Energy Lane, St. Paul, MN 55108, (612) 649-5494.

Mills, J.L. and M.D. Hampton. 1988. *Microscale Laboratory Manual for General Chemistry*. Random House, Inc., New York.

National Research Council. 1983. *Prudent Practices for Disposal of Chemicals from Laboratories*. National Academy Press, 2101 Constitution Ave., NW, Washington, DC, 20418.

Neidig, H.A. and W.J. Stratton (eds.). 1989. *Modern Experiments for Introductory Chemistry. Second Edition*. Reprinted from *The Journal of Chemical Education*. Easton, Pennsylvania.

Russo, T. 1986. *Microscale for High School General Chemistry*. Kemtec Education Corporation, West Chester, Ohio, 45069.

Szafran, Z., Pike, R.M. and M.M. Singh. 1991. *Microscale Inorganic Experiments*. John Wiley and Sons, New York.

Thompson, S. 1990. *Chemtrek: Smallscale Experiments for General Chemistry*. Allyn and Bacon, Boston.

USEPA. 1990. *Guides to Pollution Prevention: Research and Educational Institutions*. Risk Reduction Engineering Laboratory and Center For Environmental Research Information, Office of Research and Development, United States Environmental Protection Agency, Cincinnati, OH, 45268, (EPA/625/7-90/010, June 1990).

Washington State Department of Ecology. 1991. *Incorporating Pollution Prevention Concepts in Higher Education Curricula. A Research Package*. Publication #91-33. Mail Stop PV-11, Olympia, Washington 98504-8711. (206) 459-6000.

Appendix 1

Chemical and Low Level Radioactive Waste Costs at the University of Minnesota

Chemical Waste Cost Breakdown

<u>Waste Stream</u>	<u>Disposal Technique</u>	Quantity Generated <u>88-89</u>	Quantity Generated <u>89-90</u>	Quantity Generated <u>90-91</u>	Total Cost <u>90-91</u>	Cost Per Kilogram <u>90-91</u>
Fuel Solvents	Fuel Blending	6,060	8,180	2,270	\$11,500	\$5.07
Bulk Solvents	Incineration	30,400	21,100	31,900	\$191,000	\$6.01
Reactives/Mixed Hazard Classes	Incineration	5,930	5,120	6,880	\$104,000	\$15.16
Lab Packs - Treatment	Neutralize/Stabilize	17,600	14,800	11,400	\$117,000	\$10.32
Lab Packs - Incineration	Incineration	7,740	12,300	16,100	\$252,000	\$15.73
Photofixer	Silver Reclamation	7,370	15,200	13,500	\$59,300	\$4.41
PCB Material	Incineration/Landfill	8,874	11,400	75,900	\$255,000	\$3.36
Miscellaneous	Best Available	1,620	10,700	14,200	\$81,600	\$5.75
Scintillation Vial	Incineration	2,130	479	1,520	\$7,150	\$4.72
Waste Oil	Fuel/Recycle	-	-	21,400	\$18,000	\$0.84
TOTAL		87,800	99,300	173,000	\$1,100,000	\$5.36

1990-91 Cost Breakdown

	<u>Fuel Solv.</u>	<u>Bulk Solv.</u>	<u>Reac./Mix.</u>	<u>LP-Treat.</u>	<u>LP-Incin.</u>	<u>Photofixer</u>	<u>PCB</u>	<u>Misc.</u>	<u>Scint. V.</u>	<u>Oil</u>
Total Kilograms	2,270	31,900	6,880	11,400	16,100	13,500	75,900	14,200	1,520	21,400
Disposal Cost	\$779	\$32,700	\$40,500	\$42,500	\$128,000	\$0	\$166,000	\$14,300	\$0	\$0
Salary Cost	\$8,790	\$123,000	\$40,800	\$48,600	\$77,000	\$48,600	\$60,700	\$54,400	\$5,480	\$10,500
Supplies Cost	\$186	\$2,610	\$13,600	\$7,260	\$13,200	\$1,350	\$8,730	\$3,640	\$697	\$823
Overhead Cost	\$1,470	\$20,600	\$4,440	\$7,320	\$10,400	\$8,680	\$19,600	\$9,160	\$979	\$6,480
Generator Cost	\$289	\$12,500	\$4,800	\$11,400	\$24,300	\$691	\$332	\$129	\$0	\$195
Total Cost	\$11,500	\$191,000	\$104,000	\$117,000	\$252,000	\$59,300	\$255,000	\$81,600	\$7,150	\$18,000

Low Level Radioactive Waste Cost Breakdown

<u>Waste Stream</u>	<u>Disposal Technique</u>	Quantity Generated <u>88-89</u>	Quantity Generated <u>89-90</u>	Quantity Generated <u>90-91</u>	Total Cost <u>90-91</u>	Cost Per Kilogram <u>90-91</u>
Solid (R)	Ship to U.S. Ecology	18,400	18,800	19,800	\$140,000	\$7.07
Solid (D)	Decay	504	1,700	2,230	\$7,200	\$3.23
Aqueous (S)	Sewer	21,200	20,900	22,600	\$67,800	\$3.00
Aqueous (R)	Ship to U.S. Ecology	4,830	5,140	4,240	\$46,800	\$11.03
Flammable (R)	Ship to U.S. Ecology	832	472	784	\$3,362	\$4.29
Vials (D & I)	Decay/Incinerate	864	508	579	\$15,200	\$26.30
Vials (R)	Ship to U.S. Ecology	490	240	68	\$3,610	\$53.10
Vials (S)	Sewer	4,320	5,610	4,820	\$81,300	\$16.90
Animal (I)	Incinerate	640	407	272	\$751	\$2.76
Animal (D)	Decay	4,550	6,190	5,910	\$9,900	\$1.68
Animal (R)	Ship to U.S. Ecology	290	84	34	\$1,510	\$44.40
Sealed Sources	Long Term Storage	0	4,910	0	\$0	
TOTAL		56,800	65,000	61,300	\$377,000	\$6.15

1990-91 Cost Breakdown

	<u>Solid (R)</u>	<u>Solid (D)</u>	<u>Aqueous (S)</u>	<u>Aqueous (R)</u>	<u>Flammable</u>	<u>Vials (D & I)</u>	<u>Vials (R)</u>	<u>Vials (S)</u>
Total Kilograms	19,800	2,230	22,600	4,240	784	579	68	4,820
Disposal Cost	\$63,300	\$0	\$0	\$28,900	\$1,610	\$8,260	\$560	\$0
Salary Cost	\$21,100	\$1,920	\$20,500	\$5,070	\$461	\$2,000	\$922	\$25,500
Supplies Cost	\$7,900	\$941	\$1,000	\$1,380	\$250	\$426	\$46	\$1,920
HMS Overhead	\$9,650	\$881	\$9,410	\$2,330	\$211	\$916	\$423	\$14,300
RPD Overhead	\$12,500	\$1,140	\$12,200	\$3,020	\$275	\$1,190	\$549	\$13,100
Generator Cost	\$7,310	\$667	\$7,120	\$1,760	\$160	\$693	\$320	\$7,630
Loan Repayment	\$18,000	\$1,650	\$17,600	\$4,340	\$395	\$1,710	\$790	\$18,800
Total Cost	\$140,000	\$7,200	\$67,800	\$46,800	\$3,360	\$15,200	\$3,610	\$81,300
	<u>Animal (I)</u>	<u>Animal (D)</u>	<u>Animal (R)</u>	<u>Sealed Sources</u>				
Total Kilograms	272	5,910	34	0				
Disposal Cost	\$0	\$0	\$1,160	\$0				
Salary Cost	\$231	\$2,610	\$77	\$0				
Supplies Cost	\$0	\$1,390	\$100	\$0				
HMS Overhead	\$106	\$1,200	\$35	\$0				
RPD Overhead	\$137	\$1,560	\$46	\$0				
Generator Cost	\$80	\$907	\$27	\$0				
Loan Repayment	\$197	\$2,240	\$66	\$0				
Total Cost	\$751	\$9,900	\$1,510	\$0				

Appendix 2

Excerpts from the *University of Minnesota Hazardous Chemical Waste Management Guidebook*, 4th Edition

Pollution prevention training documents for University of Minnesota employees working with hazardous chemicals

Part III: Waste Reduction Procedures

Waste Minimization

The University of Minnesota is committed to the protection of human health and the environment. To meet these commitments, the University strongly encourages its employees to utilize chemical waste minimization (waste reduction) techniques to reduce the volume and toxicity of chemical wastes produced at the University. An important benefit from waste minimization is that it will help reduce the University's escalating chemical disposal costs which are currently estimated at \$1.7 million annually and expected to rise with federal and state restrictions in the future. These disposal costs come out of your research and operating funds.

