POLLUTION PREVENTION SUMMARY REPORT

consolidated from reports submitted by members of the

Interagency Pollution Prevention Advisory Team

August, 1997

POLLUTION PREVENTION *Right From The Start*

For more information on pollution prevention activities in Minnesota State Government, please contact:

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STATE OF MINNESOTA

EXECUTIVE DEPARTMENT

EXECUTIVE ORDER 91-17
PROVIDING FOR THE IMPLEMENTATION OF
POLLUTION PREVENTION BY STATE GOVERNMENT

I, ARNE H. CARLSON, GOVERNOR OF THE STATE OF MINNESOTA, by virtue of the authority vested in me by the Constitution and the applicable statutes, do hereby issue this Executive Order:

WHEREAS, Minnesota state agencies release pollution into the environment through their operations, regulate activities in the state that release pollution, and purchase items and set specifications that may lead to the release of pollution; and

WHEREAS, pollution prevention reduces pollution at its source rather than treating or controlling pollution after it has been created; and

WHEREAS, pollution prevention often results in cost savings and increased efficiencies as well as enhanced environmental protection; and

WHEREAS, the Minnesota Toxic Pollution Prevention Act, Minnesota Statutes, Chapter 115D, specifies that it is the policy of the state to encourage pollution prevention; and

WHEREAS, there is considerable potential for pollution prevention in state government;

NOW, THEREFORE, I hereby order state departments and agencies to take additional steps to prevent pollution:

1. All departments and agencies of the State of Minnesota shall give priority to preventing pollution at its source of generation.

2. An Interagency Pollution Prevention Advisory Team shall be established to:

   (a) promote regular communication and cooperation between state agencies in preventing pollution;

   (b) provide guidelines for state agencies in meeting the requirements of (4) through (6) below;

   (c) review state agency progress reports;

   (d) serve as a clearinghouse of information on progress made by state agencies in preventing pollution;

   (e) encourage the implementation of pilot projects in which state government can serve as a model;

   (f) promote efficiency in governmental efforts by reducing overlap of activities and by encouraging the sharing of innovative ideas; and

   (g) make recommendations for enhancing pollution prevention in state government.

3. The Interagency Pollution Prevention Advisory Team shall be chaired by a representative of the Office of Waste Management. All state agencies shall cooperate with the team in the execution of this order. The team shall include but

not be limited to representatives of the departments of Administration, Agriculture, Corrections, Health, Human Services, Military Affairs, Natural Resources, Public Safety, Public Service, Transportation, Pollution Control Agency, Office of Strategic and Long-Range Planning, Community College System, State University System, Technical College System, University of Minnesota, Metropolitan Airports Commission, Metropolitan Council, Metropolitan Mosquito Control Commission, Metropolitan Transit Commission, and Metropolitan Waste Control Commission. The team shall meet regularly.

4. Heads of state agencies that generate significant quantities of hazardous waste or use significant quantities of toxic chemicals shall develop policy statements indicating that pollution prevention is a priority. These agencies shall also undertake activities to reduce their generation of hazardous waste and use of toxic chemicals.

5. Heads of state agencies that regulate activities in the state which generate significant quantities of hazardous waste or use significant quantities of toxic chemicals, or whose policies have important effects upon such activities, shall develop policy statements indicating that pollution prevention is a priority. These agencies shall also undertake efforts to integrate pollution prevention into their regulatory and policy activities.

6. State agencies, subject to (4) and (5) above, shall prepare summary reports annually on their progress in preventing 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 to prevent pollution, and an estimate of environmental and economic benefits, when applicable, which have resulted from preventing pollution.

7. State agencies whose purchasing policies or specifications result in the generation of significant quantities of hazardous waste or the use of significant quantities of toxic chemicals shall, in cooperation with the Department of Administration, investigate

opportunities to encourage pollution prevention through their purchasing policies and specifications.

8. Information on progress of state agencies in preventing pollution shall be included in the Pollution Prevention Evaluation Report to the Legislature required by Section 115D.10 of the Minnesota Toxic Pollution Prevention Act.

9. State agencies are encouraged to apply for the annual Governor's Award for Excellence in Pollution Prevention, as authorized by Section 115D.06 of the Minnesota Toxic Pollution Prevention Act. A special award category for excellence in pollution prevention shall be established for state agencies.

10. The Office of Waste Management shall provide technical assistance to state agencies in the implementation of this order.

Pursuant to Minnesota Statutes 1990, Section 4.035, subd. 2, this Order shall be effective fifteen (15) days after publication in the State Register and filing with the Secretary of State and shall remain in effect until rescinded by proper authority or it expires in accordance with Minnesota Statutes 1990, Section 4.035, subd. 3.

IN TESTIMONY WHEREOF, I have set my hand this sixteenth day of September, 1991.

ARNE H. CARLSON
Governor

Filed According to Law:

JOAN ANDERSON GROWE
Secretary of State

STATE OF MINNESOTA
DEPARTMENT OF STATE
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Secretary of State

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FY 1997 STATE GOVERNMENT CONSOLIDATED POLLUTION PREVENTION SUMMARY REPORT

Fulfilling the requirements of Governor's Executive Order 91-17 Providing for the Implementation of Pollution Prevention by State Government

Introduction

This report is a consolidation of the summary reports submitted by participating State of Minnesota agencies in August, 1997. Agency contacts are listed on the opposite page.

Part I contains a description of each agency, including the number of employees, locations of the agencies, and pollution prevention training held during the last year.

Part II contains the summary of each agency's efforts toward pollution prevention within specific category headings. It is designed to facilitate greater use of the document by participating agencies and by others seeking information about pollution prevention opportunities.

Part III contains a matrix of the which agencies provided activity summaries under the different categories. It will allow the reader to identify all the categories in the report under which a particular agency has provided a summary of activities.

Part IV contains the signature of the Agency or department head. The original signed copies of the report from each agency are on file at the Office of Environmental Assistance. For more information, contact Emily Moore at the OEA at (612) 215-0201 or toll-free at (800) 657-3843.

The Appendices for the Consolidated Pollution Prevention Summary report contain the following:

- Appendix A contains a description of the Department of Agriculture's biological control program.
- Appendix B contains the Department of Administration's policy on environmental materials management, the department's priorities for environmental materials management, and the mission statement for the Plant Management Division of the Department of Administration.
- Appendix C contains an excerpt from the Metropolitan Council Administrative Procedures Manual.
- Appendix D contains the University of Minnesota Board of Regents policy on pollution prevention and waste abatement.

Part I

Agency Descriptions

The following paragraphs include general information about the participating agencies, including size of the staff, the number of locations, and the amount of pollution prevention training staff have had during fiscal year 1997.

Department of Administration -- The Department of Administration operates from numerous building locations to provide agency customers with services. Listed below are the department's divisions and offices with employee populations, the number of facility locations and the status of pollution prevention training. None have received pollution prevention training this year.

- Building Codes and Standards Division's 28 employees, housed in one location
- Building Construction Division's 31 employees, housed in one location
- Communications. Media Division's 90 employees, housed in five locations
- Council on Technology for People with Disabilities 7 employees, housed in one location
- Employee Assistance Program's 8 employees, housed in one location
- Financial Management and Reporting Division's 14 employees, housed in one location
- Human Resources Division's 13 employees, housed in one location
- Real Estate Management Division's 10 employees, housed in one location
- Risk Management Division's 6 employees, housed in one location
- InterTechnologies Group's 260 employees, housed in one location
- Materials Management Division's 87 employees, housed in three locations
- Minnesota Governor's Council on Disabilities 5 employees, housed in one location
- Minnesota Office of Citizenship and Volunteer Service's 4 employees, housed in one location
- Minnesota Office of Citizenship and Volunteer Service's 4 employees, housed in one location
- Plant Management Division's 215 employees, housed in seven locations
- Travel Management Division's 21 employees, housed in one location

Department of Agriculture -- The Minnesota Department of Agriculture (MDA) currently employs approximately 500 personnel. There are 26 different MDA facilities located throughout the State. This report primarily describes the St. Paul office complex located at 90 West Plato Boulevard. No pollution prevention training was done because of the remodeling of the facility.

Department of Corrections -- The Department of Corrections did not have a representative serving on the Interagency Pollution Prevention Advisory Team during 1997. A representative of the Department will be actively participating during 1998.

Office of Environmental Assistance -- The Minnesota Office of Environmental Assistance (OEA) was established on July 1, 1994, and employs 65 people in the St. Paul office and one person in each of the five regional offices. OEA's mission is to protect Minnesota's environment and assure economic sustainability through waste prevention and resource conservation.

The key goals of the OEA are:

- To assist those responsible for the generation and management of waste to reduce the amount of waste generated, and ensure waste is reused, recycled or managed according to the waste management hierarchy.
- To help Minnesota's businesses improve their economic efficiency through environmentally sound practices.
- To promote environmentally sustainable attitudes and behavior through education and information.
- To promote sustainable, community-based solutions to environmental problems.

The OEA also provides funding for the Minnesota Technical Assistance Program (MnTAP). MnTAP employs 16 staff at the University of Minnesota. Engineers and scientists provides free technical assistance tailored to business's

needs. MnTAP's non-regulatory status gives clients the confidence to ask difficult questions regarding their waste management problems and pollution prevention opportunities.

OEA and MnTAP staff have planned and participated in pollution prevention training events throughout the year. OEA staff also conducted an internal pollution prevention orientation training for the MPCA and OEA staff.

Department of Health -- The Minnesota Department of Health did not submit a pollution prevention summary report for 1997.

Department of Human Services -- The Department of Human Services has 6,679 employees. The department has nine Regional Treatment Centers, 90 State Operated Community Services (SOCS) sites and central administrative offices at five St. Paul locations. This report will include pollution prevention efforts at all of the Regional Treatment Centers and the Central Office. The SOCS are operated as a household and comply with the solid waste and recycling requirements of their host community.

Thirty-two maintenance workers and safety officers received annual asbestos training that included proper handling and disposal of asbestos containing materials. Several sites were involved in the annual "Waste Reduction Week" activities.

Metropolitan Airports Commission -- The Minnesota Legislature created the Metropolitan Airports Commission (MAC) in 1943 as a public corporation. MAC's mission is to "provide a system of airports that promotes regional, national and international transportation of passengers and cargo. This system shall be operated, consistent with the public interest, in a safe, efficient and financially responsible manner with minimal adverse environmental impact." The MAC is governed by 15 commissioners, 13 appointed by the Governor and one appointed by each of the mayors of Minneapolis and St. Paul.

The MAC currently owns and operates 6 reliever airports and the Minneapolis/St. Paul International Airport (MSP). While MSP handles commercial air traffic, the Reliever airport system handles the majority of "general aviation" activity. MSP is used by more than 30 million people and has 475,000 operations per year. The Reliever Airport system has more than 875,000 operations per year.

The MAC presently has about 400 employees encompassing a wide variety of duties. The airport system has been equated to "running a little city". The departments can be basically split into three sections – Landside, Airside and Administration. Landside includes Ground Transportation, Airport Directors Office, Energy Management, and Facility Management. Airside consists of Operations, Carpentry, Communication, Electrical, Fire, Police, Maintenance (field and mechanical) and the Paint shop. The Administration includes Airport Development, Environment, Commercial Management, Executive, Finance, Human Resources, Insurance/Risk, Labor Relations, Legal, MIS, Public Relations, and Purchasing.

This summary will constitute a report for the agency as a whole. The MAC is continually re-evaluating and updating all pollution prevention methods and practices through improved communications and training.

Metropolitan Council -- Transit Operations - Metro Transit is the major supplier for mass transit in the seven county metropolitan area operating 973 buses over 109 routes. To accomplish this service, Metro Transit operates five service garages, one overhaul facility, one police station, and an office building in downtown Minneapolis with a total staff size of 2,332.

During the past year Metro Transit has gone through a number of changes, including the appointment of a new General Manager and the renaming of the organization. This report will cover all of the buildings that are operated by Metro Transit. During the last year no formal pollution prevention training was done by Metro Transit but opportunities were given to staff personnel to attend programs put on by other agencies pertaining to pollution prevention.

Metro Transit is committed to excellence and leadership in protecting the environment. In keeping with its policy, our objectives are to reduce the amounts of hazardous waste that are generated at any of our facilities and keeping

the air emissions to a minimum. By successfully preventing pollution at its source, the agency will be able to increase its operational efficiencies, and provide a safer and healthier environment for all of our employees.

Metropolitan Council — Wastewater Services - The Metropolitan Council Environmental Services (MCES) owns and operates the regional wastewater collection and treatment system in the seven-county Twin Cities metropolitan area. Additional regional environmental responsibilities include industrial wastewater pretreatment and management, air and water quality monitoring, regulatory compliance, surface water planning, and nonpoint source pollution abatement. MCES operates nine treatment plants in addition to three maintenance facilities, a field office, and administrative headquarters for a total of fourteen staffed facility locations. MCES employs approximately 950 staff. This report will describe pollution prevention activities for the entire MCES. A separate report will cover pollution prevention for 1997 for Metro Transit, the division of the Metropolitan Council which provides public transit, i.e. bus service, for Minneapolis, St. Paul, and surrounding suburban areas including 78 cities.

MCES is an active member of the Interagency Pollution Prevention Advisory Team (IPPAT). Michael Nevala, pollution prevention contact for MCES, has been a member of the Minnesota office of Environmental Assistance's Hazardous Waste Management Planning Council since Fall 1996. In addition to this professional contact and the resulting internal sharing of information, some informal pollution prevention training occurs at the treatment plants related to maintenance. Industrial waste field crews had formal pollution prevention training. This past year, there were no specific pollution prevention workshops sponsored by the state and no annual pollution prevention conference.

Military Affairs — The Department of Military Affairs (DMA) is comprised of the Army National Guard and the Air National Guard. Units are located throughout the State of Minnesota in approximately 80 locations. The map designated as Attachment 1 shows the geographic location of these units. The DMA has approximately 10,120 part-time and 2,165 full-time employees exercising both state and national missions. This report summarizes the on-going activities of the DMA throughout the state. Training occurs throughout the year on specific issues relating to the maintenance and management of DMA equipment and resources. A few of these issues contain pollution prevention elements. These are described in more detail under Education, Communications and Training.

Metropolitan Mosquito Control District — The Metropolitan Mosquito Control District (the 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 46 full time staff and approximately 150 part-time staff during the mosquito and gnat breeding season. The District currently operates a warehouse facility, six field operations facilities and a central administration building. Additionally, the District owns and operates a fleet of vehicles.

Annually the District conducts a series of training sessions for all District employees. One session is used to review waste management and recycling procedures used by the District. This training includes an overview of regulatory requirements, examples of waste streams produced by the District, handling and disposal procedures, storage requirements, recycling, and emergency spill response plans.

Department of Natural Resources — The Department of Natural Resources had no representative on the Interagency Pollution Prevention Advisory Team this year and, consequently, did not prepare a summary report.

Pollution Control Agency — The Minnesota Pollution Control Agency (MPCA) has 800 staff in the central office and 6 regional offices. This report includes all external and internal activities of the MPCA. The MPCA is in the process of educating the entire agency about pollution prevention. Some staff have received training, but most have not. The process has been slow.

Department of Public Service — The Department of Public Service (DPS) employs 86 staff at the Metro Square location and an additional 41 staff at the Roseville location. DPS staff have not received any pollution prevention training during this past year.

Minnesota State Colleges and Universities -- The Minnesota State Colleges and Universities (MnSCU) are represented in this report by the following summaries:

Bemidji State University (BSU) -- The approximate employee count for BSU is as follows:
Faculty and staff (academic year) - 550
Faculty and staff (summer) - 460
Student Employees (academic year) - 1000
Sudden Employees (summer) - 700

The staffed facility locations are the BSU main campus and the Center for Research and Innovation. This report applies to all BSU facilities. No specific pollution prevention training was implemented in 1997. However, procedures and opportunities for participating in waste reduction and recycling activities, both on and off campus, were communicated through a faculty/staff computer information list and the campus newspaper.

Metropolitan State University -- Metropolitan State University is working diligently to maintain the pollution efforts and past practices as well as to further develop new procedures and to update present policies.

Moorhead State University -- Moorhead State University implemented an energy conservation effort focused on reducing energy consumption. The State of Minnesota and Northern States Power sponsored the program and provided interest free loans for implemented energy conservation efforts. This program significantly lowered campus energy consumption. The savings are initially being used to payoff the cost of implementation. After the program is paid off, it will benefit the citizens of Minnesota. This program provides financial incentive to reduce energy while providing a positive impact on the environment.

St. Cloud State University -- St. Cloud State University (SCSU) employs full- and part-time approximately 1500 administrative, teaching, clerical, technical, maintenance and student members. The campus consists of 42 buildings and is situated on over 40 acres. For purposes of this report, all campus locations will be included.

Pollution prevention continues to be a factor in purchasing and implementation of new procedures. Members of the SCSU staff, however, have not received any training in the area of pollution prevention during the past year or at any other time.

Department of Transportation -- The Department of Transportation (MnDOT) has approximately 4800 employees. MnDOT is a de-centralized organization with one central office, seven districts and one metropolitan division. MnDOT has 16 major truck stations (A and B headquarters located in each district and the metropolitan division) with 135 additional truck stations. MnDOT has numerous remote salt sheds and gravel pits. MnDOT has more than 160 EPA identification numbers. MnDOT maintains approximately 12,800 miles of highway and 4,621 bridges. MnDOT maintains 11,000 pieces of equipment. Of the 11,000 pieces of equipment 5,500 have motors, Of the 5,500 pieces of equipment with motors, 4,200 are on-road vehicles and 1,100 are off-road vehicles. This report represents MnDOT as a whole with respect to MnDOT's efforts in pollution prevention.

University of Minnesota -- The approximate employee count for the University of Minnesota is as follows:
Number of full-time faculty and staff: 16,194
Number of part-time faculty and staff: 4,176
Number of students: 48,690
Number of cont. educ./extension students: 18,522

The University of Minnesota has four major campuses: Crookston, Duluth, Morris, and Twin Cities (the Twin Cities Campus, which is counted as a single campus, includes both the Minneapolis and St. Paul Campuses). The University has approximately 22 experiment or research stations, extension agents in approximately 80 out the 87 counties in Minnesota, and the University has 50 EPA ID numbers for hazardous waste generator sites around the State of Minnesota. This report is for agency as a whole: Approximately 2,500 staff and faculty received pollution prevention training during the past year.

Board of Water & Soil Resources -- Approximately 63 staff work for the Board of Water and Soil Resources (BWSR). Half of the staff work in the central office located in St. Paul with the remainder in field offices located in Duluth, Brainerd, Bemidji, Marshall, New Ulm and Rochester. The metropolitan field office is co-located with the central office in St. Paul. This report covers the entire agency. No BWSR staff received pollution prevention training this year.

Part II

Pollution Prevention Activities During the Fiscal Year

Part II contains information about the pollution prevention activities practiced by the participating agencies. The information is organized by category of material, listed alphabetically. All individual agency summary reports that address pollution prevention measures for a given material are listed in the same order as in Part I.

Absorbents

Department of Administration -- Travel Management uses absorbents to clean oil/antifreeze spills on the shop floor.

Metropolitan Airports Commission -- The MAC uses a variety of different absorbents. Wood chips are used to absorb oil and grease. Corncob fractions are used to collect spilled jet fuel and booms are used, as a stopgap, to prevent miscellaneous debris and other contaminants from reaching the river. All of these products are incinerable and can be used in energy recovery.

Metropolitan Council -- Transit Operations -- In 1996, Metro Transit switched from the using the clay based absorbents to a cellulose type absorbent. The change was made after review of the MnDOT report and a similar in-house study. This has removed over 8,000 pounds of clay from the waste stream and put the new volume into the recycle as a fuel.

Metropolitan Council -- Wastewater Services -- With the change in state regulations on the disposal of used oil absorbents, MCES has switched from a clay-based inorganic product to Spill-Dri™, a material made from 100% reclaimed natural fiber cellulose. In some applications, polypropylene pads are used as absorbents. Products which are absorbed primarily are hydraulic fluids, crankcase oils, and other lubricating oils. The larger facilities send the used absorbents via OSI Environmental, Inc. or Environmental Solutions, Inc. for fuel recovery or incineration. Two MCES facilities have industrial wringers which squeeze the oil from the synthetic pads, allowing for frequent reuse. Another facility has analyzed its used absorbent for heavy metals, using the Toxicity Characteristic Leaching Procedure (TCLP). Since none of the listed thresholds were exceeded, the absorbent is handled along with industrial codisposal waste with the approval of the regulating county.

Metropolitan Mosquito Control District -- The District currently uses a sawdust floor dry absorbent in addition to reusable absorbent pads. Improved materials handling and shop procedures have reduced the amount of floor absorbents used by the District. Absorbents that contain hazardous materials are handled as a hazardous waste. Non-hazardous absorbents are managed as part of the solid waste stream which is, in most cases, incineration for heat recovery at an approved county facility. The use of celatom or clay based absorbents was discontinued in the District in 1995. The District has found the cost of using alternative absorbents is higher than the cost of using clay based absorbents. Some of this cost can be offset by reusing the sorbents as much as possible before disposal and through improved materials handling to reduce the amount of absorbent needed.

St. Cloud State University — "Thirsty Bananas", absorbent pads and pans, or other similar products are used around machinery to catch any leaks or potential drainage. Absorbent materials are readily available in areas where hazardous chemicals are used which could drain into floor drains if spilled. Launderable rags are used as much as possible for general facility cleaning as well as wiping down art and industrial machinery.

Department of Transportation — MnDOT has researched various alternatives to clay sorbent material. The purpose of the research was to identify as well as test the efficiency and effectiveness of sorbents that can be beneficially reused (burned for energy recovery) after saturated. Corncob, paper, wood, cork, pumice, polypropylene (reusable and launderable), peat, cellulose, polymer and clay sorbent have been tested in this research. (A full report of MnDOT's sorbent research findings is available). MnDOT no longer landfills used oil sorbent material. The burnable sorbents are used as waste derived fuel for the generation of steam and electricity. MnDOT has researched and implemented, on a small scale, the use of launderable rags. MnDOT has found that the single largest factor in reducing this waste stream is the reuse of rags, whether they are launderable or disposable.
FY97 activities: Because some MnDOT sorbent users prefer clay sorbents to burnable sorbents, MnDOT researched the recycling of clay sorbent. The purpose of the research was to identify the feasibility of recycling clay sorbents through a washing process. It appears that the cost, including labor, of this technology is prohibitive for use by MnDOT.
Economic and environmental benefits and costs: MnDOT used clay sorbents exclusively up to 1995. In 1994, MnDOT purchased approximately 75,000 pounds of clay sorbent which was landfilled. Currently, all MnDOT used oil sorbents, with the exception of launderable rags, are burned in a waste to energy facility (burned for energy recovery). Present and future environmental liability is significantly reduced as a result of this waste management change. Laundering is an easy; cost effective way to manage used oil rags. There is at minimum 27 percent cost savings to MnDOT by managing used oil rags by laundering. In addition, there is no storage, transportation or record keeping required of MnDOT.

University of Minnesota — The University's efforts in pollution prevention in the use of absorbents are as follows:
Ongoing activities: The University is reviewing the use of absorbent materials in vehicle fleet operations, facilities shops, hazardous waste operations, and chemical spill response activities. A partial shift has been made from floor-dri to polypropylene and proprietary material absorbent pads in all areas. Other materials tested in hazardous waste operations include corn cobs, cellulose, kitty liter - clay, and vermiculite.
FY 1997 activities: Vehicle fleet operations on the St. Paul Campus is using absorbent pads to clean up small routine spills, in combination with floor-dri.
Planned activities: FY 1998 and beyond: Continued review of pads versus floor-dri.
Economic benefit: Using MnDOT report for cost comparisons.
Environmental benefit: Polypropylene absorbed oils and fuels can be burned for energy recovery as opposed to clay absorbents which generate a high volume of solids in the furnace fly-ash.

Adhesives

Department of Administration — Building Construction specifies materials such as fiber-based fabrics, adhesives, carpeting, and upholstery that are void of toxins and formaldehyde.

St. Cloud State University — As a matter of practice, contractors are required to use adhesives that do not generate hazardous fumes. This is not always possible to enforce, and often specific products that provide superior adhesion are used instead. The primary goal is to employ a product that will not produce fumes which may cause temporary air quality concerns for building occupants.

University of Minnesota — Water based adhesives are being tested by cabinetry and paint shop employees.

Air Quality, CFC's

Department of Administration — The following departments have addressed air quality and CFC's:
- Building Construction monitors statewide asbestos control programs based on federal and state standards.

- Building Construction administers, specifies and carries out air quality standards.
- Plant Management installed equipment with environmentally safe Freon in the Transportation Building cafeteria.
- Plant Management retrofitted existing chillers with non-ozone depleting 134A refrigerant.
- InterTechnologies Group requires vendors to comply with federal and state refrigerant recovery statutes for air conditioner refill or replacement.

Metropolitan Council -- Transit Operations -- In 1995, the Minnesota Pollution Control Agency required Metro Transit to submit applications for air discharge permits as required by the existing Clean Air Act. This was accomplished by a complete stack inventory at all six garage facilities. In 1996, Metro Transit was issued permits for three of its locations as required by law. A review of the emissions has shown that the permits are required at two of these garages because of the size of the dual fuel boilers that are installed. Because of this, no additional reductions can be made at those garages. The permit for the third facility, the Overhaul Base, is based on the emissions from the boilers installed at the facility and exhausted paint shop emissions.

Metro Transit has installed an absorption cooling system at its Overhaul Base. This unit has proven, over the past three cooling seasons, to be highly efficient for cooling and requires less maintenance that the current DX air conditioning units on the market. Because of the changes in the laws concerning the future uses of CFC's and HCFC's, Metro Transit has put projects in its long term capital planning that would remove all current CFC cooling systems by 2005.

Military Affairs -- Refrigerants are processed through a Robyne-Air technology. This technology cleans and returns CFC's to the equipment it came from or the CFC's are saved for addition to another piece of equipment compatible with the refrigerant being recycled.

University of Minnesota --The University's pollution prevention efforts related to air quality are as follows:
Ongoing activities: There is an on-going air permit review, in preparation for the modification of existing steam plants and campus emission sources. CFC's: There is on-going CFC and HCFC capture and reclamation for cooling units; as units are serviced, their CFC/HCFC are captured, then placed back in the unit after it is serviced. White goods are shipped to certified recyclers who recover CFC/HCFC prior to disposal.
Calendar year 1997 activities: CFC's: the Twin Cities Campus recycled (recovered then placed into other units) approximately 300 pounds of R22 and 50 pounds of R12. Thousands of pounds of University refrigerants have been recovered and put back into the original units by facilities personnel after servicing, or recovered by off-site contractors.
Planned activities: FY 1998 and beyond: the University will be modifying two of its steam plants on the Twin Cities Campus and shutting down a third which will result in a reduction of sulfur dioxide (SO2) emissions from approximately 600 tons per year (tpy) to approximately 110 to 250 tpy, nitrogen oxide (NOX) emissions from approximately 1,370 tpy to 280 to 310 tpy, and carbon monoxide (CO) emissions from approximately 280 tpy to 130 to 150 tpy. (Results vary depending on the ratio of fuel types used - gas, coal, and oil - in the modified plants. A minimum of 70% gas will be used for five to six years.) Continued recycling of refrigerants and purchase of non-CFC and non-HCFC units as they become commercially available and cost effective.
Economic benefit: NA (Natural gas prices have been higher than coal (per BTU generated) for the past year, so it will be more costly for the University to operate at the higher natural gas to alternate fuel ratios.) The environmental benefit is that when the heating plants are modified, there will be a reduction of approximately 1,560 to 1,680 tpy of SO2, NOX, and CO emissions. For CFC's, the University will realize reduced emissions of global warming chemicals.

Antifreeze

Department of Administration -- Travel Management collects and recycles antifreeze.

Metropolitan Airports Commission --MAC Mechanical staff removes, cleans, and reuses antifreeze from the automotive fleet. This reduces the antifreeze that must be sent out for disposal, thus reducing disposal costs and allowing the employees to use less new product.

Metropolitan Council - Transit Operations — In January 1997, Metro Transit instituted a formal policy on the handling of all used antifreeze. This calls for holding the used material in 55 gallon drums until full and then sending it for recycling.

Metropolitan Council -- Wastewater Services — Used antifreeze/coolant is collected from the vehicle service area at the Metropolitan Wastewater Treatment Plant (Metro WWTP; St. Paul, Ramsey County). It is recycled by filtration and extended by the addition of various additives by On-Site Recycling, Inc. The prohibition deadline for the sewering of used antifreeze/coolant by small facilities continues to be postponed while the state and the automotive service industry address issues of technology, economics, and new engine warranty by the automobile manufacturers. Extended life antifreeze/coolant is available and comes installed in some new vehicles.

Metropolitan Mosquito Control District — The District no longer does flush and fill of antifreeze in District owned vehicles. Additions of antifreeze are made periodically to vehicles to maintain adequate protection from freezing and to maintain manufactures specifications. If the coolant system of a vehicle should require flushing and refilling, it is sent to an approved service center or dealer for service. The District has managed waste antifreeze since 1994.

Military Affairs -- The DMA continues to operate antifreeze recycling units for vehicle maintenance. The DMA has changed technology used from an ion exchange unit to an ultrafiltration unit. The advantage of the ultrafiltration unit is that it will eliminate the need for additional chemical disposal. Using these systems helps reduce coolant storage, transportation requirements, and hazardous waste storage. These systems help protect the environment and reduce the amount of hazardous waste by 95 percent, saving the DMA thousands of dollars in hazardous waste disposal costs annually. This has reduced the waste stream from 6,000 pounds per year to 100 pounds per year.

Bemidji State University -- BSU's pollution prevention activities with respect to antifreeze are the following:
Ongoing Activities: University vehicles are maintained through a contract with a local service station. Antifreeze is sewered as authorized by the local wastewater treatment facility.
Future Activities: Antifreeze will be reclaimed at contractor's site when reclamation equipment is installed sometime in 1998.
Economic Costs: None to University. Cost of recovery equipment is unknown but will be the contractor's responsibility. **Environmental Benefits:** Recovery will remove a small volume of biodegradable solvent waste and potentially some TC contaminants from the waste stream. Recovered material will reduce the amount of energy and resources used to manufacture virgin product. The environmental costs are unknown, but few costs are expected.

St. Cloud State University -- Antifreeze is captured for re-use.

Department of Transportation -- MnDOT's pollution prevention activities with respect to antifreeze are the following:
On going activities: MnDOT has researched, identified and implemented various recycling options for antifreeze. Most of the antifreeze generated by MnDOT is recycled through a filtration technology both in-house and contracted out. The recycled antifreeze is used in MnDOT vehicles. MnDOT's in-house antifreeze recycling program in Morris is capable of recycling all antifreeze generated by MnDOT vehicle maintenance operations. The antifreeze meets ASTM standards and may be used in all vehicles (with the exception of some new vehicles that are purchased with the new orange, long life antifreeze). MnDOT's antifreeze recycling program in Morris is offering antifreeze recycling to other state, county and city municipalities.
FY97 activities: MnDOT's in-house antifreeze recycling program in Morris added prefiltration equipment to the existing system. The prefiltration equipment is designed to remove oils from the waste antifreeze thus greatly improving the efficiency of the system.
Economic and environmental benefits and costs: The approximate cost per 55 gallon drum of recycled 50/50 antifreeze from MnDOT's antifreeze recycling program in Morris is $70.00, in comparison to $104.00 for the same service performed by an outside recycling source. New, 100% antifreeze is about $162.00 for 55 gallons (diluted 50/50 cost $81.00 per 55 gallons). By recycling antifreeze at the Morris facility, MnDOT is able to go above and beyond compliance and save money. Recycling only 30 drums of antifreeze in house will result in cost savings of more than $1,300.00.

University of Minnesota -- The University's pollution prevention activities relating to antifreeze are the following:
Ongoing activities: The University is researching opportunities for antifreeze recycling.
FY 1997 activities: The University's Twin Cities Campus Facilities Management Department is researching the feasibility of using recycled antifreeze in building chiller units. There is a concern that the 50% ethylene glycol recovered through the distillation process is not concentrated enough for the large building chiller units, which contain a fair amount of water even after being drained, due to low points in the system. The University's Fleet Services Department, Twin Cities Campus, rarely removes automotive antifreeze, rather they top off radiators with fresh antifreeze, then sell vehicles after 5 years.
Planned activities: FY 1998 and beyond: Continued research.
Economic benefit: It is estimated that the Twin Cities Campus Facilities Management Department could save up to $10,700 per year, if they can recycle antifreeze from building chiller units, rather than disposing to sewer (which results in a strength charge from MCES) or disposing as a hazardous waste.
Environmental benefit: If the chiller unit antifreeze can be recycled, it would result in the reduction of approximately 825 to 1,650 gallons of 30% ethylene glycol being disposed to sewer per year on the Twin Cities Campus.

Audits

Metropolitan Airports Commission -- The MAC is currently conducting environmental compliance inspections at the six Reliever Airports. These inspections will help identify possible environmental issues and will assist the tenants in achieving compliance or remain in compliance with existing regulations. They have also allowed the MAC to make our tenants aware of the environmental impacts their actions may have and to help them improve their waste generating practices. MAC staff is working to provide education/training and technical support to reliever tenants.

Metropolitan Council -- Wastewater Services -- Within the environmental audit program conducted by MCES staff, opportunities for pollution prevention are always noted and are included as recommendations in the audit findings. For example, the evaluation of chemical products for the presence of compounds that are categorically hazardous could result in choosing product alternatives which may not be characteristically hazardous.

Military Affairs -- The DMA conducts inspections, site assistance visits, and audits of each facility to determine compliance. During this process, pollution prevention opportunities are evaluated. Three separate visits can occur at most of the facilities. The first would be a hazardous waste site visit. The second is a Minnesota Organizational Readiness Evaluation (MORE), and the third is an environmental compliance inspection called ECAS. All of these help integrate environmental activities into the daily mission.

Bemidji State University -- BSU's efforts with respect to environmental audits are as follows:
Ongoing Activities: The BSU Environmental Task Force received a grant from the MN Office of Environmental Assistance, to conduct waste/pollution audits on campus, and to implement waste/pollution reduction in selected areas. The audits have been completed in 9 areas on campus and implementation is underway in 3 areas: janitorial services, paper use, and campus & purchasing.
FY 1997 Activities: Specific recommendations for waste/pollution reduction policies and procedures have been forwarded to the University's Administration for review and implementation.
Future Activities: Additional areas of campus will be audited pending funding and staffing.
Economic Benefits: Several of the recommendations resulting from the audits are expected to reduce the University's operation expenses. The specific benefits will be listed under the appropriate category, elsewhere in this report.
Economic Costs: The audits were funded by a grant that was matched by in kind funding through salaries and equipment purchases.
Environmental Benefits: Implementation of the recommendations based on the audits' findings are expected to generally reduce waste and pollution generation. The specific benefits will be listed under the appropriate category, elsewhere in this report.
Environment Costs: Unknown, but minimal costs are expected.

Department of Transportation — MnDOT's efforts with respect to environmental audits are as follows:
Ongoing activities: MnDOT conducts approximately 80+ internal waste stream audits annually of MnDOT facilities. The purpose of these audits are to evaluate MnDOT's hazardous and problem waste stream management methods throughout the Department by:

- identifying various pollution prevention opportunities that warrant further research.
- evaluating potential areas of noncompliance with state and federal hazardous and solid wastes, tanks, and water quality laws and rules.
- making recommendations to correct and/or avoid potential areas of non compliance.
- making recommendations to maintain an effective waste management program

MnDOT conducts approximately 25 external environmental audits of facilities that handle MnDOT wastes. The purpose of these audits is to:

- Evaluate potential and existing waste handling, storage, recycling and disposal sites. This evaluation is based on a facility's waste management procedures, pollution prevention practices, compliance records, site geology and financial strength.
- Determine if the amount of environmental risk and liability associated with using a particular site is acceptable to MnDOT.

- **Economic and environmental benefits and costs:** Both MnDOT's internal waste stream and external environmental audit programs have costs associated with them. However, based on MnDOT's experience, the cost for the program is minimal compared to the cost associated with potential Minnesota Pollution Control Agency enforcement actions and potential environmental liability (superfund). Both MnDOT's internal waste stream and external environmental audit programs offer environmental benefits in that they ensure that MnDOT waste is being managed in an environmentally sound manner.