The following describes common waste minimization techniques:

1. Product Substitution

Substitute non-hazardous or less toxic materials in your chemical processes and experiments. Some examples of this are:

- a. The substitution of citric acid based AmeriClear for xylene, benzene and toluene containing reagents in histology laboratories.
- b. Substitution of non-hazardous proprietary liquid scintillation cocktails for standard xylene or toluene based cocktails in radioactive tracer studies.
- c. The use of water based inks instead of solvent based inks in printing operations.
- d. The use of peracetic acid rather than formaldehyde in cleaning hospital kidney dialysis machines (the peracetic acid reacts with the organic material in the dialysis waste stream to produce a non-hazardous waste).
- e. The use of non-halogenated solvents in parts washers or other solvent processes.
- f. Detergents and enzymatic cleaners can be substituted for sulfuric acid/potassium dichromate (chromerge) cleaning solutions and ethanol/potassium hydroxide cleaning solutions.

2. Process Modification

To the extent that it does not affect vital research, teaching or service, laboratories and service areas (such as printing and graphics or heavy equipment shops) are requested to modify experimental or standard processes to decrease the quantity of hazardous chemicals used and generated. In labs, micro analysis techniques can greatly reduce the amount of waste generated. Examples of this are the use of micro rather than macro Kjeldahl apparatus in nitrogen determinations (Kjeldahl waste is considered hazardous waste due to the selenium or mercury compounds used as catalysts) and the use of micro chemical oxygen demand analyzers (which generate a sulfuric acid - dichromate - silver waste). Maintenance shops can also utilize parts washer solvent recycling programs through vendors such as Safety-Kleen and Penzoil.

3. Segregation and Characterization

- a. Do not mix wastes. Especially do not mix hazardous wastes with nonhazardous wastes.
- b. Accurately label the waste bottles as to their exact content.

Segregation and characterization allows waste to be redistributed for reuse if someone else in the University system can use the chemicals; if the waste cannot be redistributed, it simplifies waste treatment and minimizes costs.

4. Chemical Recycling

Unopened or unused portions of chemicals may be redistributed within the University of Minnesota free of charge. The manifest you fill out to have waste chemicals picked up has a column labeled "RECY? (3)". If this column is checked, the hazardous waste personnel will pull these chemicals out of the waste stream for redistribution to laboratories that can use them.

If you wish to have your name added to the mailing list for free chemicals from our redistribution program, please call Environmental Health and Safety at 627-4169. For additional information concerning chemical recycling, see Part III, Section B.

5. Reclamation

The University reclaims some precious metals and valuable chemicals to reduce waste treatment costs. Some examples of this are:

- a. Photo fixer waste is processed to reclaim silver at two locations: the University Chemical Storehouse and the University Hospital.
- b. Mercury is collected and sold to a vendor for redistillation.
- c. Fuel grade solvents and used motor and pump oil are reclaimed by a vendor for use as an energy source.

6. Neutralization and Deactivation

Some laboratories generate a simple, pure chemical stream, such as a dilute acid or base that can be rendered non-hazardous by simple neutralization. Other labs may generate a dilute aqueous stream that contains a metal which can be easily precipitated. In these cases, labs are encouraged to call Environmental Health and Safety at 626-6002 to determine if they can process these materials to render them non-hazardous.

7. Management

Audit chemical supplies and use inventory control:

- a. Survey all the chemicals in your labs, shops and storerooms and manifest for disposal those chemicals that have not been used within the past year or two.
- b. Purchase only the quantity of chemical required for specific projects.
- c. If you have chemicals stored in a "shared" storeroom, take responsibility to recycle or manifest for disposal those old chemicals left by personnel or students no longer with the University.
- d. When purchasing automated equipment, use the type and amount of hazardous waste generated by the machine as one of the purchasing criteria.

8. Training

Train your employees when they are first hired and yearly thereafter in waste minimization concepts. Training should include:

- a. The concepts described above.
- b. Annual documentation of the training signed by both the employee and supervisor.

Chemical Recycling

Many materials treated as chemical waste are actually surplus chemicals which are reusable. To assist waste reduction, the Chemical Recycling Program accepts both opened and unopened containers of unwanted chemicals and redistributes them to other University laboratories. Recycled chemicals are provided free of charge to any interested University department or research laboratory.

An effective recycling program is dependent on a constant influx of materials. When manifesting materials for chemical waste pickup, keep in mind that chemicals which are potentially recyclable should be indicated by checking the column marked "RECY" (see Example 1, page 35) so that they may be pulled out of the waste stream and examined for possible redistribution. Inform the Chemical Recycling Program of any usable, unwanted chemicals which have accumulated in the laboratory and, in particular, the scheduling of laboratory clean-outs. A member of the Recycling Program will in turn come out to the area where the prospective recyclable materials are stored, evaluate the chemicals to determine whether or not they are reusable, and package any recyclable materials for pickup by Lab Safety Services.

Note that certain chemicals are particularly desirable for recycling and include the following:

Solvents

Acetone
Chloroform
Dichloromethane (Methylene chloride)
Ethyl acetate
Formaldehyde
Glycerol
Hexanes
Isopropyl alcohol
Methanol
Petroleum ether
Toluene
Xylenes

Acids

Acetic acid (glacial)
Hydrochloric acid
Sulfuric acid

Poisons/ORM-E

Indicators
Iodine (solid or solution)
Metals (powders, dust, shot)
Sodium, calcium, silver, and potassium salts

Oxidizers

Bromine
Potassium chlorate
Potassium dichromate
Silver Nitrate

Unopened chemicals

The Chemical Recycling Program accepts both opened and unopened chemicals on an individual basis. The Recycling Program will recycle most unopened chemicals.

The Chemical Recycling Program provides a monthly listing of currently available materials. Available chemicals are listed with the corresponding CAS number, company name, grade description, and total amount in kilograms or liters as illustrated below.

<u>CAS Number</u>	<u>Compound Name</u>	<u>Company Name</u>	<u>Grade</u>	<u>Amount</u>
625354	Crotonyl chloride	ALD	TECH	0.1L
6046931	Cupric acetate monohydrate	SGM	ACS	0.45K
7789459	Cupric bromide	TPI	ANALY	0.45K
10125130	Cupric chloride dihydrate	LDI	ANALY	0.12K
7758987	Cupric sulfate pentahydrate	ALD	ACS	0.45K
110827	Cyclohexane	JTB	ACS	0.47L
744040C	Decolorizing carbon	MAL	PRACT	5K

A Chemical Request Form (see Figure 2) is enclosed with the monthly mailing list. Individuals interested in ordering recycled chemicals should complete the form as follows:

1. Fill out the following information: name, phone number, date, department name and number, building name and number, and room number.
2. Indicate desired chemicals and the following corresponding information:
 - CAS number
 - grade description (see Table 1 for a list of grade descriptions and their definitions)
 - company name (see Table 2 for a list of company names and their abbreviations)
 - amount requested
 - if unopened

In addition to ordering chemicals from the monthly listing, University departments and laboratories may choose to contact the Chemical Recycling Program to make them aware of desirable recycled materials particularly suitable for the department or laboratory.

To be included on the Chemical Recycling mailing list or to address any questions concerning recycling procedures, contact Chemical Recycling at the following address:

Chemical Recycling Program
Suite B-5
University Technology Center
1313 5th Street S.E.
(612) 627-4169

Chemical Request Form

Invoice # _____

Name: _____ Phone: _____

Date: _____ Dept: _____ Bldg: _____ Room: _____

For Office
Use Only

Gas Number	Compound & Grade	Company	Amount Requested	Unopened? (Y)
------------	------------------	---------	------------------	------------------

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be from a notebook or a set of legal pads. There is no handwriting or other markings on the page.

**Chemical Recycling Program
Suite B-5
University Technology Center
1313 5th Street S.E.**

If you have any questions, or comments please feel free to call the Recycling Coordinator at 627-4169. Thank you for using the Chemical Recycling Program.

For Office Use Only:

Date Received: _____

Date Shipped: _____

Additional Comments: _____

Table 1: Grade Designation Abbreviations

<u>Abbreviation</u>	<u>Description</u>	<u>Abbreviation</u>	<u>Description</u>
----	No grade specified	INSQL	Instrument quality
XX.X%	Simple percentage	LABGR	Laboratory grade
XX% DC	XX% Dye content	N.F.	National formulary
.X N	.X Normal solution	NANO	Nanograde
99+ GL	99+% Gold label	OR	Organic reagent
A-GRD	"A" grade	PEST	Pesticide grade
ACS	Meets ACS Specifications	PRACT	Practical
ANALY	Analyzed (JTB) or Analytic (MAL)	PURE	Pure
BACT	Bacteriological grade	PURIF	Purified
BRILL	Brilliant grade	REAGT	Reagent grade
CERT	Certified	REFRG	Refrigeration grade
CHROM	Chromatographic grade	RESTD	Reference standard
CLIN	Clinical grade	RGSTD	Reagent standard
COMMR	Commercial grade	SAACS	Scintanalyzed ACS
C.P.	Chemically pure	SCIGR	Science grade
DESIC	Desicator grade	SCINT	Scintillation grade
EM	Electron microscope grade	SEQUN	Sequation grade
FCC	Food chemical codex quality	SPACS	Spectroanalyzed ACS
FINE	Fine	SPECT	Spectrophotometric
FOOD	Food grade	SPTGL	Spectrophotometric gold label
GLASS	Distilled in glass	SPTAR	Spectroanalyzed analytical reagent
GLDLB	Gold label	SYNTH	Synthetic
GR 1	Grade 1	TECH	Technical grade
GR 2	Grade 2	TLC	TLC grade
GR 3	Grade 3	TP I	Type I
HISTO	Histological grade	TP III	Type III
HPLC	HPLC grade	SIGMA	Sigma grade
INSTR	Instrument grade	USPGL	U.S.P. Gilt label
		WS & IG	Washed and ignited

Table 2: Company Designation Abbreviations

AIT	Alltech Associates, Inc.	GE	General Electric
ALD	Aldrich Chemical Company	GEL	Gelman Instrument Company
ALL	Allied Chemical Company	GFS	G. Fredrick Smith Chemical Company
ALN	Al-Don Chemical Company	HAR	Harleco Chemical Products
ATL	Atlas Chemical Company	ICN	ICN Biomedicals
ANC	Anachemia Chemicals, LTD.	JTB	J.T. Baker
APC	American Potash & Chemical Corporation	K&K	K&K Labs
B/A	Baker/Adams (Division of Allied Chemical)	KAR	Karlan Chemical Corporation
B&J	Burdick & Jackson	LRI	Ladd Research Industries, Inc.
BEK	Beckman	MAL	Mallinckrodt
BRD	Bio-Rad	MAN	Mann Research Labs
CCI	Columbus Chemical Industries	MAS	Masemo Laboratories
CLB	Calbiochem	MAR	Manufacturing & Research Chemists
CRN	Corning Glass Works	MCB	Matheson, Coleman, & Bell
CSC	Central Scientific Company	MMR	Magnus, Mabbe, & Reynard
CSL	Chemical Specialties Laboratory	MRK	Merck
DCC	Davison Chemical Company	NCC	National Carbon Company
DOW	Dow Chemical	NDG	National Diagnostics
EHS	E.H. Sargent & Company	P&B	Pfaltz & Bauer, Inc.
EFI	Ernest F. Fullam Company	PHM	Pharmacia
EM	EM Science	PLY	Polysciences
EMS	Electron Microscopy Science	PRS	Pierce
EST	Eastman Kodak Company	RBZ	Roboz Instrument Company
FRY	Frey Scientific Company	S/P	American Scientific Products
FSH	Fisher Scientific	SCC	Stansi Scientific Company
FLK	Fluka Chemical Company	SGM	Sigma Chemical Company
		SPM	Spectrum Chemical Company
		S/W	Sargent Welch
		TPI	Ted Pella, Inc.



METROPOLITAN AIRPORTS COMMISSION

POLLUTION PREVENTION SUMMARY

MAC Environmental Department

July 1992

METROPOLITAN AIRPORTS COMMISSION POLLUTION PREVENTION PLAN

1.0 Policy Statement

2.0 Existing Pollution Prevention Activities

- 2.1 MAC Energy Management Center Burner Retrofitting**
- 2.2 MAC Paint Department Materials Handling**
- 2.3 Solvent-Based Parts Cleaners**
- 2.4 Compressed Natural Gas (CNG) Vehicles**
- 2.5 Freon Reclamation**
- 2.6 Antifreeze Recycling**
- 2.7 Solid Waste Study**
- 2.8 Used Oil & Battery Recycling**
- 2.9 Computer Toner Cartridge Recycling**

3.0 Responsibilities of MAC Staff

- 3.1 MAC Executive Staff**
- 3.2 MAC Legal**
- 3.3 MAC Environmental Department**
- 3.4 MAC Finance Department**
- 3.5 MAC Pollution Prevention Task Force**
- 3.6 MAC Employees**

4.0 Future Reduction Strategies

5.0 Estimation of Environmental and Economic Benefits

METROPOLITAN AIRPORTS COMMISSION

Minneapolis-Saint Paul International Airport

6040 - 28th Avenue South • Minneapolis, MN 55450

Phone (612) 726-8100 • Fax (612) 726-5296



METROPOLITAN AIRPORTS COMMISSION POLLUTION PREVENTION POLICY STATEMENT

The Metropolitan Airports Commission (MAC) recognizes pollution prevention as an integral part of its services. The MAC's operating philosophy reflects its commitment to environmental protection "beyond those standards required by federal and state regulations."

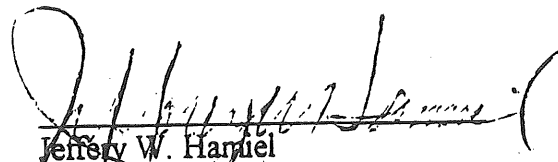
The MAC is committed to providing leadership and excellence in protection of the environment. In keeping with this policy, our objective is to reduce waste and emissions. We strive to minimize adverse impacts on the natural environment (i.e. air, water, and land) and will encourage our tenants to do likewise. Our emphasis will be pollution prevention at its source and will focus on both the products and activities which generate pollution. By noting the cost savings, increased operational efficiencies, improved quality of service and operational safety, we hope to encourage industry to adopt similar policies.

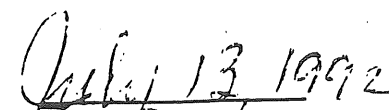
Employee involvement is an essential element of the *MAC Pollution Prevention Policy*. Our employees are therefore responsible for identifying, reducing and eliminating pollution at its source. MAC will create an employee task force to identify sources of pollution, develop prevention strategies and implement this policy. The employee task force is encouraged to use the assistance of other state organizations such as the Minnesota Technical Assistance Program (MNTAP), the Office of Waste Management (OWM), the Minnesota Pollution Control Agency (MPCA), and the Interagency Pollution Prevention Advisory Team (IPPAT). MAC senior management agrees to maintain this commitment through continued support of the task force's efforts.