University of Minnesota — The University Department of Audits checks departments to see if they have in place hazardous waste compliance protocols (which includes pollution prevention) and OSHA laboratory standard protocols. The Department of Environmental Health and Safety (DEHS) does targeted audits of large and/or non-compliant departments. All departments are directed to self audit and the audit form is currently available on the web through the DEHS homepage at *http://www.dehs.umn.edu/* through the hazardous chemical waste guidebook.

Automotive Fuels

Department of Administration — Administration's efforts with respect to automotive fuels are as follows:

- Materials Management purchased E-85 (ethanol use) vehicles for Travel Management.
- Travel Management recovers and recycles automotive refrigerants for air-conditioning units.
- Travel Management uses ethanol 85 as an alternative energy source with reduced emissions.

Military Affairs — The DMA has a fuel program where contaminated fuel is filtered so that it can be recycled. This prevents the costs and hazards of waste disposal.

Department of Public Service — The Department of Public Service has undertaken several activities to promote the use of vehicles powered by alternative transportation fuels in Minnesota. The alternative fuels, such as compressed natural gas (CNG), liquefied petroleum gas (LPG), and high concentration ethanol (E85 or 86% ethanol/15% gasoline) all emit lower levels of carbon monoxide and, thereby, reduce a major source of urban air pollution. The activities undertaken by DPS to date include:

- Developed a new motor fuel tax structure that removes the financial penalty for using some of the alternative fuels, and was enacted through the Omnibus Tax bill of 1995.
- Created a statewide network of five E85 fueling sites in 1995 by providing grants to develop E85 fleets and fueling facilities. The network continues to grow and there will be twelve sites open by December 1997.
- Initiated the Clean Fuels Minnesota program in April 1995. This is a fuel-neutral organization, with a broad based membership of over 50 organizations committed to increasing the use of alternative fuels.
- Offered grants for small demonstration projects to encourage use of alternative transportation fuels.
- Participated in US Department of case study regarding early E85 vehicle purchases and infrastructure development in Minnesota.

- Produced educational materials to promote alternative fuels including: a report to the State Legislature on alternative fuel vehicle technology; informational brochures on individual fuels, newsletters; AFV News, and traveling display for shows.

Department of Transportation -- MnDOT's heavy pieces of equipment are being purchased with computer controlled electronic ignitions which maximizes the vehicles fuel efficiently. MnDOT is purchasing lightweight aluminum wheels for its trucks for fuel economy.

University of Minnesota -- The following pollution prevention activities relate to automotive fuels:
Ongoing activities: The Department of Fleet Services, Twin Cities Campus, is researching the use of alternative fuel vehicles. The Center for Diesel Research, Department of Mechanical Engineering, Twin Cities Campus, tests engine efficiency and emissions of gasoline and diesel powered engines and offers technical assistance, for a fee, to agencies or companies researching performance of automotive and diesel engines. The center is a good resource of information on test procedures and simple maintenance that can greatly reduce diesel emissions from buses and trucks. (The center was consulted prior to the University renewing its contract for bus services on the Twin Cities Campus.) The Department of Parking and Transportation Services, received the 1997 Minnesota Government Reaching Environmental Achievements Together (MN GREAT) pollution prevention award for their ongoing efforts to reduce automobile wait times in parking lots through modifying software controlling access into and out of parking lots. The new gate controllers reduced gasoline use by about 8500 pounds since 1993 and prevented approximately 28,000 pounds of carbon dioxide emissions.
Planned activities: FY 1998 and beyond: The Department of Parking and Transportation Services, Twin Cities Campus, specified in their contract with Medicine Lake Bus Lines, that all buses used on the campus meet EPA 1997 emission limits for metropolitan buses and any stricter, future EPA limits. Normally Medicine Lake Lines would not need to comply with these strict limits, because they fall into a less regulated category of school buses. The contract also specifies financial penalties, such as $50 a day for every incident of a bus having visible exhaust emissions. The environmental benefit is reduced air emissions from automobile and bus exhausts.

Automotive Maintenance

Department of Administration -- Materials Management purchased four propane fueled pick-up trucks for the DOT Highway Helper program. Travel Management's maintenance is managed with an information management system in a preventive fashion to minimize excessive and/or premature replacement of parts.

Military Affairs -- Camp Ripley Training Site serves as a major training area for National Guard units from throughout the nation. The MATES serves as a facility within the training site where units can obtain equipment to use while they are here for annual training periods and weekend drills. The MATES facility is responsible for servicing all equipment used at the training site. Maintenance produces large amounts of waste oils and other liquid products that are extracted and replaced during maintenance. To reduce maintenance man-hours, workday time consumption, and production of waste liquids, the DMA "mothballs" a portion of its fleet during times when troop activity is reduced. The Controlled Humidity Storage Facility allows the DMA to store vehicles in an environment that will keep them out of the weather elements. This facility also allows the vehicles to remain operational in the event of a large mobilization of DMA troops.

Department of Transportation -- MnDOT is studying various brake cleaners. for the purpose of:
- Identifying brake cleaners containing chemicals that are harmful to the environment (including human health).
- Identifying brake cleaners containing chemicals that are low risk to the environment (including human health).
- Measuring the performance of brake cleaners containing chemicals that are low risk to the environment (including human health).

University of Minnesota -- The Department of Fleet Services, Twin Cities Campus, uses the recycling services of Safety Kleen for their parts washer solvents. Oil and gas filters are crushed, the oil recycled, and the metal scrap recycled. Automotive lead acid batteries and air conditioning refrigerants are also collected and recycled. Underground storage tanks for fuels have either been removed or upgraded to meet MPCA and EPA requirements, which will prevent contamination from leaking tanks.
The environmental benefit is the protection of groundwater.

Board of Water & Soil Resources – BWSR purchases automotive fuel at State Motor Pool and certified garages.

Batteries

Department of Administration – Travel Management recycles automotive batteries.

Department of Human Services – DHS collects batteries for recycling or returns them to the vendor.

Office of Environmental Assistance - The OEA has purchased alkaline rechargeable dry cell batteries for general office use.

Metropolitan Airports Commission – All MAC batteries are recycled. Automotive batteries are not retained on-site but are traded in on a one for one basis. This virtually eliminates the potential for a hazardous waste spill. All Nickel cadmium and alkaline batteries are collected from the various sites and recycled.

Metropolitan Council – Transit Operations – Metro Transit continues to recycle all of its lead/acid and dry cell batteries. This process has been in effect since the 1960's.

Metropolitan Council – Wastewater Services – Spent lead acid batteries (SLABs) are collected as a special hazardous waste and sent to battery recyclers. For most over-the-road vehicles, used SLABs are exchanged for new ones at the time of service. The used batteries which do accumulate and are stored for recycling are from heavy equipment and electric carts. Almost 10,000 pounds of SLABs were recycled from MCES facilities in 1996. Dry cell batteries that are currently standard issue contain less than 0.0025% mercury and therefore are not characterized as hazardous waste. The Metro WWTP warehouse normally dispenses over 3,000 pounds of AAA, AA, C, D, and 9V alkaline batteries in a year which now can be handled as regular solid waste. Nickel-cadmium batteries which are no longer capable of being recharged are accumulated for recycling through U. S. Filter in Roseville. A small project is underway to test the feasibility of using Ray-O-Vac rechargeable alkaline batteries. Dry-cell batteries which are older than the manufacturers' mercury restriction or cannot be documented to be low mercury still turn up and are stored until they can be disposed of as hazardous waste.

Metropolitan Mosquito Control District – Spent lead acid batteries are recycled through the District's battery vendor. As new batteries are purchased old batteries are exchanged with the battery supplier. Batteries are stored at District facilities in acid proof, leak proof tubs until they are transported to the vendor for recycling.

Military Affairs – A battery recycling program was established to help reduce the second largest waste stream within the DMA system. Used lead acid batteries are sold and other batteries are recycled with a nominal fee to cover packaging and transportation costs.

Department of Public Service – The Weights and Measures Division continues to work with the Pollution Control Agency, posting information for consumers regarding proper disposal sites for waste oil and lead acid batteries. This activity helps increase the collection of these materials and reduces the chance that they will become hazardous wastes through improper disposal.

Bemidji State University – BSU has addressed battery management in the following ways:
Nickel-Cadmium and Lead-Acid batteries are recycled. Mercuric oxide, silver oxide and large lithium batteries are disposed of as hazardous waste. We are seeking a local depository for recycling of mercuric oxide, silver oxide, and large lithium batteries. Recycling batteries would reduce our disposal cost by approximately five cents for each pound of batteries removed from the waste stream. The economic costs are unknown but expected to be minimal.
Environmental Benefits: Reduction of toxic metals.
Environment Costs: Unknown, but it is assumed that the recycling process would require the consumption of some energy and other resources.

St. Cloud State University -- All types of batteries, from nickel-cadmium to vehicle, are collected for recycling rather than disposed in the regular waste stream. Departments are encouraged to make the switch to rechargeable battery applications wherever possible.

Department of Transportation -- MnDOT recycles all dry and wet cell batteries at approved battery recyclers/smelters.

University of Minnesota -- The Department of Environmental Health and Safety collects and hand sorts batteries from all campuses. Batteries are managed for recycling/reclamation where possible. Automotive lead-acid batteries from campus fleet services departments are recycled. "Mercury free" alkaline batteries are distributed by the University Stores - Purchasing Department and rechargeable battery systems are used for various functions by departments.

Board of Water & Soil Resources -- BWSR collects and recycles all batteries.

Cleaning Supplies

Department of Administration -- Plant Management uses janitorial products that are appropriate to discard in sewers in all Building Services operations. Plant Management uses chemicals packaged as concentrates to reduce packaging waste by 85 percent in Building Services and Groundskeeping operations.

Office of Environmental Assistance -- The OEA participated in a process with the Department of Administration during fiscal year 97 to require vendors seeking bids for the State of Minnesota contract for cleaning supplies to supply information about their products, environmental attributes. This process will be completed during fiscal year 98 with the issuance of a new state contract that incorporates product performance and environmental attributes along with price of the product.

Military Affairs -- The DMA generates approximately 2,000 pounds of shop towels (rags) per year in performing its mission. The rags were previously managed as a special hazardous waste requiring disposal through a hazardous waste contractor. A successful rag reutilization effort has been implemented through the use of off-site rag laundering contractors. the soiled rags are collected, segregated and stored for the contractor to pick up. Clean rags are returned when the dirty ones are collected. The program saves money and reduces waste entering landfills.

Bemidji State University -- Waste reduction recommendations have been forwarded to the University's administration for review and action. It is anticipated that recommendations made to the Administration will be implemented during the 97-98 academic year. Included is a recommendation to discontinue the practice of replacing trash liners daily and instead go to an "as needed" schedule. A list of vendors of more environmentally acceptable cleaning products will be developed. Reducing the frequency of changing the trash liners is expected to reduce expenditures significantly for that product. The economic costs and benefits of using alternative cleaning products is unknown at this time. These activities are expected to reduce waste and pollution generation.

St. Cloud State University -- A committee has been in place for nearly two years that reviews cleaning products that can be substituted for those which pose a hazard to the employee using them or pose a pollution risk. Cleaning products are purchased in bulk as much as possible and then transferred into re-useable/refillable bottles and containers.

Department of Transportation -- Cleaning supplies are being purchased with automatic system for mixing and dispensing of concentrate. By using automatic mixing and dispensing systems MnDOT has experienced less cleaning chemical waste and less packaging waste.

University of Minnesota -- Informally, Facilities Management custodial divisions review new products with their safety staff, or Department of Environmental Health and Safety staff, to select products that clean properly, minimize employee exposure to hazardous chemicals, and protect the environment by minimizing harmful compounds discharged to sewer and air. The Purchasing Department stocks non-phosphate containing cleansers.

Laboratories have almost completely switched from chromium-acid cleaners to non-chromium cleaners, many of which are also non-corrosive detergents. The environmental benefit is avoided water pollution and improved worker health.

Board of Water & Soil Resources — Cleaning is performed by private business at all locations.

Commuting and Transportation

Department of Administration — The Department of Administration's telecommuting pilot project consisted of 60 employees and saved more than 25,000 commute miles, 1,800 trips to the office, 1,200 gallons of fuel and 1,200 pounds of pollutants.

Plant Management's coordinator for statewide transportation planning is promoting energy saving ideas and organizing alternative transportation options including bus passes, ride matching, state commuter van pools, telecommuting, flex time and bicycling. Travel Management's commuting initiatives include the MCTO Bus Pass Program, although operational control of the Bus Pass Program has been reassigned to the transportation coordinator at Plant Management.

Office of Environmental Assistance -- The OEA is among a few agencies that are testing telecommuting with a few staff. These staff employ this work method and work out of their homes one or two days per week. The result is fuel conservation and reduced emissions from vehicles.

Department of Human Services — The Department of Human Services continues its telecommuting policy. Staff who have job duties conducive to home office application have been identified and will telecommute at least one day a week. The pollution prevention from the elimination of the daily commute is substantial.

The Department of Human Services' inter-active satellite link to Regional Treatment Centers and other metropolitan and non-metropolitan Minnesota agencies continues to grow and be a success. The ability to tele-conference using this satellite technology has allowed staff to reach a larger audience while reducing travel time, vehicle use and its subsequent pollution and also provides the opportunity for a paper-less exchange of ideas.

University of Minnesota — The Department of Campus Health and Safety and the Department of Parking and Transportation Services are continually studying and implementing new strategies to (1) reduce automobile traffic to the Twin Cities Campus and (2) more efficiently direct the flow of traffic and pedestrians when they reach the University. Employee population densities are mapped to show critical areas for mass transit lines. Routes for buses have been maintained, in spite of shrinking state funding. Car pooling is actively promoted through advertisements, reduced parking rates and preferential surface lot locations. Biking and walking routes are promoted (with new signage and special lanes on University roads) and the Twin Cities Campus uses a mass transit system to bus students, employees, and guests from parking lots to various locations on campus. Also, the University administration is promoting students living on-campus and is planning new student housing projects to entice students to live on-campus, rather than commuting.

Parking and Transportation Facts:

Total cars parked (FY 94/95)	5,761,521
Non contract parking:	10,501 spaces
Carpool parking:	923 spaces
Visitor parking: (FY 94/95)	287 special events, 32,677 parking reservations
Population served (FY 94/95)	80,000 to 100,000 a day
Day students (approx.)	37,000
Evening students (approx.)	16,000
Summer Sessions (approx.)	12,000
Staff & Faculty (approx.)	17,500

Population Spread (Students, Staff, and Faculty):

20% live within one mile of campus
40% live within 4-5 miles
(9% live in Minneapolis Uptown area)
(4-5% live in St. Paul Macalester/Groveland area)
60% live outside 4-5 miles

Travel Modes (approx.):

22% walk
9% carpool
4% bicycle
18% bus riders
47% single occupant vehicle

Biking Facts (1997):

Total bike lockers:	18
Total bike rack spacers:	5,700
Secured bike parking spots in Coffman Memorial Union:	6

Bike lanes and signage added in September and October 1997

The environmental benefit is avoided air pollution.

Education, Communications and Training

Department of Administration -- Building Codes and Standards provides training with inclusion of environmental quality aspects of the Minnesota State Mechanical Code. More than 2,500 municipal building officials, inspectors, design professionals and contractors were provided this training during fiscal year 97. Building Codes and Standards participated on a task force for the development of voluntary residential ventilation standards. Building Codes and Standards promulgated rules providing recycling space in public buildings. Building Codes and Standards will continue to develop and enforce rules to facilitate pollution prevention, lead and asbestos abatement, and education and training opportunities. It will monitor the progress of national air radon mitigation standards. Plant Management coordinates departmental pollution prevention information through the Resource Recovery Office. The Resource Recovery Office represents Administration on the Interagency Pollution Prevention Advisory Team. The Resource Recovery Office planned pollution prevention training including a September *Government Print Buyers and Design Workshop* for public agencies co-sponsored by Citizens for a Better Environment, Great Printers Project and Communication.Media. The Resource Recovery Office provides information to state employees about waste reduction and recycling opportunities at the annual October Central Stores Product show and the annual Communications.Media Open House, through periodic Info to Know@ bulletins, during onsite presentations and in response to agency requests for assistance. Communications.Media informed customers of environmentally preferred alternatives to reduce pollution through the *Fast Facts* newsletter, the Annual Paper Fair and Design event, training classes and their Internet web site: http://www.comm.media.state.mn.us.

Communications.Media, Materials Management, and the Resource Recovery Office support Minnesota Statute Section 16B.122 by providing state agencies with guidelines for the use of recycled papers and environmentally preferred inks. Materials Management and the Resource Recovery Office will update the environmentally responsible purchasing section of the purchasing training provided to state employees (Authority for Local Purchases manual). Materials Management reviews contracts with each Acquisition Management Specialist for environmentally responsible purchasing goals.

Office of Environmental Assistance -- Ongoing programs to encourage waste and pollution prevention are directed at the targeted areas of construction and demolition waste, mercury-containing products, transport packaging, the hospitality industry, composites made from recycled materials, and office buildings. The OEA promoted pollution prevention through the following programs and activities:

- Provided a grant of $40,000 to the Minnesota Chamber of Commerce for the Minnesota Waste Wise program, a voluntary program designed to help businesses reduce waste.
- Awarded 32 grants for pollution and waste prevention. (See attached list.)
- Sponsored the Seventh Annual Governor's Awards for Excellence in Waste & Pollution Prevention (September 1997). Award winners included: Automated Building Components Millwork Division (Chanhassen), Crown

Cork & Seal Plant # 23 (Faribault), Andersen Corporation (Bayport), Dana Corporation Spicer Clark-Hurth Off-Highway Components Division (Plymouth), West Group (Eagan), Stowe Environmental School (Duluth), Aveda Corporation (Blaine), and John Roberts Company (Coon Rapids). Honorable mention was awarded the Solid Waste Management Coordinating Board (St. Paul) and the Minnesota Asphalt Pavement Association (New Brighton.)