Wherever possible, the following measures will be implemented (in order of preference) to reduce or eliminate pollution at MAC Airports:

- I) Elimination at the source
- II) Substitution of a nonhazardous material/product
- III) Recycling/Reclamation of Materials

The results of this policy will be summarized and reported to the governor's office on an annual basis.


Jeffrey W. Hamiel
Executive Director, MAC


Date July 13, 1992

2.0 PREVIOUS POLLUTION PREVENTION ACTIVITIES

This section describes the previous measures which the MAC has undertaken to reduce pollution stemming from its operations. Pollution for the purpose of this section will pertain to any adverse effects to the natural environment (i.e. air, water and land). Pollution stems both from activities and the use of products.

2.1 MAC Energy Management Center Burner Retrofitting

MAC Energy Management Center has installed energy efficient natural gas burners which have greatly reduced the amount of sulfur and nitrogen oxides emitted into the atmosphere. Available data suggests that there has been an approximate 90% reduction in these emissions since the retrofits. Data for this project will be summarized in the 1993 annual report.

2.2 MAC Paint Department Materials Handling

The MAC Paint Department is the largest single user of hazardous materials and generates more hazardous waste than any other MAC department. Lead-based paints and organic solvents constitute the majority of the materials used in this department.

Prior pollution prevention efforts have focused on process efficiency to minimize the impact from these materials. By altering the container handling and mixing processes, it is estimated that the amount of hazardous wastes generated in this department has decreased to one-half of 1989 levels.

2.3 Solvent-Based Parts Cleaner Services

Organic parts cleaning solvents represent the largest single source of hazardous waste from MAC operations. Past efforts have focused on reducing the rate of generation of these materials, as well as the use of non-hazardous processes including bead-blasters and aqueous-based parts cleaners. Increased service frequency for rented parts washers has decreased the total amount of hazardous waste generated. To date, an acceptable replacement to these units has not been found.

2.4 Compressed Natural Gas (CNG) Vehicles

In 1991, the MAC purchased a CNG vehicle for its Field Maintenance Department. CNG-vehicle produces cleaner emissions with only minimal changes to the vehicle maintenance schedule. This vehicle appears to be a successful alternative to gasoline-based vehicles. MAC staff has met with vehicle manufacturers to discuss the possibility of expanding this program by having the MAC serve as a test fleet for CNG vehicles.

2.5 Freon Reclamation

Vehicle maintenance at MAC frequently requires freon replacement in vehicle air conditioning. MAC captures and recycles freon from its vehicles. The MAC Energy Management Center has installed similar equipment to recapture freon from coolant equipment at its facilities.

2.6 Antifreeze recycling

Vehicle antifreeze is captured, treated and reused in all MAC vehicles. This has resulted in the virtual elimination of the use of commercial antifreeze.

2.7 Solid Waste Study

The MAC is examining its solid wastes generation at MSP International Airport. This study will provide recommendations for providing an economical and environmentally efficient solid waste disposal system.

2.8 Used Oil & Battery Recycling

All used oil and spent lead-acid batteries are reclaimed or recycled from MAC vehicles.

2.9 Computer Toner Cartridge Recycling

MAC Management Information Systems has selected computer printer toner cartridges which can be readily recycled, eliminating toxic materials from the solid waste stream.

2.10 Consumer Products

MAC Purchasing Department monitors the use of environmentally-friendly consumer products. In addition to minimizing the use of hazardous materials, the use of recycled products is encouraged when feasible.

3.0 RESPONSIBILITY FOR POLLUTION PREVENTION:

The following describes the major responsibilities of MAC staff with regards to pollution prevention. It is the responsibility of all MAC employees to encourage all opportunities for pollution prevention.

3.1 MAC Executive Staff

Demonstrates commitment to pollution prevention. Authorizes resources to assist in the development of pollution prevention activities.

3.2 MAC Legal Department

Maintains knowledge of the potential environmental liability stemming from pollution.

3.3 MAC Environmental Department

Participates on the Interagency Pollution Prevention Advisory Team, maintains a working knowledge of technological and regulatory information and directs pollution prevention efforts at MAC.

3.4 MAC Financing Department

Provides information on the acquisition and costs of materials and services for MAC operations.

3.5 MAC Pollution Prevention Task Force

Gathers and analyzes employee input to minimizing pollution stemming from MAC operations. Tracks progress of pollution prevention efforts at MAC facilities.

3.6 MAC Employees

Provide input for the development and implementation of pollution prevention strategies.

4.0 REDUCTION STRATEGIES

MAC's pollution prevention reduction strategies will focus on those products and activities which generate pollution. The following methods will be examined respectively to find the most appropriate form of pollution prevention.

Whenever feasible, reduction at the source of generation is the preferred method of pollution prevention. This will include be accomplished through source reduction, materials handling, process modification, housekeeping, maintenance and training. Recycling and reuse options will also be considered pollution prevention options.

All of the pollution prevention strategies in Section 2 will be ongoing in nature. Any new strategies instituted by the MAC Pollution Prevention Task Force will be included in this plan.

5.0 ESTIMATION OF ECONOMIC AND ENVIRONMENTAL BENEFITS

At this time, there is no single standard method for determining the economic and environmental benefits of pollution prevention. Also, there are secondary benefits of pollution prevention which may not cannot be directly calculated. The 1993 report will incorporate a methodology for calculation of these benefits.

POLLUTION PREVENTION REPORT - JULY 1, 1992

AGENCY: Metropolitan Council

PREPARED BY: Wayne Nelson, Senior Planner (291-6406)

I. STEPS TAKEN TO INTEGRATE POLLUTION PREVENTION INTO AGENCY ACTIVITIES

A. Policy Statement

Attached.

B. Activities To Reduce Generation Of Hazardous Waste

Council operations are conducted in an office environment that involves a very low level of toxic materials. The Council office manager maintains a file of material safety data sheets on chemicals of concern in this environment. An effort is made through purchasing decisions to avoid using any of these materials to the extent that is feasible.

C. Efforts To Integrate Pollution Prevention Into Policy Activities

The Council plans for the seven-county Metro Area. It is responsible for overseeing the development of the highway, transit, regional parks, sewers and airports systems as well as planning for a variety of other region-wide needs. Specific policies to reduce the generation of hazardous waste and toxic materials are contained in The Council's Solid Waste Management Development Guide/Policy Plan. The plan endorses the state's waste management hierarchy which assigns top priority to waste reduction and reuse. It specifically addresses toxicity management with the following policies:

- 1A. An environmental protection fee should be added to tipping fees at all land disposal facilities in the state. Funds accumulated from the fee should pay for all environmental protection costs, including the removal of toxics from the waste stream, and encourage generators to participate in further waste reduction efforts.
- 1B. A tax or fee should be assessed on a list of materials determined by the Minnesota Pollution Control Agency to cause a negative environmental impact. Monies accumulated should be placed in a dedicated fund used to reduce the toxicity of the waste stream.
- 1C. The primary messages of public education and information programs should include waste reduction and toxicity reduction in addition to recycling.

D. Efforts To Investigate Opportunities To Encourage Pollution Prevention Through Purchasing Policies

No specific investigation has been initiated to date.

II. PLANS FOR FUTURE ACTIVITIES TO PREVENT POLLUTION

A. Steps To Reduce Toxic Pollutants At The Source - Schedule

A staff committee has been established to audit toxic materials used on the Council's premises, evaluate and recommend alternatives to the use of these materials and prepare the annual report to the Office of Waste Management on progress with pollution prevention. A staff toxic waste audit will be performed and reported upon in 1993. The staff committee will include staff responsible for office management, purchasing, research and long range planning, natural resources planning, solid waste management planning and other subjects deemed appropriate by the committee. The committee will consult with the other tenants of the Mears Park Centre to coordinate building-wide management of toxic materials.