- OEA staff coordinate the Interagency Pollution Prevention Advisory Team, developing agendas and facilitating quarterly meetings, recording minutes, and maintaining the mailing list. In fiscal year 97 IPPAT coordinated the Minnesota Government Reaching Environmental Achievements Together (MnGREAT!) award program. Award Winners included the Dept. of Administration, Printing, Communications & Media Division; Minnesota Pollution Control Agency, Kurt Schroeder, Lafayette Park Transportation Committee; Moorhead State University, Dept. of Environmental Health and Safety; University of Minnesota Dept. of Parking and Transportation Services; and University of Minnesota Dept. of Plant Pathology and Facilities Management Department.
- The OEA partnered with other agencies and organizations to incorporate pollution prevention topics and presentations into existing conferences, in order to extend the pollution prevention message to a wide variety of audiences.
- The OEA sponsored the Minnesota Conference on Sustainable Development, along with the Minnesota Department of Natural Resources, the Minnesota Environmental Quality Board and the Extension Service of the University of Minnesota. Over 700 people attended the two-day workshop.
- OEA staff established a Minnesota Sustainable Communities Network (MnSCN) during fiscal year 97 and held six regional meetings on sustainability throughout the state. The MnSCN sends information via e-mail to over 700 people bi-weekly.
- The OEA distributes Source Reduction Now, a detailed guide to implementing source reduction programs in companies and agencies. The printed guide is accompanied by a training video. The OEA has also published many fact sheets and case studies on solid waste source reduction, which includes minimizing the toxicity of products as well as solid waste reduction.
- The OEA provides technical assistance and training on source reduction to local governments and coordinates a council called Counties and Cities Implementing Source Reduction and Recycling (CISRR). The council promotes networking and coordination among source reduction assistance providers in local government.
- In 1996, the OEA and Emergency Response Commission (ERC) were delegated responsibility for administering the pollution prevention Progress Report. The ERC now collects the forms from businesses and works with the OEA to review them for completeness. The OEA and MnTAP then work with companies to determine success stories and to target technical assistance efforts by analyzing the data collected.
- The Toxicity Reduction in Products and Waste Team was established during fiscal year 97 and has the goal to coordinate, educate, and facilitate among state agencies, businesses, units of government and other interested parties, the reduction of toxicity of products and materials discarded in the waste stream. This committee in turn established a Design for the Environment sub-committee to influence the development of products that currently contain toxic materials to ensure that they do not become problems at the end of their useful life.

Metropolitan Council -- Waste Water Services -- Within the MCES is the Office of Customer Relations and Environmental Education (OCREE) and the Industrial Waste Section (IWS). Together, these two units have purchased "Non-Point Source Pollution Prevention Environmental Resource Guides." Since 1995, the guides have been distributed at several teacher workshops including short presentations, full-day sessions, and two-day institutes granting continuing education or graduate level credit. Other related presentations have been made to district curriculum planning sessions, the Lt. Governor's Environmental Education Summit, the Minnesota Environmental Education Association annual conference, Minnesota River Joint Powers conference, and the Minnesota Education Association annual conference. In addition to educators, the resource guides have been given to staff members from state agencies, local soil and water conservation districts, and county agencies. "No Dumping" flyers, which describe household products that should not be disposed of to the sanitary sewer system, are distributed at many public events and are used as "stuffers" in utility billing notices by cities.

Military Affairs -- Several different methods are used to educate and train field soldiers and state employees regarding their responsibility for implementing pollution prevention. DMA Regulation 200-3 (Hazardous, Infectious and Special Waste Management Requirements) is a hands-on tool that has been provided to all DMA facilities and has been mandated by the command to be used throughout the state. This regulation is a simple way to reference and implement pollution prevention methods at each facility. DMA 200-3 is in a constant process of revision to

address new and changing policies and guidelines. Training videos have been prepared and are being used to help educate individuals on their responsibilities. *The National Guard's Most Wanted* is a 20 minute video that was filmed and produced in 1994. This video is used to stress awareness. *10 1/2 Steps to Facility Compliance With Hazardous Waste Generator Requirements* is a one hour video. This video enhances the first tape taking compliance issues to a greater level. Pollution prevention is presented as a full block of learning on this tape. Spill Response/Control is a 40 minute tape that trains every soldier on their responsibilities regarding spills. Eight hour classroom training sessions are held to train the trainers. The sessions are used to distribute the *10 1/2 steps to compliance* video,. The video is viewed and a question/answer period follows. Second, updates of regulation DMA 200-3 are distributed. Third, individuals responsible for hazardous waste and pollution prevention are given an opportunity to have questions answered. Organizational implementation of pollution prevention activities occurs at this time as well as the evaluation of other pollution prevention activities already in place.

Pollution Control Agency -- MPCA has an effort to educate all agency staff to a level of basic education on pollution prevention. To date, the Air Quality Division has been through the training. Hazardous Waste is in the process of developing the training and the other divisions have yet to begin. The MPCA is also working on education with external clients. MPCA has done mail inserts, integrated pollution prevention into fact sheets, and published articles in various newsletters in an attempt to raise awareness among businesses.

Bemidji State University -- BSU has implemented the following education activities toward pollution prevention:

Ongoing Activities: The University continues to maintain a curriculum that offers a number of courses that address a wide range of environmental topics.

FY 1997 Activities: Education was an integral part of the OEA grant project which funded the environmental audits conducted the previous year. As part of the project, Dr. Raymond Nelson of the BSU Education Department, and Pam Warren, an environmental education student, agreed to work with BSU instructors, who wished to integrate waste reduction or other environmental education concerns into their curriculum. They invited interested faculty members to meet with them to discuss strategies concerning the integration of environmental education into various BSU disciplines. A proposal to require an environmental component in the University's Liberal Education curriculum was introduced as a part of the curriculum development process. Its approval is pending and expected to be approved. Procedures and opportunities for participating in waste reduction and recycling activities, both on and off campus, were communicated through a faculty/staff computer information list and the campus newspaper.

Future Activities: The University Environmental Task Force makes recommendations to the University Cabinet on pertinent environmental issues and works to promote environmental awareness. The Task Force is anticipating involving a student environment organization as an auxiliary group which will work to publicize and generate discussion about environmental issues affecting the campus and increase environmental awareness in general. It is hoped that these educational activities will have a far reaching impact by serving to heighten public awareness about environmental issues and ultimately have a positive influence on their behavior and attitudes. Student exposure to and participation in, these activities, is expected to extend these benefits far beyond the campus, through their examples and teachings, when they leave the University.

University of Minnesota -- "Courses on the Environment, A Student Guide to University of Minnesota Courses on Environmental Issues on the Twin Cities Campus, 1996 - 1999" (published in printed and electronic formats by CURA (Center for Urban and Regional Affairs), 612/625-6324, 330 HHH Center, 301 - 19th Ave. S., Minneapolis, MN 55455, and the College of Natural Resources, 2003 Upper Buford Circle, St. Paul, MN 55108) lists 523 environmental courses from 54 different departments, many of which deal directly with pollution prevention. Two new courses in particular cover pollution prevention education. The first is an interdisciplinary course called "Preventing Pollution: Innovative Approaches to Environmental Management," which is offered through the following departments: Civil Engineering (5099), Honors Seminar (3030), Management (8019/5101/3019), Public Affairs (5793), and Public Health (5150). The second course is called "Environmental Engineering for Chemical Engineers," offered through Chemical Engineering and Materials Science (5904), which educates senior and graduate I.T. students in incorporating pollution prevention principles early in the engineering design process. The department of Environmental Health and Safety conducts annual training in hazardous waste management. The training covers the basics of pollution prevention. Approximately 2,000 employees are trained annually. The training is offered through classroom presentations and over the web. Web training slides are located at *http://www.dehs.umn.edu/slide1.htm* and the Environmental Health and Safety home page is located at *http://www.dehs.umn.edu/*. The Waste Abatement Committee, made up of members from many key departments,

coordinates pollution prevention projects at the University of Minnesota. The committee communicates information to new employees through orientation programs and to existing employees through in-house vendor trade shows sponsored by the Purchasing Department. The Minnesota Technical Assistance Program (MnTAP), located in the Department of Environmental and Occupational Health, in the School of Public Health at the University of Minnesota, continues to provide technical assistance in the areas of industrial and solid waste management and pollution prevention to Minnesota's manufacturing and service industries. MnTAP provides technical assistance to Minnesota businesses through the following services: 1) telephone assistance, 2) site visits, 3) intern programs, 4) presentations and workshops, 5) technical publications, 6) library, and 7) materials exchange. MnTAP averages 150 calls per month and 140 site visits a year. The environmental benefit is the education of future generations on the importance of pollution prevention.

Electronics

Department of Administration — Materials Management provides for the reuse of computers and other electronics though the surplus property program.

Office of Environmental Assistance — During fiscal year 97 OEA staff were actively engaged in state and federal policy forums to develop long-term solutions for managing waste electronics that do not create undue economic burdens for state and local governments. The activities will continue during fiscal year 98.

Department of Human Services — Obsolete electronic equipment (computers) are donated to schools. Equipment that cannot be donated is picked up by an electronics recycling vendor.

Bemidji State University — BSU's pollution prevention activities in the electronics area are as follows:
Ongoing Activities: The University has a continuing program for recycling obsolete and non-functioning electronic equipment.
FY 1997 Activities: Approximately 5.2 tons of non-functioning or obsolete electronic equipment and 165 computer monitors were recycled. The process involved recovery of recyclable metals and other materials. None of the material was landfilled. An additional 2 tons of non-functioning and obsolete computer equipment went to a local vendor for use as repair and replacement parts. Approximately 50 non-functioning or obsolete typewriters went to a local vendor for repair and redistribution to non-profit groups. **Future Activities:** Recycling of electronic equipment will continue.
Economic Costs: Processing of recycled material cost approximately $3000. This does not include shipping and labor costs. **Environmental Benefits:** Recovery and reuse of these materials prevents the introduction of the metals and other materials into the environment and reduces the demand for virgin material.
Environment Costs: An unquantified amount of energy and other resources are involved in processing and handling these materials.

University of Minnesota — The University of Minnesota statewide system collects all electronic equipment, redistributes what it can within the University, then pays to the have the rest sent to a licensed recycler. The recycler redistributes a portion of the equipment (sells the equipment as is), recycles a portion (particularly precious metals), and properly disposes of the remainder. The University recycled approximately 100,000 pounds of electronic material in the past fiscal year. It costs approximately $.17/lb to recycle electronic equipment, and recycling it avoids heavy metal contamination of soil and groundwater.

Energy - Lighting

Department of Administration — Building Construction participates with utility companies to complete retrofitting of existing building lighting systems to achieve energy consumption reduction.

- Plant Management recycles incandescent bulbs to prevent solid waste disposal.
- Plant Management coordinates building lighting retrofits with Building Construction and Northern States Power Company to reduce energy consumption, thereby decreasing pollution levels.
- Materials Management purchased solar-powered highway warning signs for DOT.
- Travel Management minimizes lighting through the use of energy efficient lights.

Office of Environmental Assistance — The OEA encourages energy conservation via its grants. In fiscal year 97 the grant rules were amended to incorporate energy conservation among the many eligible activities a project could undertake.

Metropolitan Council -- Wastewater Services — Several retrofits to energy-efficient fluorescent lamps or high intensity vapor lamps have taken place at MCES facilities. Unlike incandescent lamps, these alternatives are considered as a special hazardous waste due to their mercury content. In 1996, almost 7,000 lamps were recycled through Recyclights in Bloomington.

Metropolitan Mosquito Control District — The District facility in St. Paul utilizes an energy saving computer control system to operate the buildings HVAC systems. The control system, made by Direct Digital Controls, monitors sensors through-out the building as well as outside weather conditions. The gathered information is used by the control system to balance heating and cooling needs and minimize energy usage during the day. At night and during low usage periods (weekends, holidays) the control system shuts down the HVAC equipment for additional energy savings.

Military Affairs -- The DMA hired an outside organization to perform energy audits at Camp Ripley. Energy conservation project plans and specifications have been developed for buildings as a result of these audits. We are currently waiting for funding. Project specifications include lighting system replacement or retrofit, HVAC systems repair, and HVAC controls repair or improvement. Some of these projects include energy management control systems designed to significantly improve control of energy consumption.

The department also upgraded the electrical demand management system central control station computer and software. Improvements will enhance control of various electrical loads, providing greater demand and energy savings opportunities with existing connected loads. New uniquely addressable control switches can now be used to control occupancy status of specific buildings.

Department of Public Service -- The Department operates the Energy Information Center which serves energy consumers and features a toll-free "hotline" staffed full-time by Energy Information Specialists. The Energy Information Center answers questions, provides advice, and mails publications on energy conservation and renewable energy technologies. The Energy Information Center responded to 49,778 telephone, mail and trade show inquiries and distributed 202,677 publications during fiscal year 97. The Department estimates that 2.3 x 1012 Btus, enough to provide the total heating needs of 23,000 to 27,900 homes for a year, are saved as a result of the contacts and publications distributed. Other related activities include:

- *The Wind Resource Education Program* - the goal of this study is to involve interested school districts in the wind assessment program. Several grants have been written to develop wind curriculum to aid the education of the students and the general public.
- *Minnesota Energy Code* - The Department has worked to increase the understanding of the current Minnesota energy code. A curriculum was developed and a 3-day instructor training held, after which over 2,000 licensed building contractors received training. The emphasis for the next year will be to work to improve the curriculum and expand training to mechanical and other building trades. The Department's work to upgrade the energy code is targeted for completion by 1/1/98. This upgrade to the code will likely have an emphasis on building durability.

Bemidji State University -- The following are BSU's activities in lighting pollution prevention:
Ongoing Activities: We continue to replace incandescent exit lights with more energy efficient light-emitting diodes (LEDs).
FY 1997 Activities: A faculty/ student team working on the waste/pollution prevention grant project, studied the benefits of replacing all incandescent lights on campus with more energy efficient compact fluorescent lights.
Future Activities: We will begin a process of encouraging the campus community to convert incandescent light bulbs to compact fluorescent bulbs.
Economic Benefits: It is estimated that a total conversion to LED exit lights could save about 50,000 KWh/year and result in cost savings of $2500 in lower electricity cost each year. The total cost of replacement bulbs would be about $5000 and the life expectancy of the LEDs is over 25 years. The payback period for the LED retrofits would be less than 20 months, when only savings from lower energy use and elimination of the cost of bulb replacement

are considered. It is estimated that if a complete conversion to compact fluorescents were made, the University would use approximately 1,500,000 fewer KWh of electricity per year and save approximately $75,000 per year.
Economic Costs: The total cost of LED replacement bulbs is estimated to be $5000. We estimate that there are approximately 3000 incandescent lights used on campus. Conversion of all these bulbs to compact fluorescents, at an average price of $7.00 each, would cost $21,000. Rebates and other incentives may be available from our electrical power provider.
Environmental Benefits: Reduced demand for electrical power generation and the associated environmental costs. Also, the LED and fluorescents longer life will reduce energy and resource use associated with the manufacture of more frequently replaced incandescent light bulbs.
Environment Costs: Unknown, but the LED and fluorescent manufacturing process does require the consumption of some energy and other resources.

Metropolitan State University --The facility project currently underway exceeds the energy code minimum requirements. Data is in the process of being collected. Examples of activities are:

- Occupant sensors were used in toilet rooms and public areas.
- LED exit lights were used.
- High efficiency fluorescent lights were used throughout the project, T-8 and compact.
- Loe-E glazing was specified throughout. Characteristics (i.e. shading co-efficient etc.) are available upon request.
- Energy efficient Direct Digital Controls (DDC) were used throughout, for the control of the HVAC, and related systems.

Energy - Production

Department of Administration -- Building Construction specifies and incorporates, where ever possible, the use of energy efficient triple-glazed windows to save on energy loss and heat gain in facilities.

- Plant Management replaced burners at the Minnesota History Center to achieve higher efficiency and greater control of the dual fuel system.

Metropolitan Council -- Wastewater Services -- Flue gas heat from the incineration of biosolids at the Metro WWTP is captured by an energy recovery-boiler economizer system at a recovery rate of 40%. The steam produced from the boilers is used to heat the Plant, to run pumps and induced-draft fans, and to accommodate the solids heat-treatment process needs. Approximately $1 million in fuel costs are saved each year by this energy recovery system.

Department of Public Service -- The goal of the two year project *Solar/Wind Resources* is to document the wind and solar resources in the Buffalo Ridge area of southwestern Minnesota. The Department installed equipment at five sites and recorded wind, solar and temperature data. Each site monitors global horizontal solar radiation. The report on this project, "Minnesota Wind/Solar Resource Evaluation Project," summarizes the information collected and is posted on the Department web page. The goal of the *Wind Resource Assessment Program* - is to record and analyze wind resource data. This ongoing program uses GIS technology with wind power densities, making this data base among the most advanced in the nation. The *Tall Tower Study* program conducts research to determine the wind shear parameters that should be used when estimating the available wind energy at various heights. The extensive data collected through this program will be used to establish an analytical method of converting data collected at one level to a level above or below the monitored level. The final report on this program is expected in December 1997.
Environmental Costs: In 1993, the Minnesota legislature required the Minnesota Public Utilities Commission to "quantify and establish a range of environmental costs associated with each method of electricity generation." The law further requires each utility to use the values in conjunction with other external factors when evaluating new sources of electric generation in all proceedings before the Commission. During the contested-case hearing ordered by the Commission to establish final environmental-cost values, the Department proposed a range of values for carbon dioxide (CO_2), volatile organic compounds (VOC), particulates (PM-10), and nitrogen oxides (NO_X). The Department also recommended that no values be established for sulfur dioxide (SO_2) and mercury. In 1997, the Commission issued its decision on final environmental-cost values. The Commission accepted the Department's recommendations for all values except CO_2. A group of utilities and other parties are currently appealing the

Commission's CO_2 decision to the Minnesota Court of Appeals. The Department is not part of this group. The date of legal resolution is unknown.