B. Anticipated Policy Initiatives

No additional policy initiatives are anticipated at this time.

C. Anticipated Purchasing Policy And Specification Initiatives - Schedule

A staff committee will begin to monitor purchasing decisions. No specific policies, specification requirements or schedules appear to be warranted at this time.

III. ESTIMATE ENVIRONMENTAL AND ECONOMIC BENEFITS RESULTING FROM PREVENTING POLLUTION

A. Environmental Benefits

Air quality testing in Council offices detected only trace amounts of formaldehyde. No other chemicals of concern were detected. The low level of toxic chemical use on Council premises is a prime factor affecting the excellent air quality enjoyed on the Council premises.

B. Economic Benefits

Pollution prevention undoubtedly contributes to a healthier and more productive work force at the Council. These economic benefits cannot be quantified. More attention to pollution prevention in the future will likely be constructive in this regard. The low current level of toxic materials use in the Council's office environment and the absence of any documented problems associated with such use makes it unlikely that further economic benefits from pollution prevention initiatives will be identified.

WNPPAW1M

METROPOLITAN COUNCIL

ADMINISTRATIVE PROCEDURES MANUAL

Section 2 Page 2.11.1 Date Approved 6/30/92
Subject Pollution Prevention Dept. Responsible Administration

POLICY:

The Metropolitan Council will support pollution prevention by participating in the implementation of Governor Carlson's executive order 91-17, which provides for the implementation of pollution prevention by state government. To this end the following environmental guidelines are hereby established.

- ◆ The Council is committed to identifying and implementing pollution prevention opportunities through the encouragement and involvement of all employees. Preventing pollution by reducing and eliminating the generation of toxic waste or emissions at the source will be a consideration in the development of Council policies and programs.
- ◆ Technologies and methods which substitute non-hazardous materials or use other source reduction approaches will be given careful consideration in addressing all environmental issues.
- ◆ The Council seeks to adhere to all environmental regulations. It will promote cooperation and coordination with other governmental agencies and Minnesota citizens toward the shared goal of pollution prevention.

DEFINITION:

Pollution prevention is defined as reducing pollutants at the source rather than controlling them after they have been created.

PROCEDURE:

The Council's participation will be coordinated through a staff committee with the following responsibilities:

- ◆ Encourage policy development that minimizes unnecessary use of toxic materials and requires financial responsibility for the proper disposal of these materials,
- ◆ Audit toxic wastes subject to Council control,
- ◆ Evaluate and recommend the safest and most cost effective measures to abate the use of toxic wastes subject to Council control,
- ◆ Monitor purchasing and building maintenance activities to discourage the use or generation of toxic materials by Council employees or on Council premises or through the activities of vendors that provide supplies or services to the Council, and
- ◆ Prepare annual pollution prevention reports to the Office of Waste Management pursuant to the executive order.

**POLLUTION PREVENTION PLAN
FOR
METROPOLITAN MOSQUITO CONTROL DISTRICT**

PREPARED BY:

**METROPOLITAN MOSQUITO CONTROL DISTRICT
2380 WYCLIFF STREET
ST. PAUL, MINNESOTA 55114
(612) 645-9149**

**DATE:
JULY 01, 1992**

CERTIFICATION
of the
POLLUTION PREVENTION PLAN
for
METROPOLITAN MOSQUITO CONTROL DISTRICT

I certify under penalty of law that I have examined and am familiar with the information contained in this plan, and that based on my inquiry of those individuals who prepared or are responsible for obtaining that information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

Name: R. D. Sjogren

Title: Director

Date: 7/1/92

POLLUTION PREVENTION POLICY
for
METROPOLITAN MOSQUITO CONTROL DISTRICT

POLICY

The Metropolitan Mosquito Control District is committed to protecting the environment. It is the policy of the District to significantly reduce and whenever possible, eliminate, the release of toxic pollutants and the generation of hazardous and other wastes.

When wastes or releases cannot be avoided, we are committed to minimizing any undesirable impacts on the air, water and land.

By successfully preventing pollution at its source, we can improve the quality of the environment we live in and maintain a safe and healthy work place for our employees.

Environmental protection is everyone's responsibility. The MMCD is committed to being a good neighbor and operate in strict compliance with federal, state, and local environmental laws. Meeting this commitment requires the cooperative effort of all MMCD employees.

Technologies and methods that substitute nonhazardous materials and utilize other source reduction approaches will be given top priority in addressing all environmental issues.

METROPOLITAN MOSQUITO CONTROL DISTRICT

The Metropolitan Mosquito Control District, established in 1959 controls mosquitoes and gnats (black flies) in the metropolitan counties of Anoka, eastern Carver, Dakota, Hennepin, Ramsey, Scott and Washington. The District operates under the seventeen member Metropolitan Mosquito Control Commission, composed of county Commissioners from the participating counties. A Director is responsible for the operation of the program and reports to the Commission. The District employs 62 full time staff and approximately 150 part-time staff during the mosquito and gnat breeding season. The District currently operates a warehouse facility, nine remote field/shop facilities and 3 labs. Additionally, the District owns and operates a fleet of vehicles.

MMCD POLLUTION PREVENTION GOALS

The District has established a goal to reduce the overall generated waste levels of 1992 by 25%, by December of 1993 and an additional 25% by December of 1995. The District is also committed to "Zero Generation" of hazardous or toxic chemicals targeted for reduction in the Minnesota-50 Project by December 1995.

MMCD GENERATION of HAZARDOUS MATERIALS

The major waste streams generated by MMCD are from two specific areas of operation. The first is the entomology lab operation, the second is the clean up of oil leaks and liquid control materials.

The entomology lab operations primarily involve the identification of insect samples that have been preserved in ethyl alcohol. Once the sample is identified the contents, including the ethyl alcohol, is discarded. The District labs generated 200 gallons of waste alcohol in 1991.

The clean up of oil leaks and chemical spills at District facilities generates approximately 500 lbs. of contaminated clay absorbents and 200 lbs. of contaminated absorbent pads annually.

CURRENT POLLUTION PREVENTION METHODS

Lab Alcohol

Used ethyl alcohol from preserved aquatic samples is collected and stored in 55 gallon drums at each lab location. The waste alcohol is filtered through a fine mesh screen to remove organic debris. Once the drums are filled with waste alcohol they are transported by a licensed hauler to Waste Research & Reclamation, a licensed disposal facility, for incineration. The District generates 200 gallons of waste ethyl alcohol annually. From this 200 gallons, 180 gallons is captured for disposal and 20 gallons is released through evaporation.

Contaminated Absorbents

Absorbents are used to clean up oil leaks in vehicle storage areas and to clean up leaks and small spills from District spraying equipment. Annually the District generates 500 lbs. of contaminated absorbents and 200 lbs. of contaminated absorbent pads. Oil leaks are kept at a minimum through improved maintenance and inspection of vehicles. Spraying equipment maintenance was improved to reduce leaking from hoses and tanks. Absorbent pads, which can be reused several times before disposal is needed, are being used when possible. Oil and chemical pesticide drums are stored on spill control platforms to allow for recovery of any spilled material.

POLLUTION PREVENTION OPTIONS

Lab Alcohol

Some type of preserving agent is necessary to stabilize aquatic specimens until lab personnel can identify the samples. Without a preserving agent specimens will rapidly deteriorate.

Options

Option 1 would explore substituting an alternative preserving agent for ethyl alcohol. The substitute chemical would need to demonstrate preserving qualities equal to ethyl alcohol, a no or low health/safety risk, be environmentally acceptable, keeping with the District's pollution prevention policy and lastly, economically feasible. Substitution of alternative chemicals may not reduce the amount of waste preservative generated.