Conservation Improvement Programs - Electric The Department oversees utility investment in conservation and demand-side management through implementation of Conservation Improvement Programs (CIP). With the exception of NSP, investor-owned electric utilities are required to invest 1.5 percent of their gross operating revenue into energy conservation projects. NSP is required to invest 2.0% of its gross operating revenues because it is a nuclear power generator in Minnesota. By increasing the energy efficiency of its customers, a utility can reduce the emissions created by traditional electric generation sources, such as coal, natural gas or petroleum distillates. Some of the staff-evaluated, commissioner-approved projects which will reduce pollution emissions include:

- Commercial and industrial lighting efficiency projects for Interstate, Otter Tail Power, Northern States Power (Electric) and Minnesota Power;
- Commercial and industrial lighting efficiency projects for Interstate, Otter Tail Power, Northern State Power (Electric) and Minnesota Power;
- Residential central air conditioner efficiency projects for Northern States Power Company;
- A refrigerator recycling project for Interstate (Electric); and
- Northern States Power's State of Minnesota Retrofit project for more efficient energy systems in state-owned or leased buildings.

Environmental Benefits
Avoided Emissions due to Electric CIP
1995-1997

		Total 1995 Tons	Total 1996 Tons	Total 1997 Tons	Total 1995-1997 Tons
Emission	lbs/kWh				
SO2	0.0043	1,065	881	594	2,471
Nitrogen Oxides	0.0078	1,933	1,471	1,077	4,482
PM-10	0.0009	223	170	124	517
CO_2	2.9	718,551	547,084	400,592	1,666,226

Following is a summary of just some of the measurable benefits of DPS Conservation Improvement Programs for electric and gas utilities. Actual kWh savings in 1995, 1996 and projected kWh savings for 1997 achieved through Conservation Improvement Programs for each investor-owned electric utilities are provided below:

Energy Savings

	1995 Actual Energy Savings (kWh)	1996 Actual Energy Savings (kWh)	1997 Projected (kWh)
Interstate	8,347,380	6,014,737	5,467,327
MP	44,072,581	105,550,369	34,149,079
OTP	11,961,683	13,470,907	9,401,284
NSP	431,162,000	252,236,000	227,252,740
Total	495,543,644	377,299,013	276,270,430

Conservation Improvement Program - Gas

In addition to the electric CIP, the Department oversees the gas CIP projects. Seven investor-owned gas utilities offer CIP projects reviewed and evaluated by staff and subject to commissioner approval. The utilities are required to spend .5 percent of their gross operating revenues. The commissioner has used the CIP process to promote sound gas conservation practices which will continue to reduce or stabilize energy consumption growth. The following are some of the staff evaluated, commissioner-approved projects which will reduce pollution emissions:

- Low-income building weatherization projects for Interstate Power Gas Company, Minnegasco, Peoples Natural Gas Company, Western Gas Utilities, Inc., and Northern States Power (Gas) utilities
- High-efficiency gas furnace/setback thermostat programs for Interstate, Minnegasco, Peoples Natural Gas Company, and Western Gas Utilities, Inc.
- Minnegasco water-heating rebate project for low-income customers

- Minnegasco's and Northern States Power's State of Minnesota Retrofit projects for more efficient energy systems in state-owned or leased buildings
- An efficient water heater rebate project and high efficiency furnace rebate project for Northern Minnesota Utilities
- A low-income furnace rebate project for Great Plains Natural Gas Company.

The gas CIP also reduces pollution emissions by promoting conservation projects geared toward a reduction in energy consumption. Estimated Mcf savings through Conservation Improvement Programs for each gas utility are provided below:

Energy Savings (Mcf)

	1996	1997	1998
Interstate 15,269	11,829	11,867	
Minnegasco	273,383	267,489	273,120
Great Plains	7,136	7,7398,170	
Northern Minnesota Utilities	6,579	8,386	8,484
Northern States Power-Gas	585,206	290,493	296,068
Peoples 33,182	47,864	52,045	
Western 2,261	1,027	1,027	
Total	923,016	634,827	650,781

As a result of the above Mcf savings goals, the following emissions should be avoided:

Energy Savings (Mcf)

	Tons/Mcf	1996 Total Tons	1997 Total Tons	1998 Total Tons
SO_2	2.85E-07	0.185	0.127	0.130
Nitrogen Oxides	4.49E-05	41.443	28.504	29.220
Volatile Organic Compounds	3.34E-06	3.046	2.095	2.148
Total Solid Particulates	4.39E-06	3.969	2.730	2.798
CO_2	5.75E-02	53,073	36,503	37,420

1996 Energy Policy and Conservation Report

Every four years the Department is required by statute to prepare a comprehensive energy report on Minnesota's energy situation. The Department published its most recent report in December 1996. In this report the Department emphasizes the importance of carefully evaluating environmental impacts when assessing the State's energy options. This policy is reflected in many of our recommended energy strategies and action steps -- particularly in our recommendation regarding energy conservation, renewable resources, and other alternative energy resources.

Electric Integrated Resource Planning

The Department of Pubic Service is committed to the development of cost-effective, environmentally sound renewable energy production in Minnesota. Integrated Resource Planning provides a planning forum for regulators, environmental and consumer groups, renewable-energy and conservation advocates, and electric utilities to meet our need for electricity. In fiscal year 97, the Department reviewed and commented on the resource plans of United Power Association and Otter Tail Power Company.

In response to utility resource plans, the Department recommended that utilities use environmental costs in developing plans for supply- and demand-side resources. The Department also recommended that all utilities use a systematic analysis to determine the optimal level of demand-side management for their systems. In addition, the

Department recommended that Otter Tail Power consider wind as a potential resource in its planning process; and United Power Association develop long-term DM goals for the entire planning period.

Institutional Conservation Program - Grants Program/Loan Program
The goal of this ongoing Institutional Conservation Program is to reduce energy consumption in eligible institutional buildings. It provides loan funds to implement energy conservation measures in schools, city and county buildings and hospitals.

Bemidji State University — BSU's pollution prevention activities in the area of energy production are as follows:
FY 1997 Activities: We engaged in discussions with our electrical power supplier about using an emergency generator to supply electricity to the grid during periods of peak demand. We will continue to explore the benefits of peak shaving. The peak shaving could potentially reduce electrical costs by as much as $70,000/yr, according to the electrical power supplier. The electrical power supplier would pay for and install the necessary equipment and modifications. Providing electricity to the grid should lessen the need to construct new generating plants. Operation of the generator will require the burning of fossil fuels.

Metropolitan State University — Metro State participated in a comprehensive cooling and energy study through active participation with NSP and an outside consultant. This included:
- Chilled water systems economics analysis.
- Annually cooling energy usage summary.
- Northern States Power Rebate Calculations, based on energy efficiency or reduction of energy use at peak operating times.
- An energy simulation Program Output/Economic Summary was also included in this report.
- Historical data and the use of Adjustable Speed Drive analysis was completed.

Moorhead State University — The Moorhead State University Energy Conservation Retrofit Program is successful in saving $236,100 annually be reducing energy consumption. Total installed cost was $946,000 equating to a simple payback of 4.0 years. The Energy Conservation Retrofit Program has proven beneficial not only to Moorhead State University, but also the state of Minnesota, its citizens and its environment.

Flow Reducing Shower Heads
The energy management retrofit program was used to install flow reducing shower heads throughout the campus. These shower heads save energy by reducing consumption of domestic hot water. This energy conservation effort is estimated to save $8,200.00 annually with an initial cost of $4,000.00 and a simple payback of 0.6 years.

Energy Management Control System
The energy management retrofit program was used to install an energy management control system (EMCS) in 19 buildings throughout campus. The primary function of the new EMCS is to reduce building operational hours. When buildings are unoccupied there is generally no need to maintain comfort levels and ventilation with outside air can be reduced. By use of the EMCS it is simple to schedule buildings according to their actual occupancy. This provides savings by reducing space temperature in the heating season and increasing the space temperatures in the cooling season when in unoccupied mode. Fan run time and the associated energy is also reduced. The energy conservation effort is estimated to save $193,000 annually with an initial cost of $638,000 and a simple payback of 3.3. years.

Pool Environmental Unit
Prior to the energy retrofit the pool area used an air handler to deliver 15,000 cubic feet per minute of 100 percent outside air to the pool area. Systems like this waste energy through conditioning of excessive outside air. The outside air flow cannot be reduced without increased humidity levels in the pool area thus creating an environment which promotes mold and fungus growth. The air which is exhausted is high in humidity and carries energy out of the space. The energy retrofit program was used to install a pool environmental unit. This unit saves energy be reducing the amount of outside air by 80 percent of original capacity, while improving pool humidity levels. Air that circulates through the air handler is dehumidified and the associated energy is reclaimed and used to heat pool water. This energy conservation effort is estimated to save j$19,200 annually with an initial cost of $170,000 and a simple payback of 8.9 years.

Heating Plant Boiler Economizers
Boilers in the heating plant are used to generate steam for campus wide heating. The energy retrofit program implemented installation of economizers on these boilers. By adding economizers heat that would be lost up the stack and to the atmosphere was recovered and used to preheat water going to the boiler. This energy conservation effort is estimated to save $13,700 annually with an initial cost of $116,000 and a simple payback of 8.5 years.

Blow Down Heat Recovery
Water needs to be drained from the Physical Plant's heating boilers to maintain water chemistry and demote the formation of scale in the boiler. The energy retrofit program implemented installation of a blow down heat recovery unit to reclaim energy from the blow down water. The energy conservation effort is estimated to save $2000 annually with an initial cost of $17,000 and simple payback of 8.5 years.

University of Minnesota — The University has an ongoing green lights program to change out older, less efficient lighting as remodeling of buildings is undertaken at all campuses and facilities.

Groundwater Wells

Metropolitan Council -- Wastewater Services — A water conservation project at the Metro WWTP uses treated effluent in place of on-site well water for non-potable service water purposes. In operations of the Plant, this has resulted in a 35% reduction in groundwater use and a cost savings of almost $4,000 over three years for permit fees and electricity to operate pumps. This project received an MN GREAT! award for its achievements in pollution prevention in 1995.

Heavy Metals

Office of Environmental Assistance — During fiscal year 97 OEA staff helped to develop legislation directed at the replacement of mercury manometers in Minnesota dairy operations and collaborated with representatives from the Minnesota healthcare community to develop outreach materials promoting mercury pollution prevention within the healthcare sector.

Metropolitan Council -- Wastewater Services — The MCES's industrial waste section (IWS) is responsible for enforcing the pretreatment program for over 800 permitted industrial waste dischargers to the regional collection and treatment system. Substantial reduction has occurred in heavy metals released to the system due to these enforcement and education efforts.

Metals Loading to the Metro WWTP from Industrial Users
(in pounds)

Metal	1981	1992	% Reduction
Cadmium	6,666	654	90.2%
Chromium	65,742	7,657	88.4%
Copper	45,234	13,180	70.9%
Lead	6,603	4,131	37.4%
Nickel	44,646	5,880	86.8%
Zinc	71,199	13,802	80.6%

Environmental benefits of this load reduction include: compliance with effluent limits, compliance with receiving water quality standards, improved biosolids quality, reduced air emissions from biosolids incineration, and compliance with biosolids land application metals criteria. Economic benefits include: reduced use of treatment chemicals and reduced disposal costs for biosolids that can now be beneficially reused. Mercury in the collection and treatment system is still of concern. The IWS has worked specifically with dental clinics regarding mercury, surveying over 1600 clinics in 1995. In cooperation with the Minnesota Dental Association, the Section has compiled a list of treatment technologies to minimize the release of amalgam wastes to the sewer. This past year, the IWS completed a chapter for a Water Environment Federation monograph entitled "Controlling Dental Facility

Discharges to Wastewater" intended to assist in identifying and minimizing sources of mercury. The pollution prevention efforts regarding mercury has also included surveys of commercial laboratories, sampling companies, and environmental consultants. A survey for medical clinics is currently being developed.

Metropolitan Mosquito Control District -- The District generated six pounds of damaged mercury thermometer devices in the past fiscal year. This waste stream was recycled through the state contract with Recyclights. Planned activities for fiscal year 98 include purchasing mercury free thermometers for use in the District. The goal of the District is to have zero generation of waste mercury in fiscal year 98.

Military Affairs -- The DMA operates both medical and public affairs operations that utilize various types of photographic chemicals. The Guard disposed of 1,500 pounds per year of this material as hazardous waste. The Guard installed silver recovery technology where these waste photographic chemicals are processed. The wastes are rendered non-hazardous and the silver is sold. This method has eliminated this hazardous waste stream.

University of Minnesota -- UM-Duluth is taking part in a 'zero discharge' project which among other chemicals focuses on mercury. Excess and waste mercury is being collected and shipped off-campus for proper reclamation or disposal. The proactive program of minimizing mercury on campus should result in a reduced potential for mercury discharge to the environment.

Ice Control, Sanding

Department of Human Services -- Potash is used by the Cambridge RHSC for ice control on sidewalks. The material provides grit for traction, melts ice and provides fertilizer for the grass areas near the sidewalks.

Metropolitan Airports Commission -- The MAC encourages its employees to explore different avenues of ice control on the runways, taxiways, ramps, aprons and streets. The use of sodium formate and the reduced usage of urea are two avenues currently being investigated.

Aircraft de-icing performed by tenant airlines using glycol based deicing fluid could be considered another form of ice control. The MAC currently has a glycol collection system at MSP, which is designed to significantly reduce the amount of aircraft deicing fluid discharged to the Minnesota River. Currently, the spent glycol is pumped out of 24 plugged storm sewer pipes, at deicing locations, around the field and either processed on-site through recycling or discharged to the sanitary system for treatment under an Industrial Discharge Permit with MCES.

In the near future, a comprehensive permanent control system for glycol containment will be built which will consist of concrete deicing pad facilities located at runway ends with drainage designed to contain glycol-impacted run-off. The MAC is also working with MSP tenant airlines to obtain vacuum sweepers that can collect glycol that is not contained in the deicing pads.

Metropolitan Council -- Transit Operations -- During the 1997-98 winter season Metro Transit will start looking at recycling the floor sweepings from the service garages. This will remove this sand, that is brought into the buildings from the streets from, the current waste stream.

Laboratory

Department of Administration -- Materials Management established a contract for medical IV bags that do not contain PVC, reducing formaldehyde and dioxin during the manufacturing process.

Department of Agriculture -- The Laboratory Services Division is continuing to research replacing the Kjeldhal apparatus within the agronomy work unit with newer technology. They have reduced the number of burner racks by 50% and have reduced the amount of mercury hazardous waste proportionately. The agronomy work unit has also discontinued the use of carbon disulfide to process samples for sulfur and is currently sending them to the University of Minnesota Soils Testing Laboratory to be tested using ICP methodology. With this cooperative effort we hope to be able to aquifer ICP technology of our own. Within the Microbiology work unit alternatives for

selenite cystine, when used creates selenium a known heavy metal hazardous waste stream, are being researched. Within the last three years the total dollars spent on hazardous waste removal has decreased from $20,000.00 to $8,000.00 per year. The Agriculture Marketing and Development Division's biological control program has been doing research on elimination of certain types of insect pests and noxious weeds using various types of insects that are natural predators to these pests. Attached is a brief description of these research studies. (Appendix A)

Metropolitan Council -- Wastewater Services -- MCES operates its own analytical laboratory. Pollution prevention progress has resulted from the incorporation of microanalytical techniques, automation, solid phase extraction, and supercritical fluid extraction (SFE). For example, by utilizing the unique properties of carbon dioxide (CO_2) in its supercritical state, relatively large volumes of solvents are no longer necessary for sample extraction or clean up of concentrated extract. Furthermore, there is no longer a need to evaporate solvents in laboratory hoods. Some methods requiring up to 1,000 milliliters of solvent can now be performed with one milliliter. One problem in the past has been in obtaining the approval of these new techniques from regulatory agencies for use as standard analytical methods. Approval is close for residual solids, pesticides, and polychlorinated biphenyls (PCBs).

Department of Public Service -- The Weights and Measures Division receives petroleum samples from various companies for testing. The waste remaining after testing is either returned to the petroleum company for further refining or added to the Division vehicle tanks.

Bemidji State University -- BSU has conducted the following pollution prevention activities in its laboratories:
Ongoing Activities: Using microscale techniques in chemistry laboratories.
Economic Benefits: Reduced hazardous waste costs. Reduced chemical costs.
Economic Costs: Equipment costs are somewhat higher for microscale experiments as compared to macroscale experiments. **Environmental Benefits:** Reduces volume of waste generated as compared to macroscale techniques. **Environment Costs:** Unknown but expected to be minimal.

University of Minnesota -- The University of Minnesota includes pollution prevention as part of the chemical waste management training for all laboratory workers. The training manual provides suggestions, information resources and reporting documents.

HVAC, Indoor Air Quality

Department of Administration -- Building Construction specifies and administers proper flame spread materials for interior finishes to reduce or eliminate the spread of fire and toxic fumes.

- Building Codes and Standards continues to administer and enforce indoor air quality standards of the Minnesota state mechanical code in state-owned facilities, public schools, hospitals, nursing homes, supervised living facilities, correctional facilities, and prefabricated construction.
- Building Codes and Standards enforces flame-spread rating for materials on interior finishes.
- Plant Management replaced vacuum cleaners with higher filtration units for improved indoor air quality.

Metropolitan Council -- Transit Operations -- Transit has been working in this area since 1991, at that time the first study on air handling systems was completed for the Ruter Garage. That study focused on the new standards required by the MPCA and what changes would have to be made to meet these standards. Based on the study, a complete new system was installed in 1995 to allow the garage to operate within the required standards. Additional studies have been completed or are in the process for the Snelling Garage, in 1995, and at the South and Heywood Garages, in 1997.

Department of Public Service -- See Education, Communications & Training

Metropolitan State University -- The effects of indoor air quality on building occupants continue to be an important issue to management, staff, and employees of Metro State University. We recognize that the essential key personnel to successfully implement, carry out and manage the IAQ issues of our university are our safety, maintenance, and plant management staff, who have all been appraised of state and local guidelines, and received

copies of such. Some of the steps we have taken within are:

- Janitorial staff are now using only vacuums with HEPA filtering capabilities.
- All carpet specified for our campus has zero emissions for Styrene and 4-PC, and passes the Carpet and Rug Institutes Indoor Air Quality emission guidelines.
- Carpet adhesives specified must contain no Trichloroethane, is solvent free, and must have low or no VOC's.
- Paint specifications are written as water based paint, non-VOC containing.
- Areas suspected of being damp are continually monitored for fungal & mold growth, (especially those known to contain sheetrock/gypsym materials).