Option 2 will examine source reduction, recapture, and reuse of used ethyl alcohol as means to significantly reduce the amount of waste alcohol generated by the program. Significant waste and emission reductions can be accomplished simply by minimizing the amount of alcohol used in the labs. Additionally, an improved filtering method to separate organic debris from used ethyl alcohol would allow the chemical to be reused by the program. These procedures could realize up to a 50% reduction in the overall amount of waste alcohol produced.

Evaluation

Option 1 is perhaps the least acceptable method for reducing the generation of waste alcohol. The two alternative chemicals considered were methyl alcohol and isopropyl alcohol. Both alternative chemicals display excellent preserving qualities, but at the same time show a slightly higher health/safety risk. From an economic cost standpoint there is no distinct advantage between the alcohol used now and the alternatives, disposal costs may in some cases be higher than current costs.

Option 2 offers the best method for source reduction of ethyl alcohol. By following good lab practices and minimizing use an estimated 10% reduction can be achieved. By filtering the used alcohol and reusing it another 40% reduction of waste alcohol might be achieved. The cost for a filter unit to remove contaminants from used alcohol is not known at this time, but is estimated to be at reasonable cost. The cost of new material and disposal of waste should also reflect the 50% reduction.

Selected Option

Option 2 is the selected measure. Implementation of the selected option will be completed by March 31, 1993.

Contaminated Absorbents

Options

Option 1 will be to improve maintenance and inspections of vehicles and equipment to reduce leaks that require absorbents for clean up. Improved employee training and awareness of pollution prevention would also be included in this option. Improved techniques for handling and transfer of liquid pesticides could significantly reduce spills. Improved overall housekeeping could possibly reduce generation of contaminated absorbents by an estimated 25%.

Option 2 would explore the possibility of using sealed container systems for liquid pesticides. The containers would be supplied by the chemical vendor and would be returnable when empty. Sealed container systems eliminate the possibility of spills and leaks. While this type of system would not reduce the amount of absorbents contaminated with used motor oil, it does reduce the amount of absorbent containing the more toxic of the two chemicals. A 50% reduction in the generation of contaminated absorbents is possible.

Evaluation

Option 1 offers the most cost effective method for reducing waste absorbents. Training and pollution awareness can be incorporated into the District employee training schedule on an annual basis. Currently employees receive training for spill control and containment and clean up of hazardous materials. This source reduction approach would have no capital cost and implementation could be complete by December 1993.

Option 2 offers the possibility of a 50% reduction in waste absorbents. It will also have the highest capital cost attached. Chemical vendors are reluctant to invest in sealed systems because of increased production costs. End users would have increased costs for retro fitting equipment to use the new containers as well as shipping costs to return empty containers. Option 2 is the most effective in reducing waste but is the least cost effective.

Selected Option

Option 1 is the selected prevention measure. Implementation of this option will be complete by December 1993.



METROPOLITAN TRANSIT COMMISSION
515 North Cleveland, St. Paul, Minnesota 55114-1878 612/642-2600

June 30, 1992

Ms. Laurie Hutchinson
Office of Waste Management
1350 Energy Lane
St. Paul, Minnesota 55110



RE: Annual Progress Report

Dear Ms. Hutchinson:

Enclosed is the Annual Progress Report on Pollution Prevention from the Metropolitan Transit Commission. If there are any questions or concerns, please call me at 642-2622.

Sincerely,


John Bryan
Systems Engineer

JB/crf
Encl.

TABLE OF CONTENTS

Policy Statement from the Commission

Summary of objectives and accomplishments
for 1991-1992

Certification of accuracy

RESOLUTION 92 - 38
OFFERING GUIDELINES AND A POLICY STATEMENT
ON POLLUTION PREVENTION

WHEREAS the Metropolitan Transit Commission (MTC) is committed to protecting the environment; and in keeping with this policy, the MTC, through the combined efforts of members of staff, will investigate methods for preventing pollution through the elimination or reduction of waste and of harmful emissions to the air, water and land; and

WHEREAS by successfully eliminating sources of pollution, the Commission will realize cost savings, increase operational efficiencies, improve service and will also maintain a safer, healthier work place for MTC employees;

BE IT THEREFORE RESOLVED that the MTC's environmental guidelines include the following:

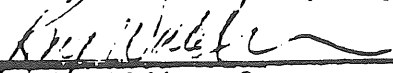
- At the MTC, environmental protection is everybody's responsibility.
- Preventing pollution by reducing or eliminating the sources of waste is a primary objective of MTC's operations. The MTC is committed to identifying and implementing methods for pollution prevention by encouraging the involvement of all MTC employees.
- Where protection of the environment is concerned, methods and technologies which substitute non-toxic materials for pollutants will receive support, in keeping with a source-reduction approach to pollution prevention.
- The MTC seeks to demonstrate its good citizenship by adhering to all regulations designed to protect the environment. The Agency promotes cooperation and coordination of efforts of staffs of government agencies and members of the general public. We acknowledge a shared goal of eliminating sources of pollution. At the MTC, protecting the environment is our highest priority. We pledge to reduce, or eliminate wherever possible:
 - Our use of toxic substances
 - Our generation of hazardous waste
 - Our release of toxic pollutants
- When waste or releases cannot be avoided, we are committed to minimizing their amounts and their undesirable impact upon the air, water, and land.

THEREFORE BE IT FURTHER RESOLVED that the Metropolitan Transit Commission supports pollution prevention through the continuation of protective programs and through participation in the efforts outlined in the Minnesota Toxic Pollution Prevention Act of 1990, pursuant to Executive Order 91-17 providing for the implementation of pollution prevention by State Government, and through the promotion of pollution prevention by all of the Commission's employees.

CERTIFICATION OF RESOLUTION

I, the undersigned, Ray Waldron, Secretary of the Metropolitan Transit Commission, do hereby certify that the foregoing Resolution 92-38 is a true and correct copy of a Resolution of the Metropolitan Transit Commission adopted at a meeting of said Commission duly convened and held on April 14, 1992, at which a quorum was present and voting; and the action taken has not been in any manner rescinded or modified.

In witness whereof, I have hereunto set my hand this 14th day of April, 1992


Ray Waldron, Secretary

The Metropolitan Transit Commission is committed to excellence and leadership in protecting the environment. In keeping with this policy, our objective is to reduce the waste and emissions that are currently produced by the Metropolitan Transit Commission. By successfully preventing pollution and its source the agency will be able to increase its operational efficiencies and maintain a safe and healthy environment for all of our employees, while at the same time achieve operational cost savings.

The Metropolitan Transit Commission is in complete support of these ideals and in April 1992, past a resolution affirming its commitment to the protection of the environment. A certified copy of this resolution is on the following page.

Summary of Objectives

During the past year the MTC has actively participated in the Interagency Pollution Prevention Advisory Team. The agency also sent members to the first training seminar that IPPAT held in May of 1992.

The MTC has, in the last six months, applied for and received a grant from the Office of Waste Management to help with the study of chemicals that are used by the agency. This study will conclude with the agency being able to determine which hazardous emission and waste are produced by the different chemicals and then what chemicals or compounds can be substituted to prevent these hazardous emissions and waste.

The MTC is moving forward on this project, and hopes to have the contractor that will perform this study on board before the middle of September. The interagency agreement for the grant from the Office of Waste Management should be completed within the next 60 days.

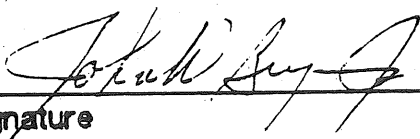
The MTC is also currently looking at modifications to our painting shop to incorporate the use of electrostatic painting of metal parts. This idea was instituted after the IPPAT training seminar. One of the pollution preventions that were forwarded was from the paint shop at the Department of Corrections. The MTC is studying how much painting of steel is done in our paint shop. Then a tour of the Corrections Departments paint shop will be scheduled. It is hopeful that this project may reduce our emissions from

the paint shop by 25-50%. The final project that the MTC is working on is a study of alternative fuels to be used in the buses. Currently, the MTC uses #1 diesel to power its fleet. By the end of the year the MTC will be testing four other types of fuels and system to reduce the particule emissions from our fleet. This study will start in full in the fall of 1992, when all the buses have been received from the manufacture and will run for three years. Beside reducing the emissions from the buses it will also reduce emission at each of our bus storage facilities.