Metro State has also created a partnership with our contractors, vendors, construction group & architect to insure that we incorporate waste and pollution measures in all our facility projects. Examples are:

- Particleboard containing formaldehyde (except for naturally occurring trace amounts) were not allowed in our construction project.
- Low-VOC or Non-VOC paints were used throughout the project.
- The specified carpet has zero emissions for Styrene and 4-PC, in addition to passing the Carpet and Rug Institutes Indoor Air Quality emission guidelines. Carpet seaming cement and adhesive were solvent free and low-VOC (No Trichloroethane).
- All existing ductwork was replaced. Interior duct insulation was not allowed. Interior insulation at main air handling units and VAV boxes was encapsulated with mylar and/or perforated metal.
- Material Safety Data Sheets were submitted for most finish materials for the Owners records.
- CO2 sensors monitor the air quality through the buildings return air system.

Metropolitan State University would like to recognize the special efforts put forth by our architects, (Bentz, Thompson, Reitow), construction company (Jorgenson Construction) and the employees of Metropolitan State University, in keeping with the pollution prevention efforts.

University of Minnesota -- The University has specified products and procedures that will minimize the effect of off-gassing of irritating agents from new products in the office environment. This should result in a reduction in IAQ complaints and improved worker health.

Materials Exchange

Department of Administration -- Travel Management's material exchange is done through Surplus Property when property has some useful life remaining.

Office of Environmental Assistance -- In 1993, the OEA formed the Minnesota Materials Exchange Alliance, a group composed of counties and agencies interested in maximizing materials exchange opportunities. The mission of the Alliance is to develop an effective materials exchange infrastructure in Minnesota and to foster coordination and greater utilization of the state's potential for reuse.

From January 1, 1997, to the present over 1 million pounds (500 tons) of materials have been exchanged in Minnesota. There have been 278 successful exchanges with an overall statewide success rate of 32%. Collectively, Minnesota materials exchange saved businesses over $560,000. The Alliance has three major components, the coordinating agency, the lead program, and the local programs. The OEA assumes the role of the coordinator, MnTAP is the lead program, and five local programs have been established in regions throughout the state.

Coordinating Agency (OEA):

- Coordinates the participation of alliance members throughout the state.
- Develops consensus among programs on long term vision.
- Develops generic promotional materials for adaptation by local programs.
- Serves as the national contact.
- Funds the lead program activities at MnTAP.

Technical Coordinator (MnTAP):

- Maintains local program for the seven county metro area.
- Serves as key resource and referral source for technical assistance.

- Provides a listing service for businesses located in regions of the state that do not have a materials exchange program.
- Publishes and distributes a statewide consolidated listings catalog two times a year. In fiscal year 97 the number of copies printed was cut in half, and in early fiscal year 98 the catalog will be available electronically, in order to reduce the need for printed copies.
- Maintains database and establishes listings protocols.

Local Programs:
- Provide assistance to businesses locally.
- Seek listings from businesses and industry.
- Channel listings to the statewide catalog.
- Actively match materials listed.
- Document materials placed (successful exchanges).

Materials Exchange Programs in Minnesota - contact numbers
- Metro Area eXchange (MAX)
  (612) 627-4646 or toll free (800) 247-0015
- Northeast Minnesota Materials Exchange
  (218) 722-3336 ext. 440
- Olmsted County Materials Exchange
  (507) 285-8231
- Southeast Minnesota Recyclers Exchange (SEMREX)
  (507) 457-6464
- Southwest Minnesota Materials Exchange
  (507) 372-8227
- Minnesota Technical Assistance Program (MnTAP)
  (612) 627-4646 or toll free (800) 247-0015

Metropolitan Council -- Wastewater Services -- MCES has utilized materials exchanges for surplus goods that otherwise would have been handled as hazardous waste. Exchanges have been made with the University of Minnesota, though the Minnesota Materials Exchange Alliance, and directly with industrial users.

Military Affairs -- Materials not being used by a unit due to mission change or other reasons are being exchanged with units that have a need for the materials. This eliminates the potential for shelf life expiration and the need to order materials that are available through other units.

University of Minnesota -- The University Department of Environmental Health and Safety operates a chemical redistribution program which finds users for unwanted but usable chemicals within the University community. The program distributes approximately 1000 kg of chemicals per year that would otherwise be disposed of as hazardous waste.

Office Supplies

Department of Administration -- Risk Management continues to request soy-based ink for printing orders. Risk Management recycles printer and typewriter toner cartridges. InterTechnologies Group refills small spray bottles with glass/desk cleaner from gallon containers to avoid aerosol can use. InterTechnologies Group uses recycled laser printer cartridges.

Office of Environmental Assistance -- All printer toner cartridges are returned for remanufacturing, and xerox copier dry ink and toner cartridges are returned to Xerox for recharging. Recycled paper is used exclusively in the office, whenever it is available. Letterhead and envelopes contain 100 percent post-consumer recycled paper content. The OEA continues to use water-based correction fluid instead of solvent-based fluid. OEA computers are cleaned with pressurized carbon dioxide instead of chlorofluorocarbons. OEA audio, video, and digital tapes are reused, as well as computer discs. For all internal meetings, staff specifies and purchases lunches and break food

and beverages from vendors who offer low- or no-waste packaging and reusable dishware. This reduces waste and supply costs. We employ washable linens in our kitchen and in restrooms.

Metropolitan Airports Commission -- Products used are from recycled items when ever possible. Recycling office supplies reduces waste to landfills, which in turn reduces the potential to contaminate groundwater.

Metropolitan Council -- Wastewater Services -- Office supplies, particularly paper goods, are frequently purchased with recycled and post-consumer recycled content. Recycled laser toner cartridges are obtained through Matrix Laser.

Metropolitan Mosquito Control District -- The District specifies paper with a minimum 15% post consumer fiber content for printers and copy machines when ordering from vendors. Reconditioned, re-inked laser printer cartridges are purchased and used when ever possible. Used laser print cartridges are collected and returned to office supply vendors for reconditioning.

Bemidji State University -- BSU's pollution prevention programs with respect to office supplies are as follows:
Ongoing Activities: Using paper with at least 10% post consumer fiber content.
FY 1997 Activities: Environmental audits have been completed on campus and some preliminary implementation is underway in three areas, including paper use on campus. Specific recommendations for paper use reduction policies and procedures have been forwarded to the University's Administration for review and implementation.
Future Activities: Our goal is to reduce paper use by 20% over the next two years by implementing several measures. First and foremost is to increase the amount of double-sided copying done at the university. We plan to achieve this by a combination of financial incentives (lower price for a double-sided printing compared to printing on separate sheets), educating faculty and staff on how to do double-sided copying and the benefits of double-sided copying, and specification changes on copy machines (ability to do automatic double-sided copying and to automatically tally single and double-sided copying). A second way of reducing paper use is to change the way communication occurs on campus. Instead of making announcements by individual mass mailings, we have proposed increased use of the faculty-staff listserve, bulletin board strips placed near mailboxes, use of the campus TV station for posting announcements, and having a single, weekly sheet for upcoming events. We are proposing policies with a target of increasing the recycling of office paper by 50%. We propose three methods for achieving this goal: 1) Education of faculty, staff, and students on the importance of recycling. 2) Making it more convenient to recycle. 3) Improving the procedures for the collection of recycled materials.
Economic Benefits: It is estimated that paper use costs the University about $25,000 per year. The goal of a 20% reduction would reduce those costs by $5000. Reduced paper use and increased paper recycling will reduce our solid waste disposal costs. A decrease of at least $50,000/yr, as compared to 1996 expenses, is anticipated.
Economic Costs: Personnel, equipment, and educational expenses are expected to be approximately $30,000/yr for recycling and solid waste management.
Environmental Benefits: Reduced waste generation and demand on energy and other resources needed to produce virgin material. **Environment Costs:** Energy and other resources will be consumed during the production and use of the equipment and supplies used to manage the recycling and solid waste activities.

University of Minnesota -- The University of Minnesota collects its used oil and oil filters for energy recovery and materials reclamation.

Oil, Oil Filters

Department of Administration -- Materials Management established a contract for re-refined motor oil. Travel Management oil filters are drained for 24 hours so as to qualify for special hazardous as opposed to hazardous waste. Re-refined oil is also used for oil-changes.

Department of Human Services -- Waste oil is mixed with fuel for energy recovery at several of the Regional Treatment Centers. Oil filters are drained and picked up for disposal by a contract vendor.

Metropolitan Airports Commission -- Used oil is collected not only at MAC specific sites but also from Reliever non-business tenants. This reduces the chances of possible ground water and soil contamination from the oil being "dumped out back" or thrown into the dumpster.

Metropolitan Council Transit Operations -- All used oil and oil filters are recycled. Used oil has been sold as a fuel since 1985. Used oil filters have been recycled since 1993 when they were eliminated from the waste stream.

Metropolitan Council -- Wastewater Services -- Used oil and used oil filters are handled as special hazardous wastes. The used oil is collected and stored at MCES facilities and is transported by licensed haulers for burning as fuel. Used oil filters are drained and at the larger facilities crushed. The residual oil is collected and the crushed metal filters are recycled with scrap iron and steel. Where the oil filters are not crushed, they are transported for processing by a licensed hauler such as OSI Environmental, Inc. In 1996' over 8,000 gallons of used oil were transported and approximately five 55-gallon drums of used oil filters were recycled.

Metropolitan Mosquito Control District -- Used oil and used oil filters are recovered and recycled through a recovery vendor. Re-refined oil is being used in the District's light duty vehicles to help create a market for re-refined products. The District continues to follow a fleet maintenance procedure of extending the mileage between oil changes for District owned vehicles. Currently oil changes are every 5,000 miles for most of the fleet, 3,000 miles for heavy use vehicles. This fleet maintenance procedure has been in effect for almost two years. During this time the District has not experienced any fleet problems related to the extended mileage program. The District will continue to monitor the condition and performance of the fleet for any negative impacts due to the extended mileage.

Military Affairs -- The DMA has continued to administer its Oil Analysis Program (OAP). This is a statewide effort to detect impending equipment component failures and determine lubricant conditions through periodic analytical evaluation of oil samples. It has become a mandatory maintenance tool for all DMA vehicles. The Oil Analysis Program evaluates the residue suspended in the oil system. This residue indicates the parts that are wearing out and the degree of wear. A sample can provide the maintenance community with information about the condition of the equipment and the quality of its maintenance. The federal equipment reliability has improved through OAP, as well as increased safety factors. By detecting the signs of impending failure at an early stage, maintenance can be performed at a lower level. This has decreased maintenance support costs and also improved readiness by reducing the number of items not operationally ready due to maintenance. There has also been a reduction in the amount of oil being used. Oil filter presses remove the majority of the free liquid held in the filter. TCLP tests performed on crushed filters allow the waste stream to be managed as a recyclable metal. There are two direct benefits from this technology. First, the DMA will see a cost savings in the amount of hazardous waste it disposes. Second, there is a decrease in the amount of storage area required. DMA is now utilizing 14 oil filter presses. These units have reduced the waste stream from 5,000 pounds yearly to a recyclable metal.

Department of Public Service -- See batteries.

Bemidji State University -- BSU's pollution prevention activities with respect to oil and oil filters are as follows:
Ongoing Activities: University vehicles are maintained through a contract with a local service station. Waste oil is blended with other fuel and burned in the contractors heating equipment. Oil filters are drained and recycled. Waste oil from other campus sources is recycled through the Beltrami County Solid Waste Services.
Economic Benefits: Reduces contractors heating fuel costs.
Environmental Benefits: Reduces potential for oil and toxic metal pollution. Reduces negative environmental impacts associated with producing fuel that would otherwise be used to heat the contractors premises.
Environment Costs: Energy and other resources will be consumed during the production and use of the equipment and supplies used to manage the oil recycling activities.

Paints, Coatings, Stripping

Department of Administration — Administration performs the following pollution prevention activities associated with paints, coatings, and stripping:

- Plant Management uses waterborne contact cements in maintenance activities.
- Plant Management uses latex paints almost exclusively and conducts tests with low emissivity paints.
- Plant Management tests the use of latex-based duct sealant compounds.
- Plant Management uses nut chips with shot peening equipment to remove paint and gasket materials.
- Materials Management makes solvent-free paint available to state agencies and political subdivisions through a state contract.
- Materials Management specifies no-lead paint for traffic marking and equipment paint.

Metropolitan Airports Commission — The MAC Paint Department retrofitted its paint application vehicles to allow for latex, water-based paints to be used when striping runways and taxiways. This minimizes the use of solvents that were in the non-latex paints and has resulted in a decrease in the amount of solvents released to the environment and reduces the amount of paint by-product that requires disposal.

Metropolitan Council – Wastewater Services — The Paint Shop at the Metro WWTP continues in its relevant on-going pollution prevention activities such as direct-to-metal, water-based pints and epoxies which eliminate the use of approximately 1,000 gallons of solvent-based primer and 100 gallons of paint thinner each year. Used polystyrene paint arrestors are dissolved in waste thinner, thereby eliminating one hazardous waste stream. Cleaning and paint removal alternatives have eliminated the generation of almost 4,000 pounds per year of sand blast media as hazardous waste. Black Diamond media used in combination with the proprietary Blast-Ox compound does not exceed hazardous waste levels when analyzed for TCLP. Blast-Ox is dusty, however, and is not suitable for use in confined spaces. In one instance where this additive was not used, the waste blast media exceeded TCLP thresholds for lead. Arrangements were made to deliver the media to Gopher Resource Corporation in Eagan to use as feedstock material for lead smelting. This alternative was better than having to handle the media as hazardous waste and to ship it out of state at four times the cost of the feedstock option. A baking soda base blast media, Armex, is used to strip coatings and clean machinery such as motors and pumps. The Paint Shop received a special recognition award form the MnGREAT! program in 1995 for these activities and savings estimated at $26,000 annually.

Military Services — A pilot project was performed by the DMA comparing its existing paint removal operation, silica sand blasting vs. sodium bicarbonate. The pilot project found that silica sand blasting used eight 25 pound bags/hour compared with sodium bicarbonate which used four 25 pound bags/hour. Since the pilot project was completed, sodium bicarbonate technology has replaced silica sand blasting as the method for stripping products prior to painting. With this change, the DMA has eliminated the need to dispose of large quantities of spent silica sand contaminated with lead paint chips.

Sodium bicarbonate technology allows for complete solubilization of the normal blast media with the addition of water. The undissolved material which typically represents 13 percent of the total process effluent, includes only paint chips, aluminum oxide, grease and oil, and is disposed of as hazardous waste. This material is proposed to be removed from the effluent using a filtration system. The first filter removes the heavies and the second filter removes the soluble metals. The remainder of the effluent is sewered. This should reduce the waste stream from four tons per year to 400 pounds per year. A soda blasting treatment unit is scheduled to be installed at the CSMS in Camp Ripley in 1998.

The DMA is also purchasing paints in smaller quantities so they are used before their shelf life expiration date. This avoids the necessity of disposing of paints as hazardous waste. Eventually a pharmacy concept will be developed to track the purchase and use of paints and other hazardous materials.

Parts Cleaning

Department of Administration -- Plant Management shares used cleaning solvent with Travel Management to be reconditioned for future use.

Department of Human Services -- A contract vendor manages the parts cleaning solutions.

Military Affairs -- The DMA continues the use of a toll service company on a limited basis to provide a solvent recycling service that provides one type of non-halogenated solvent that meets the specifications of the process operators. The organization continues to reduce the volume of solvent used by eliminating the unlimited combinations of solvents for disposal. Maintenance facility chiefs and TACC commanders were required to justify the use of this solvent equipment. In reviewing their need prior to adding their shop to the contract, an additional forty-percent reduction in use was achieved. Programs have also been established to require users of the solvent service to pay for the service (cost of doing business). This attributed to an additional twenty-percent reduction. DMA maintenance facilities have replaced many of their solvent systems with systems that use hot water and biodegradable detergent. They have installed twenty-two aqueous parts washers in various maintenance shops. This operation has produced less hazardous waste. (About 30 pounds per year for aqueous parts washers (sludge) compared to 800 pounds per year for solvent.) The DMA continues to purchase aqueous parts washers and make technological changes to make older parts washers more efficient through filtration. The DMA currently operates 22 small bore weapons cleaners. With this technology, weapons can now be cleaned with high pressure steam instead of solvents. Steam, the combination of moisture, heat and pressure provides the means for immediate removal of contaminants from a given surface, cleaning it thoroughly, coupled with immediate spotless drying. There are no hazardous wastes associated with this cleaning process. This technology has also been utilized by various other maintenance activities to replace solvents they were using.

University of Minnesota -- The University's efforts with regard to parts cleaning are as follow:
Ongoing activities: The University of Minnesota has an ongoing program of using parts cleaning services, such as Safety Kleen, which recycle the dirty solvent. Evaluation of more environmentally friendly parts cleaning products is ongoing in individual shops.
FY 1997 activities: U of MN - Duluth Facilities Management switched from a solvent recycling service to a product that is non-flammable and is perpetually cleaned by a recirculating filter system. Filters periodically need to be disposed of but the solvent does not need to be shipped off site for recycling/disposal.

Metropolitan Airports Commission -- MAC Maintenance (mechanical) is continuing to use more environmentally friendly solvents and have plans in the future to incorporate more solvent free parts washers into the system. The hope is to eventually eliminate solvent parts washers from the maintenance shop.

Metropolitan Council -- Wastewater Services -- There are over two dozen parts washers at MCES facilities. The solvent is petroleum based and is serviced by Safety-Kleen as a hazardous waste largely due to its low flash point. To date, various experiments with alternative, non-hazardous solvents, have not met with wide-spread user and regulatory acceptance. One facility, after review of its operational needs, discontinued use of the parts washer altogether. Trials with other parts cleaning options will continue. Carburetor cleaner is no longer in wide-spread use due to the increase in vehicles that are now fuel injected.

Bemidji State University -- A water based parts cleaning solvent with a 0% volatile component is being tried on a trial basis in our maintenance area. The costs are $200 per 15 pounds of solid concentrate. The environmental Benefits are reduced air pollution.