Certification of Accuracy

I, the undersigned, do hereby certify that I have personally examined and am familiar with the information submitted in this document and based on my inquiry of those individuals responsible for obtaining the information. I believe that the submitted information is true, accurate, and complete.

JOHN BRYAN System Engineer
Printed Name & Title

 6/30/92
Signature Date

JB/crf

Metropolitan Waste Control Commission
Pollution Prevention Summary Report

July 1, 1992

Submitted to the Office of Waste Management to meet the requirements of the Governor's Executive Order 91-17: PROVIDING FOR THE IMPLEMENTATION OF POLLUTION PREVENTION BY STATE GOVERNMENT.

INTRODUCTION:

Definition: Pollution prevention reduces pollution at its source rather than treating or controlling pollution after it has been created.

The Metropolitan Waste Control Commission (MWCC), as a part of the Metropolitan Council, is a regional agency charged with the collection and treatment of wastewater. The MWCC provides wastewater treatment service within the seven-county Minneapolis / St. Paul area. The MWCC owns and operates 11 wastewater treatment plants and over 500 miles of sewer line.

In order to determine the effectiveness of wastewater treatment, the MWCC monitors area rivers that receive treated water, air emissions from treatment facilities, and residual solids land disposal sites. The MWCC also monitors and regulates the type and strength of wastewater which is discharged to treatment facilities. As such, the MWCC is involved with end-of-pipe treatment and associated monitoring and pretreatment or reduction of the amount of waste which needs treatment.

The MWCC views pollution prevention as a necessary addition to the established treatment/pretreatment waste control strategy. Past MWCC experience using incentives to promote wastewater volume reduction has resulted in pollution prevention efforts on the part of industries which discharge to the MWCC system. The MWCC believes pollution prevention benefits the environment because less pollution is created, benefits the MWCC by reducing the amount of pollution which needs to be treated at MWCC facilities, and benefits parties practicing prevention by reducing waste and disposal costs.

The remainder of this report will summarize pollution prevention activities carried out by the MWCC prior to July 1, 1992, policy initiatives and statements related to pollution prevention, and outline future directions for MWCC pollution prevention programs.

I. Integration of Pollution Prevention into MWCC Activities

A. Policy Statements

The MWCC Board of Commissioners adopted the following resolution September 17, 1991.

RESOLUTION NO. 91-227: SUPPORTING COMMISSION POLLUTION
PREVENTION ACTIVITIES

WHEREAS,

1. Pollution prevention includes, but is not limited to, reducing the generation of pollution at the source, reducing and/or eliminating the release of pollutants to the environment, and closed loop recycling of wastes.
2. Pollution prevention strategies can substantially reduce pollutant loads to sewers and treatment facilities, without transferring those same pollutants to the air or land.
3. Pollution prevention provides an opportunity for businesses to reduce costs for inventory, treatment, and disposal.
4. Pollution prevention provides an opportunity for the public to reduce costs for waste treatment facilities and infrastructure maintenance by reducing the treatment burden on current facilities.
5. The pollutants currently discharged to the sewer collection and treatment system require multi-media treatment and this treatment has the potential for environmental discharge with undesirable impact.
6. Future Metro Area growth and increasingly stringent regulatory efforts will increase the need for treatment of sewered wastes and increase the treatment requirements placed on the byproducts of the treatment process.
7. The reuse and/or disposal of treatment residual solids in an environmentally sound manner presents a major challenge which could be simplified by reducing the pollutants in the wastestream.
8. Federal and state regulations are not all based on environmental need and do not necessarily promote increased efficiency through pollution prevention.

BE IT RESOLVED that the Metropolitan Waste Control Commission will support pollution prevention through its continuing programs, through participation in the efforts outlined in the Minnesota Toxic Pollution Prevention Act of 1990, through the formation of a subcommittee of the General Advisory Committee to provide input on Commission pollution prevention issues, and through promotion of pollution prevention to the users of the collection and treatment system.

This resolution describes the reasons for MWCC support for pollution prevention. The complete business item which presented this resolution to the Commissioners is attached (Attachment I). The business item further describes MWCC involvement with interagency pollution prevention efforts and the EPA grant program to promote pollution prevention through wastewater treatment works.

The MWCC has also held discussions on pollution prevention with the General Advisory Committee (GAC), a committee formed by MWCC to represent community, industry, and public interests in issues that affect the MWCC. Attachment II is a recommendation from the GAC to the MWCC Board of Commissioners regarding pollution prevention.

The third attachment, Attachment III, details the charter for an internal recycling program. This charter was adopted in November, 1990.

B. Activities to Reduce Pollution

The MWCC continues to operate an industrial pretreatment program. The program is designed to regulate the sewered wastes from specific classes of industry in an effort to prevent damage to facilities, unsafe conditions for operating personnel, and wastewater treatment plant permit violations.

While this program was not initially designed as a pollution prevention tool, the program has resulted in waste reduction and pollution prevention. Implementation of program requirements reduced the metals loadings to treatment facilities, reduced wastewater volumes discharged to the sewers, promoted process efficiency and good operating practices for industries, and promoted alternatives to sewerage of wastes.

During 1991, the MWCC collaborated with the Minnesota Office of Waste Management (OWM) to receive an EPA grant to promote pollution prevention activities through a publicly owned treatment works. Attachment IV is the grant proposal. The grant program consists of workshops to introduce pollution prevention to area industry, public input to the MWCC for use in pollution prevention efforts, and development of tracking methods to determine pollution prevention benefits.

The first product of the program was a pollution prevention workshop held on April 29, 1992. A Quarterly Progress Report from MWCC to EPA (May 1992) describes grant program efforts to date and is included as Attachment V.

In addition to the activities summarized above, MWCC

staff are active on the Pollution Prevention Task Force and the Interagency Pollution Prevention Advisory Team. Both of these groups are coordinated through the Minnesota Office of Waste Management and address the Toxic Pollution Prevention Act (1990) and the Governor's Executive Order regarding pollution prevention, respectively. Staff activities include providing input on pollution prevention issues/programs and representing the interests of wastewater treatment facilities.

C. Integration into Regulatory and Policy Activities

MWCC regulatory activity is limited to the industrial pretreatment program. The Waste Discharge Rules for the Metropolitan Disposal System define the MWCC's industrial permitting program. These rules were revised and adopted on June 16, 1992. In Article I, 103.00 PURPOSE, letter I. states the purpose is "to reduce the introduction of pollutants into public sewers and thereby prevent detrimental environmental effects." This statement provides the groundwork for using the MWCC pretreatment program as a vehicle to promote pollution prevention.

Other staff activities related to pollution prevention regulation/policy include participation in interagency workshops on policy, internal environmental audits of MWCC facilities, and federal and state rules commentary.

D. Encouraging Pollution Prevention through Purchasing Policies

Attachment III, charter for recycling program, describes Phase II - Purchasing. This represents the MWCC's initial efforts to address this issue. The MWCC is also initiating a materials management program to control all inventoried goods. Chemicals and other toxic materials will be managed under this program.

II. Future Pollution Prevention Activities

A. Activities to Reduce Pollution

The MWCC will continue the pollution prevention grant program as described in Attachment IV. Progress and schedules are defined in Attachments IV and V.

B. Integration into Regulatory and Policy Activities

The policy statements and Waste Discharge Rules revisions described above represent the current MWCC commitment to pollution prevention. After an assessment of the impact of pollution prevention activities is made under the grant program, MWCC policies and regulations will be reexamined for possible changes regarding pollution prevention initiatives.