Personal Care

Department of Human Services -- The St. Peter Regional Treatment Center's Diaper Project, a program of using washable under pads/diapers instead of disposables, continues to resulted in a ripple effect which reduces the need for bed linen services, reduces the solid waste sent to the landfill, and provides a cost savings per unit used. The program has expanded to include nearly all of the care units where disposable diapers had been previously

used. This program has generated much interest in other state agencies. As a result, St. Peter Regional Treatment Center has presented its program to other groups for application in their facilities.

Pesticides, Fertilizers

Department of Administration -- Plant Management follows pollution prevention practices during the planting and care of landscaping by Grounds Services. Plant Management has a representative participate on a Public Land Task Force addressing integrated pest management practices.

Department of Human Services -- The St. Peter Regional Treatment Center's grounds crew continues to use adjusted application ratios for herbicides, pesticides, and insecticides. It has been found that the effective rates of application can be much less than the manufacturer's recommended ratios. In some cases, the manufacture recommended application is as much as two times the effective application. Herbicide is applied during optimal weather and moisture conditions and unsightly weeds, such as dandelions, are targeted for control, eliminating broadcast applications.

Metropolitan Mosquito Control District -- The District is committed to control materials that have low environmental impact and selectivity for target species. Control materials evaluations have shown that the pesticides selected by the District for use in controlling pest insects do not display any hazardous characteristics. By selecting control materials that rate high in environmental compatibility, the District has reduced the risk of environmental pollution and has eliminated significant costs associated with storing, transporting and disposing of hazardous wastes. The District is currently testing laginex, a promising new biological mosquito control product based upon the fungal mosquito parasite Lagenidium. Initial test results are very promising. Large scale tests will begin in late August 1997. Laginex is totally specific to mosquitoes meaning that it will not harm anything else in the environment. Laginex contains no toxic chemicals, preservatives or inert ingredients.

University of Minnesota -- The University of Minnesota is a world leader in agriculture research and education which includes extensive efforts in the development and environment-friendly use of pesticides and fertilizers.

Policy Statement

Department of Administration -- The Department of Administration specifically addresses pollution prevention as a top priority of the *Department of Administration Policy on Environmental Materials Management* (Exhibit 1) and the *Minnesota Department of Administration Priorities for Environmental Materials Management* (Exhibit 2). (See Appendix B)

- The Resource Recovery Office in Plant Management encourages pollution prevention and promotes the preferred waste management practices listed in Minnesota Statutes, Section 155A. 02 during the acquisition, use, maintenance, and discard of materials.
- Plant Management's Mission Statement encompasses pollution prevention and other environmental concepts (see Exhibit 3 in Appendix B).
- Plant Management revises and updates employee position descriptions as a continuous process requiring each employee to be individually accountable for achieving environmental stewardship as a function of their job responsibilities. Employees are to follow state and federal requirements and shall identify opportunities to implement the following values:
    - Conservation of energy and environmental resources
    - Prevention of pollution
    - Promotion and education
    - Integration of environmental stewardship into all workplaces and services

Department of Agriculture -- In compliance with Executive Order 91-7, 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 it's source and to reduce waste and emissions, that can have an adverse impact on the environment.

Office of Environmental Assistance — Pollution prevention means eliminating or reducing pollution at its source. This includes utilizing raw materials and other resources more efficiently, substituting benign substances for hazardous ones, and producing products without toxic constituents. Pollution prevention helps to protect human health, strengthen our economy, and preserve our environment.

The Minnesota Office of Environmental Assistance (OEA) gives priority consideration to pollution prevention in its programs and activities as required by Governor's Executive Order 91-17. The OEA is committed to excellence and leadership in preventing waste and pollution and strives to be a model for other agencies and organizations. We believe that pollution prevention in our workplace will lead to healthier and more efficient employees, saving of public funds, and less waste introduced into the environment.

The OEA stresses the preventive approach as the preferred approach for environmental protection in its policy-making activities. In reports, testimony, and strategic planning, the OEA staff will promote pollution prevention as the top of the environmental protection hierarchy. Each member of the OEA staff is responsible for preventing pollution by reducing their own waste generation at work. Specifically, staff are directed to give consideration and preference to pollution prevention options when purchasing supplies and equipment, traveling to meetings, using equipment in the office, photocopying documents, and in ordering office furniture. The OEA will demonstrate cost-effective alternatives that reduce all environmental impacts in its office and lease agreements. It will also work cooperatively with other tenants to promote the prevention approach building-wide. The OEA will also build partnerships with all stakeholders to promote the preventive approach to environmental protection. These stakeholders include other state agencies, local governments, businesses and business groups, schools and higher educational institutions, financial and economic development institutions, non-profit organizations and citizens.

In order to pursue and monitor this pollution prevention policy and as part of the OEA's participation in Minnesota Waste Wise, a coordinating team with representatives from each unit is established that will meet regularly to discuss and stimulate the increased implementation of pollution prevention activities at the OEA. This team will measure the effectiveness of its efforts and will meet with the OEA director at least quarterly for updates about the OEA's progress.

Metropolitan Airports Commission — The Metropolitan Airports Commission (MAC) recognizes pollution prevention as an integral part of its services. The MAC's strategic plan reflects its commitment to environmental protection. The MAC is committed to providing excellence and leadership in protection of the environment. In keeping with this position, our objective is to reduce waste and emissions. The MAC strives to establish sound environmental strategies that lessen adverse environmental impacts on the natural environment and the surrounding communities. We encourage our tenants to do the same. The MAC promotes taking a proactive approach to environmental protection and supports cooperation with other regulatory agencies. The MAC is aware that meeting this commitment will require the cooperative efforts of its entire staff and tenants.

Metropolitan Council -- Wastewater Services — Section 2.11.1 of the Metropolitan Council's Administrative Procedures Manual describes the organization's policy for pollution prevention pursuant to the Governor's Executive Order 91-17. Please refer to Attachment 1. (Appendix C)

Metropolitan Mosquito Control District — 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. By successfully preventing pollution at its source, we can improve the quality of the environment we live in and maintain a safe healthy work place for our employees. Environmental protection is everyone's responsibility. The District 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 the District employees. Technologies and methods that substitute nonhazardous materials and utilize other source reduction approaches will be given top priority for integration into the District operations.

Department of Public Service — The Department of Public Service considers protection of the environment to be a high priority. We provide leadership in developing, advocating and implementing equitable, cost-effective policies regarding energy, telecommunications and standards for weights and measures. In the area of energy policy,

protection of the environment through reduction of pollution associated with traditional energy sources is a major goal of the Department. We are committed to lead, by example, through the reduction of energy use, the use of toxic pollutants, and the generation of hazardous waste in our own department.

Bemidji State University -- The University adopted the following policy statement in 1991: Bemidji State University is committed to excellence and leadership in protecting the environment. The University is striving to identify and implement pollution prevention opportunities through encouragement and involvement of its students and staff. We believe that environmental protection is a top priority and should be everyone's responsibility. We are encouraging pollution prevention and waste abatement through the establishment of an Environmental Task Force. This task force, comprised of students and staff, is committed to pursuing waste abatement programs such as recycling, reuse, and purchase of recycled materials to reduce the need for disposal of waste. Bemidji State University seeks to demonstrate its leadership role by adhering to all environmental regulations. We promote cooperation and coordination among higher education and the government toward the shared goals of preventing pollution and abating waste.

FY 1997 Activities: The Environmental Task Force proposed that the policy statement be changed to the following: Bemidji State University enjoys a high quality natural setting in the northern lakes region of Minnesota. Bemidji State University is committed to excellence and leadership in protecting the natural environment. The University community affirms the belief that faculty, staff and students are responsible to provide this leadership in environmental stewardship and in promoting environmental awareness, local action, and global thinking. Bemidji State University will endeavor, as far as resources will allow, to improve our stewardship roles in the areas of: education (including the infusion of environmental content into appropriate curriculum), operations (including day-to-day use of resources associated with the functioning of the University), and communication (including raising environmental awareness, especially through example and modeling good stewardship practices in partnership with the broader community.) In our general operations, Bemidji State University will strive, wherever possible, to:

- Conserve natural resources and support sustainable practices,
- Conduct affairs in ways which safeguard the environmental health and safety of students, faculty, staff, and members of the broader community.
- Reduce the generation of wastes and the use of toxic substances and promote strategies to reuse and recycle those wastes which cannot be avoided, and purchase renewable, reusable, recyclable and recycled materials.

In pursuing our educational and research missions, Bemidji State University will strive, wherever possible, to:

- foster an understanding of and responsibility for the natural environment,
- convey knowledge regarding environmental and health issues relevant to various academic disciplines,
- encourage environmental research,
- conduct teaching and research in an environmentally responsible way,
- provide a forum for the open flow of information within the University community and the community at large regarding environmental issues and their relationships to other social issues.

The proposed policy statement will be forwarded to the University's administration for review and action.

Future Activities: Policy provisions will be implemented if approved by the administration. If adopted and successfully implemented, the provisions of the policy should initiate a broad range of environmental benefits.

University of Minnesota -- (See also Appendix D) 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 programs and to develop policies, plans and resources to achieve that goal.

Printing

Department of Administration — Communications.Media offers customers *Launch!* software that allows them to send electronic files, a 1997 MN Great! award-winning project.

- Communications.Media continues to use equipment to reduce waste including a water flow meter to reduce water use at PrintComm and silver waste recovery equipment in processing areas at both PrintComm and DocuComm.
- Communications.Media participates in the Great Printers Project and has a goal to complete experimentation of Ano VOC@ replacements for litho wash and deglazer.
- The Minnesota Office of Citizenship and Volunteer Services continues to use soy-based inks for all its stationery, brochures, and other publications.

Office of Environmental Assistance — As part of its internal practices, the OEA communications team used kenaf paper for printing a conference brochure once during fiscal year 97. Otherwise, the OEA uses recycled uncoated paper containing at least 20 percent and usually 100 percent post-consumer fiber. Whenever possible, the OEA chooses paper stock manufactured using no chlorine or chlorine derivatives and specifies soy-based ink for all printing jobs.

Metropolitan Airports Commission — The MAC contracts with companies that use soy-based inks and environmentally friendly products.

Metropolitan Council -- Wastewater Services — MCES staff has attended a workshop sponsored by the Minnesota Environmental Initiative on the "Great Printers Project". A "Great Printer" makes a voluntary commitment to comply with environmental regulations and to practice pollution prevention. Interest will turn into participation by MCES if the state printing office and other state contract vendors join the program.

Metropolitan Mosquito Control District — The District requires printing vendors to use high post consumer content paper and soy-inks for District brochures, informational pamphlets, fact sheets and yearly reports.

Procurement

Department of Administration — Materials Management and Resource Recovery Office assist agencies in the purchase of environmentally appropriate products and services.

Department of Agriculture — The Laboratory Services Division has replaced 4 liter glass containers of methylene chloride with the 20 liter nowpack container system. This has helped in reducing the amount of glass that needed to be disposed of has created a vehicle where by the manufacturer of the chemical retains ownership of the metal 20 liter container, when emptied they are returned to be refilled, and has an added safety benefit because there is less exposure of the chemical and less possibility for container breakage. Laboratory purchasing personnel are currently working with senior staff to find other alternatives than glass containers for chemicals that are purchased in large quantities.

Office of Environmental Assistance — During fiscal year 97 the OEA continued its ongoing Buy-Recycled promotion and began to include building materials in its list of recycled materials to procure. As an

internal action, the OEA purchased modular furniture in fiscal year 97 which had been refinished/refurbished, saving $24,000.

Metropolitan Airports Commission -- Whenever possible the MAC Purchasing Department incorporates requirements for the use of environmentally sound products when procuring goods and materials for the airports. In addition, MSDSs are reviewed to reduce the amounts of environmentally detrimental product usage. Preventing pollution by reducing and eliminating the generation of waste and emissions at the source is a prime consideration.

Metropolitan Mosquito Control District -- The District is committed to "Zero Generation" of hazardous waste or toxic chemicals targeted for reduction in the Minnesota-50 Project. The District's intent is not to purchase any material which contains any of the ingredients listed by the United States Environmental Protection Agency (EPA) as "Inerts of Toxicological Concern" (List 1), or "Potentially Toxic Inerts/ High Priority for Testing" (List 2). The Hazardous Materials Team reviews products used by The District for user/environmental friendliness. The team locates and purchases user/environmentally friendly replacement products for products determined to be unsuitable for use by the District staff. The District is negotiating with primary vendors who supply the District with BTI, the dry granule control material used to control mosquito larvae, for material packaging that is recyclable or returnable. In an average year the District will dispose of 20,000 paper BTI bags (15,000 pounds) which have a plastic or metallic paper lining. This lining makes it impossible to recycle the bags with a recycler so the bags are burned or landfilled. Two options are being considered. The first is converting to bulk bags of 1,000 pounds or greater capacity which could also be returned to the vendor for re-use. This option is considered to be the best alternative but it does present some special material handling problems which need to be studied. The other option is to package the BTI granules in plastic poly bags which would be recyclable with local recyclers who were located with the help of MN Technical Assistance Program and the MN Office of Environmental Assistance.

Military Affairs -- In an effort to further reduce the amount of potential hazardous waste the DMA has adopted the concept of material substitution. This program works by purchasing materials that will accomplish the same desired effect but not have the hazardous waste streams associated with them. This program has helped reduce the cost of hazardous waste disposal.

Bemidji State University -- Environmental audits have been completed in nine areas on campus and implementation is underway in three areas, including purchasing. Recommendations for purchasing policies that include environmental considerations have been forwarded to the University's administration for review and action. Plans for specific activities will be developed based on the University Administration's response to the purchasing policy recommendations they are reviewing.

Metropolitan State University -- Metro State has incorporated waste and pollution prevention measures in all its facility projects. Some of these are described under HVAC/Indoor Air Quality. In addition, the following measures were taken:

- The contractor was required to recycle construction waste throughout demolition and construction. Records are being kept by the contractor and will be submitted for review and the owners records.
- Recycling stations are provided at each floor.
- Efforts were made to select materials of standard dimensions and use those dimensions to establish installation details. This was not very successful, however, as the contractor believed it was not "time efficient" with regards to installation.
- Vinyl wall fabric was not allowed.
- Linoleum was used in lieu of vinyl tile.

Remanufactured Parts

Department of Administration -- Materials Management Division specifies remanufactured automotive products.

Office of Environmental Assistance -- The OEA uses remanufactured printer cartridges and xerox copier dry ink and toner cartridges.

Department of Human Services — Copier toner cartridges are being returned to the vendor for reuse. Over 100 cartridges were returned by the Central Office alone.

Bemidji State University — Remanufactured computer printer cartridges and toner cartridges for Xerox copy machines were added to our Central Stores office supplies inventory. University personnel were given the option to order the remanufactured or new printer cartridges. Remanufactured printer cartridges will be used to fill all orders, unless new cartridges are specifically requested. Remanufactured printer cartridges are approximately 50% the cost of new cartridges. This activity is expected to reduce costs. Environmental benefits are reduced waste generation and less demand on energy and resources to produce virgin material. This activity is expected to reduce environmental costs.

Tanks

Department of Administration — Plant Management removed all known underground fuel storage tanks. Above-ground storage tanks were installed in all but one location.

Department of Human Services — All the Regional Treatment Centers are upgrading the corrosion resistance of their storage tanks. Storage tanks on all campuses will be in compliance with the Minnesota Pollution Control's 1998 Tank regulations.

Metropolitan Airports Commission — To comply with federal regulations the MAC will be removing, replace or upgrading all MAC owned and operated regulated underground storage tanks. This program will help to eliminate the potential for possible soil contamination. This process is on-going to meet the 1998 deadline and to eliminate tanks, as they become obsolete or redundant. Reliever airports are up to date.

Military Affairs — A program has been underway to meet 1998 storage tank standards. Tanks that are outdated or have switched fuels have been removed. About 50 UST's have been removed during the last several years. Further tank testing is scheduled for the fall of 1997 to identify leaking tanks.

Department of Public Service — The Weights and Measures Division distributes a pamphlet to educate storage tank owners on the proper maintenance of petroleum storage. In the past, approximately 400 tanks a year had to emptied due to contamination. The material was then treated as hazardous waste.

Technical Support

Department of Administration — Resource Recovery Office provides for appropriate technical support to agencies including referrals to MnTAP.

Office of Environmental Assistance — MnTAP helps industrial service and manufacturing businesses prevent pollution and manage waste properly. Rather than focus solely on end-of-pipe treatment or control solutions MnTAP helps Minnesota companies reduce or prevent--at the source--the amount of waste they generate and find alternatives to using hazardous materials. By implementing waste reduction techniques, Minnesota companies can achieve or go beyond compliance with environmental regulations and reduce their disposal and raw material costs. MnTAP not only works with businesses and generators of waste, but also business organizations such as trade associations and chambers of commerce that themselves provide assistance or a service to businesses. MnTAP provides this assistance in a number of ways: telephone assistance, site visits, student interns, materials exchange, educational and informational resources, and seminars and workshops.

During fiscal year 97, MnTAP responded to almost 1,600 calls (50% of these specific to materials exchange) requesting pollution prevention and waste management information, conducted 73 site visits to businesses, and delivered 118 seminars. In addition, MnTAP placed eight interns in companies which resulted in a projected reduction of 684,685 pounds of waste and emissions and 7,751,180 gallons of water with a projected cost savings of over $1 million dollars.

Metropolitan Council -- Wastewater Services -- In its participation with IPPAT, MCES is part of an information network that is very useful in the pollution prevention support offered to public agencies. As a regulatory agency, MCES is active in pollution prevention technical support through the IWS. This section continues to promote pollution prevention to its more than 800 permitted industrial users. During on-site inspections, IWS staff regularly discusses pollution prevention issues and point out process areas where pollution prevention would result in waste reduction.

Although MCES collects fees based on volumes of wastewater through its Service Availability Charge (SAC), wastewater reduction and cost-savings are encouraged for industrial users. In 1992, IWS received one of five nationwide grants for promoting pollution prevention at publicly owned treatment works (POTW's). With matching funds from MCES, a number of programs were created to train public officials and industries, survey system users, initiate on-site technical assistance, and promote interagency coordination in pollution prevention. Twenty-nine permittees volunteered for the Industrial Pollution Prevention Participation Program (I4P) and wrote and implemented model plans for pollution prevention. For more than two years, the Pollution Prevention Advisory Council (PPAC) brought together representatives of industry, communities, and citizen groups on a bimonthly basis to be updated on the grant program and to advise in its direction.