C. Encouraging Pollution Prevention through Purchasing Policies

Through participation in State Department of Administration recycling task force efforts and the Interagency Pollution Prevention Advisory Team, the MWCC will participate in procurement policy development. The internal materials management program will begin during 1993.

III. Environmental and Economic Benefits of Pollution Prevention

A. Environmental Benefits

The MWCC pollution prevention efforts have not been established long enough to attribute any environmental benefits directly to these programs.

However, the MWCC's industrial pretreatment program which has produced a pollution prevention effect has resulted in less pollution. The pretreatment program has resulted in lower volumes of wastewater and reduced pollutant loadings in the remaining wastewater. For example, Table 1. shows the reduced loadings to the Metro Plant. The Metro Plant is the MWCC's largest facility and services a great proportion of the industries in the Minneapolis / St. Paul area. Similar reductions have been experienced at other MWCC facilities.

Table 1. Reduction of Metals Loading to Metro Plant

<u>Metal</u>	<u>Pounds</u>		<u>Reduction</u>
	<u>1981</u>	<u>1990</u>	
Cadmium	6,666	647	90 %
Chromium	65,752	10,683	84 %
Nickel	44,646	7,040	84 %
Copper	45,234	11,631	74 %
Zinc	71,199	18,266	74 %
Lead	6,603	3,831	42 %

Environmental benefits of this load reduction include compliance with treatment plant effluent limits, receiving water compliance with area water quality standards, reduced air emissions from sludge incineration, and increased beneficial use of residual solids.

B. Economic Benefits

As stated above, the MWCC pollution prevention programs have not been established long enough to allow for an assessment of economic benefits.

An assessment of the economic benefits of reducing

pollutant loadings is possible.

If any of the six metals listed in Table 1. produced some water quality concern, the MWCC could be required to control that metal more stringently. If end of pipe treatment was selected as a control option, tertiary treatment would be required at MWCC facilities (MWCC currently operates at secondary or advanced secondary treatment levels). Tertiary treatment at all MWCC facilities would cost between 300 - 500 million dollars (1992 cost). The cost to MWCC of the pretreatment program over the past decade has been approximately 11.5 million dollars or about 3% of the current construction cost. This comparison does not include any costs associated with environmental damage, worker safety, residuals disposal, or air quality considerations. The addition of these factors would increase the economic benefits of the reduced pollutant loadings.

July 9, 1992

Ms. Laurie Hutchinson
Office of Waste Management
1350 Energy Lane
St. Paul, MN 55110

RECEIVED

AN OFFICE OF

JUL 11 1992

WASTE MANAGEMENT

RE: Pollution Prevention Summary Report

Dear Ms. Hutchinson:

The Governor's Executive Order 91-17 requires state agencies to develop policy statements indicating that pollution prevention is a priority. Agencies are to prepare summary reports annually, with the first report due July 1, 1992. The summary reports are to describe steps taken to integrate pollution prevention, provide a summary of plans for future activities to prevent pollution, and give an estimate the of environmental and economic benefits resulting from the agency's pollution prevention activities.

Support for Pollution Prevention Policy

The Minnesota Public Utilities Commission fully supports the Governor's policy to reduce pollution at its source rather than treating or controlling pollution after it is created. State government has an important role to play in providing leadership in protecting the environment.

Internal Activities

The Commission itself does not generate significant amounts of hazardous waste or use significant quantities of toxic chemicals. The Commission has a program to recycle paper, newspaper, and aluminum cans; we also purchase recycled paper and envelopes. The Commission returns empty computer printer toner cartridges for recycling. Any additional actions necessary to identify and reduce the use of toxic chemicals will be pursued by the Commission's recycling committee.



Regulatory and Policy Activities

A January 3, 1992, Memorandum from the Office of Waste Management to the Interagency Pollution Prevention Advisory Team identified the Public Utilities Commission as an agency which may make policies or regulations affecting the generation of hazardous waste or use of toxic chemicals in Minnesota.

The functions of the Commission are both legislative and quasi-judicial in nature. The Commission is charged with ensuring that public utilities furnish safe, adequate, and efficient service at just and reasonable rates. The Commission is also charged with, to the maximum reasonable extent, setting rates to encourage energy conservation and renewable energy use and to further the goals of other statutes relating to energy conservation improvement programs, cogeneration and small power production, and general state energy policy.

In order to carry out its duties, The Commission must carefully weigh any pollution prevention activities against the Commission's other responsibilities to ensure efficiency and reasonable rates.

The main influence the Commission can have in reducing hazardous waste and the use of toxic chemicals in Minnesota would be through its regulatory activities that affect: a) the level of conservation, the demand-side management activities, and the generating resource mix of regulated electric utilities; b) cogeneration and small power production; and c) certificate of need for large energy facilities. Increases in conservation, cogeneration, and the use of renewable resources may reduce the generation or use of hazardous or toxic waste by electric utilities.

Other state and federal agencies (such as the PCA) are charged with monitoring and regulating the actual pollution resulting from power generation. The Commission itself does not directly regulate this aspect of public utility operations.

Minn. Stat. § 216B.241 (Energy Conservation Improvements) requires gas and electric utilities to make investments in energy conservation improvements. 1991 amendments to this statute require electric utilities to spend 1.5 percent of their gross operating revenues on energy conservation improvements and gas utilities to spend 0.5 percent of their gross operating revenues on similar activities. The

Commission has authorized CIP tracker accounts which allow utilities to recover all these investments, including carrying costs. The Commission has also established incentive plans for all electric utilities which allow bonus returns, recovery of lost margins due to conservation, or other mechanisms to encourage utility investment in conservation.

Minn. Stat. § 216B.164 (Cogeneration and Small Power Production) directs the Commission to give the maximum possible encouragement to cogeneration and small power production consistent with protection of the ratepayer and the public. This statute implements the federal Public Utility Regulatory Policies Act which requires public utilities to purchase all the power provided by qualifying facilities, providing a market for electric power produced from renewable resources. In addition, the Commission is currently engaged in a rulemaking process to implement a 1991 amendment to Minn. Stat. § 216B.164. This amendment requires payments to qualifying facilities to include the avoided environmental costs.

Minn. Stat. § 216B.243 (Certificate of Need) requires consideration of energy conservation and environmental quality when determining whether to grant a certificate of need for a large energy facility in Minnesota. Recent amendments to this statute specifically require that an applicant for a certificate of need demonstrate that 1) demand cannot be met more cost effectively through conservation and load-management and 2) that the alternative selected is less expensive (including environmental costs) than power generation by a renewable energy source.

The Commission adopted integrated resource planning rules in July of 1990 (Minn. Rules, parts 7843.0100-7843.0600) which require electric utilities to file resource plans every two years which explain the mix of supply-side and demand-side options the utility expects to use to meet its energy demand over the next 15 years. The options are evaluated according to the effects on service reliability, electric rates and customer bills, the environment, utility flexibility, and risk to the utility and its customers.

Future Activities

The Commission will continue its activities to implement the statutes and rules discussed above. After carefully considering the Executive Order and its diverse responsibilities under Minnesota Statutes, the Commission believes it is already complying to the extent consistent

under the law and is not able to take action beyond those which have already been initiated.

Adoption of a specific policy statement on pollution prevention would have general applicability and future effect on the regulated utilities, and thus could only be implemented through a rulemaking in which the affected utilities and other parties would be provided with adequate opportunity to respond. The Commission believes that its current statutory authority, and the rules and other activities being undertaken to implement its statutory mandates, provide sufficient policy guidance on these issues.

The Commission endorses the Order and will continue to pursue activities appropriate within our statutory mandate. The Commission does not believe filing future reports would provide any significant new information or benefits.

Sincerely,

A handwritten signature in dark ink, appearing to read "Richard R. Lancaster". The signature is fluid and cursive, with a large initial "R" and "L".

Richard R. Lancaster
Executive Secretary