The IWS established a new pollution prevention Team in 1997. The purpose of the team is to "initiate, support, integrate and promote pollution prevention through education, assistance, and partnering". This will result in a reduction of toxics, conventional loadings, and discharge volumes to the collection and treatment system. So far, the pollution prevention Team has designed and purchased a new pollution prevention display, is developing a new educational pollution prevention brochure for households, and has registered as a member in the National Pollution Prevention Roundtable. Goals of the team include establishing staff experts for defined industries and targeting dental and medical clinics for pollution prevention efforts. Two training sessions were conducted in 1997--one for the IWS field crews on pollution prevention and one for the entire IWS staff on ISO 14000.

Pollution Control Agency -- We have a large number of efforts involving technical support. They include:

- Regulatory Integration. PCA staff are involved in integrating pollution prevention principles into as many of the PCA's programs as possible. This includes staff training. Through the staff training we hope to identify pollution prevention opportunities in our daily work. This includes mapping all processes to determine where those opportunities may exist. As of this date, staff have delivered nine training sessions to staff in the Air Quality program, and are currently developing modules for the RCRA program.
- Minnesota Twist Drill. This is an experiment in pollution prevention and regulatory flexibility. The Generator tax and fees for Minnesota Twist Drill increased ten fold unexpectedly from one year to the next. The increase turned out to be caused by faulty reporting by Minnesota Twist Drill. The increase created an undue and unexpected burden on Minnesota Twist Drill. As a result, we agreed that if Minnesota Twist would put the money toward a pollution prevention project to reduce the waste barium, that we would wave a portion of the fee. To date, Minnesota twist has two bids for the project and will be moving ahead with the proposal in the upcoming months.
- Supplemental Environmental Projects (SEPs) These are Projects that companies agree to undertake as part of the settlement of environmental violations. SEPs may include, but are not limited to pollution prevention projects.
- Mercury Reduction Initiative . The mercury reduction initiative is a comprehensive approach to reduce mercury emissions from all sources. We are currently getting input from all potentially interested parties in an effort to develop a reduction system that is fair, effective and economically viable.
- Removing Barriers to pollution prevention. We are planning to review our rules to identify and remove barriers that may prevent or inhibit businesses from implementing pollution prevention.
- Small Business Assistance Loan Program. The loan program makes low interest loans available for small businesses for the purchase for equipment that will reduce or eliminate an existing waste. For more information on the program contact Charlie Kennedy, 612-297-8615.

Tires

Department of Administration -- Materials Management provides state contracts for tire recovery.

Metropolitan Council -- Wastewater Services — When not exchanged directly with a vendor, used vehicle tires are transported to BFI Tire Recyclers of Minnesota, Inc. in Savage, where they are processed into a fuel source. Large tires from the diesel tractors and trailers used in the N-Viro Soil program are retread. This includes up to three times retreaded on sixteen trailers with twelve tires each and three tractors with eight tires each (not counting the two steering axle tires). Presently, new light truck and automobile tires can be purchased through the state contract at price comparable or cheaper than retreads. MCES was unsuccessful in trying to recycle large rubber conveyor belts. Although the material is the same as tires, local recyclers were unwilling to handle the different configuration. One vendor was found who would grind the belts into an asphalt additive, but the distance for transport and cost were too much. The belts were landfilled.

Military Affairs — Tires are recycled through the Defense Reutilization Marketing Office (DRMO) in Duluth, Minnesota.

Bemidji State University — University vehicles are maintained through a contract with a local service station. Used tires are recycled. Recycled tires are ground, powdered, and blended with coal used to fuel an electrical power generating plant. This will result in reduced fuel costs for the power plant. There is no direct cost to the University. The contractor pays $90.00/ton for drop-off at the county's solid waste transfer station. Environmental benefits: include decreased use of landfill space and decreased demand for coal. Energy and other resources will be consumed during the production and use of the equipment and supplies used to recycle the tires.

Water Treatment and Conservation

Department of Administration — Administration has implemented the following measures:

- Plant Management completed the separation of sewer and storm water systems within the Capitol Complex.
- Plant Management rebuilds parking lots and structures to meet water division guidelines.
- Materials Management Division developed a contract for salmon and trout feed that reduces the effluent produced by excess feeding of fish. The water quality downstream from state hatcheries will be improved as a result of this contract.

Department of Human Services -- The AH-GWAH-CHING Center has its own water treatment system. The minerals removed from the water are given to local farmers to be spread on their fields.

Metropolitan Council -- Wastewater Services — The MCES is the division of the Metropolitan Council which treats wastewater. The system collects and treats over 300 million gallons of wastewater per day from over 100 communities and two million people. The MCES operates over 500 miles of interceptor sewers, nine treatment plants, and discharges clean effluent to four area rivers. Pollution prevention affecting the quality of effluent was described in the section on heavy metals. Groundwater conservation was described in the section on groundwater wells. One area that clearly falls under pollution prevention is the beneficial reuse of residual solids from the wastewater treatment process. The on-going ash utilization program incorporates the ash from incinerated biosolids into flowable fill, cement/concrete, structural fill, and asphalt projects. In 1996, a total of 16,148 tons was utilized from the Metro WWTP. An additional 2,606 tons of ash from the Seneca WWTP (Eagan, Dakota County) was used to make NutraLime, a soil amendment for agricultural and horticultural applications. The ash was landfilled prior to the success of the utilization programs.

N-Viro Soil is an on-going program which produces a combination of alkaline admixtures and biosolids, also used for agricultural and horticultural applications. In 1996, 5,316 dry tons of biosolids from the Seneca WWTP were blended with admixtures to produce approximately 36,845 wet tons of N-Viro Soil. Straight biosolids, without any blended components, are typically landspread . A total of 6,485 tons was land applied in 1996, mostly from the smaller regional treatment plants. Two of those plants, Cottage Grove (Cottage Grove, Washington County) and Hastings (Hastings, Dakota County), have installed screenings presses. The presses dewater screenings, the trash and debris that is collected from wastewater in the pretreatment process. The benefits of a screenings press are evident--less water for lower screenings volume which results in lower disposal and hauling costs. In addition, the dewatered screenings contribute less water to landfills, which helps reduce leachate generation. For the Hastings WWTP, it has been calculated that a 65% cost reduction translates into a two-year payback period for the investment in the new equipment.

The Stillwater WWTP (Oak Park Heights, Washington County) uses ultraviolet lamps for effluent disinfection. Normally, chlorine is used for disinfection at treatment plants and sulfur dioxide or sodium bisulfite is used for dechlorination. Although none of these chemicals are detected in plant effluent and therefore are not pollutants, the use of ultraviolet disinfection eliminates the need for hazardous chemicals on-site. The entire MCES, with an emphasis on the work of the IWS, was a recipient of an honorable mention for the 1995 Minnesota Governor's Award for Excellence in Pollution Prevention.

Military Affairs -- The Camp Ripley waste water treatment plant continues to reduce pollution and run more economically. Prior to 1995, a chlorine disinfection system was the technology method employed at the facility to control bacteria. This required approximately 500 pounds of chlorine per year. The residual chlorine resulting from this method of disinfection was treated and discharged to the Mississippi River. To meet MPCA standards for discharge, the facility changed the disinfection system to ultraviolet light (UV). UV eliminates the transportation, storage and handling of dangerous chemicals. UV disinfection adds no chemicals to the wastewater and produces no trihalomethanes. An effluent recycling pump was added to the waste water treatment plant. The addition of the recycling pump allows for the continuous use of waste water, eliminating the need to pump fresh water. The plant will save $1,000 per month on treatment cost. The closed loop wash rack allows complete recycling of wash water used for cleaning. Facilities installing closed loop wash racks will attain zero discharge, and therefore eliminate any possibility for NPDES violations or need for a permit. There also will be a reduction in the amount of fresh water needed to perform this mission. The Minnesota Army National Guard designed and installed a system at the AASF in 1995, and is planning for installation of a system in 1997 at the MATES facility in Camp Ripley.

A draft pollution prevention plan was produced for Camp Ripley by Science Applications International Corporation (SAIC) under contract with the National Guard Bureau. In addition, pollution prevention opportunity assessments were prepared for the Camp Ripley Training Site and the Regional Training Site - Maintenance (RTS-M) facility. These documents provide a generalized format from which more detailed pollution prevention work can be conducted.

The Minnesota Army National Guard has a baler located at its transfer station in Camp Ripley. This piece of equipment is used to prepare materials for recycling and marketing. The benefits of this unit are that the materials have less volume, increased density, and greater cohesion. Shipping costs are decreased due to the increased material density. Products that are baled include cardboard, paper, and plastics. These products are shipped and recycled.

DMA maintenance activities generate 15,000 gallons/year of used oil This waste material is recycled for its BTU content. In 1994 a used oil burner was installed at the Camp Ripley Transfer Station to evaluate the technology. This is used to heat the facility and could establish the placement of this type of heat source in maintenance shops close to the fuel source.

Bemidji State University -- A diversion will be constructed to divert storm water from one of the campus's largest parking lots to a sod covered, recreational field. The project will be conducted in cooperation with the Beltrami County Soil and Water Conservation District. There is no direct cost to the University. The project will be funded by Beltrami County Soil and Water Conservation District. The project will prevent untreated storm water from entering the storm sewer which empties directly into Lake Bemidji. The effects of the storm water discharge on the vegetation and soil are unknown at this time, but are expected to be minimal.

St. Cloud State University -- Water-saving shower heads have been installed in residence hall showers. SCSU residence halls provide housing for nearly 3,000 students so this represents a significant number.

Department of Transportation -- MnDOT's truck station in North Branch has a complete water recycling system in place. All truck wash water as well as snow melt from trucks is captured, run through a small water treatment system and reused as make-up water in the production of salt brine. (See category 18. Ice control, Sanding.)

Part III

Part III contains a matrix showing which agencies provided activity summaries under each categories. Each agency addressing a particular category of pollution prevention activities is marked with an X in the row for that category. The categories addressed by each agency or department can be identified by considering the column for that agency or department. Please see the matrix on the following 4 pages.

Part IV

Part IV contains the signatures of each agency. Each agency's signed copy is on file at the Office of Environmental Assistance. For more information, contact Emily Moore at the OEA at (612) 215-0201 or (800) 657-3843.

Activity Type	Dept of Administration	Dept of Agriculture	Dept of Corrections	Office of Environmental Assist	Dept of Health	Dept of Human Services	Metropolitan Airports Commission	Met Council Transit Operations	Met Council Wastewater Serv	Military Affairs	Metropolitan Mosquito Control	Dept of Natural Resources	Pollution Control Agency	Dept of Public Services	Bemidji State	St Cloud State	Moorhead State	Dept of Transportation	University of Minnesota	Brd of Water & Soil Resources
Absorbents																				
** Ongoing	X						X	X	X		X					X		X	X	
** FY97	X																	X	X	
** Planned	X																		X	
Adhesives																				
** Ongoing	X															X			X	
** FY97	X																			
** Planned	X																			
Air Quality																				
** Ongoing	X					X		X	X	X						X		X	X	
** FY97	X					X		X											X	
** Planned	X							X											X	
Antifreeze																				
** Ongoing	X						X	X	X	X	X				X	X		X	X	
** FY97	X							X		X								X	X	
** Planned	X														X				X	
Audits																				
** Ongoing							X		X	X					X			X	X	
** FY97							X								X					
** Planned							X	X							X					
Auto - Fuels																				
** Ongoing	X									X									X	X
** FY97	X													X				X	X	
** Planned	X						X												X	
Auto - Maintenance																				
** Ongoing	X								X	X								X	X	
** FY97	X																	X		
** Planned	X																			
Batteries																				
** Ongoing	X					X	X	X	X	X	X			X	X	X		X	X	X
** FY97	X													X						
** Planned	X														X					
Cleaning Supplies																				
** Ongoing	X					X				X						X			X	X
** FY97	X			X											X			X		
** Planned	X														X					
Commuting, Transportation																				
** Ongoing	X					X		X								X		X	X	
** FY97	X																			
** Planned	X																			

Activity Type	Dept of Administration	Dept of Agriculture	Dept of Corrections	Office of Environmental Assist	Dept of Health	Dept of Human Services	Metropolitan Airports Commission	Met Council Transit Operations	Met Council Wastewater Serv	Military Affairs	Metropolitan Mosquito Control	Dept of Natural Resources	Pollution Control Agency	Dept of Public Services	Bemidji State	St. Cloud State	Moorhead State	Dept of Transportation	University of Minnesota	Brd of Water & Soil Resources
Ed, Communication & Training																				
** Ongoing	X			X		X	X		X	X			X	X	X	X		X	X	
** FY97	X					X							X	X	X					
** Planned	X							X					X	X	X					
Electronics																				
** Ongoing	X			X		X									X	X		X	X	
** FY97	X														X					
** Planned	X														X					
Energy - Lighting																				
** Ongoing	X								X	X	X				X	X		X	X	
** FY97	X			X											X					
** Planned	X			X				X							X					
Energy - Production																				
** Ongoing	X					X			X					X		X		X		
** FY97	X													X	X					
** Planned	X													X	X					
Groundwater Wells																				
** Ongoing									X							X		X		
** FY97							X													
** Planned																		X		
Heavy Metals																				
** Ongoing									X	X						X		X	X	
** FY97				X							X									
** Planned				X																
HVAC, Indoor Air Quality																				
** Ongoing	X															X				
** FY97	X							X						X						
** Planned	X							X						X						
Ice Control, Sanding																				
** Ongoing						X	X									X		X		
** FY97								X												
** Planned																				
Laboratories																				
** Ongoing		X							X					X	X	X		X	X	
** FY97		X																		
** Planned	X	X																		
Materials Exchange																				
** Ongoing	X			X					X	X						X			X	
** FY97	X																			
** Planned	X																			

Activity Type	Dept of Administration	Dept of Agriculture	Dept of Corrections	Office of Environmental Assist	Dept of Health	Dept of Human Services	Metropolitan Airports Commission	Met Council Transit Operations	Met Council Wastewater Serv	Military Affairs	Metropolitan Mosquito Control	Dept of Natural Resources	Pollution Control Agency	Dept of Public Services	Bemidji State	St. Cloud State	Moorhead State	Dept of Transportation	University of Minnesota	Brd of Water & Soil Resources
Office Supplies																				
** Ongoing	X			X			X		X		X				X					
** FY97	X														X					
** Planned	X														X					
Oil/Oil Filters																				
** Ongoing	X					X	X	X	X	X	X			X	X	X		X	X	
** FY97	X																			
** Planned	X																			
Paints, Coatings, Stripping																				
** Ongoing	X						X	X	X	X						X		X		
** FY97	X																			
** Planned	X														X					
Parts Cleaning																				
** Ongoing	X					X	X	X	X	X						X		X	X	
** FY97	X																		X	
** Planned	X																			
Personal Care Products																				
** Ongoing						X														
** FY97																				
** Planned																				
Pesticides, Fertilizers																				
** Ongoing	X					X						X					X		X	X
** FY97	X																			
** Planned	X						X					X								
Policy Statement																				
** Ongoing	X	X		X	X		X		X	X	X			X	X	X		X	X	
** FY97	X														X					
** Planned	X														X					
Printing																				
** Ongoing	X			X			X				X					X		X		
** FY97	X																			
** Planned	X																			
Procurement, Materials Mgmt																				
** Ongoing	X			X			X	X	X	X	X				X	X		X		
** FY97	X														X			X		
** Planned	X										X				X					
Remanufactured Parts																				
** Ongoing	X				X			X								X				
** FY97	X														X					
** Planned	X														X					

Activity Type	Dept of Administration	Dept of Agriculture	Dept of Corrections	Office of Environmental Assist	Dept of Health	Dept of Human Services	Metropolitan Airports Commission	Met Council Transit Operations	Met Council Wastewater Serv	Military Affairs	Metropolitan Mosquito Control	Dept of Natural Resources	Pollution Control Agency	Dept of Public Services	Bemidji State	St. Cloud State	Moorhead State	Dept of Transportation	University of Minnesota	Brd of Water & Soil Resources
Tanks (Storage)																				
** Ongoing	X				X		X	X						X		X		X		
** FY97	X				X															
** Planned	X						X											X		
Tires																				
** Ongoing	X								X	X					X	X		X		
** FY97	X																	X		
** Planned	X																			
Technical Support																				
** Ongoing	X			X			X		X				X			X		X		
** FY97	X												X							
** Planned	X												X		X					
Water Treatment, Conservation																				
** Ongoing	X				X				X	X						X		X		
** FY97	X							X												
** Planned	X																			

Appendix A

Biological Control Program - Minnesota Department of Agriculture
Ag Marketing and Development Division
August 11, 1997

The Biological Control Program in the Minnesota Department of Agriculture was begun in 1987 by Dr. Dharma Sreenivasam with the goal of providing an effective, economical, and practical alternative control strategy to the wide spread use of chemicals. The program began by studying the use of an egg parasite, Trichogramma (a small wasp) to control European corn borer in sweet corn. This program has been expanded to evaluate the efficacy of three different species of *Trichogramma*.

In 1989 the Biological Control Program under the direction of Dr. John Luhman began to rear and release a wasp (*Coccygomimus disparis*) for control of the gypsy moth. This small wasp parasitizes the pupae of gypsy moth as well as several native moths (eastern and forest tent caterpillars, whitemarked tussock moth, and fall webworm). The strategy is to establish populations of *C. disparis* in these native hosts so that their numbers will be high enough to effectively combat gypsy moth should it arrive in Minnesota.

In 1992 the biocontrol program began under the direction of Dr. Neville Wilson to release biocontrol agents against leafy spurge, a noxious weed. This cooperative program with the USDA has resulted in the establishment of insectaries by the USDA and MDA of *Aphthona* flea beetles from which flea beetles were collected and redistributed into leafy spurge stands. In 1997 we released over 800,000 *Aphthona* in Minnesota. These agents have proven very effective for leafy spurge control and will greatly reduce the amount of herbicides applied to leafy spurge.

In 1994, a biological control program for apple pests was established by Richard Gagné with its primary goal to help apple growers incorporate the use of natural enemies and to promote the increased use of integrated pest management in orchards. The main apple pests that the biocontrol program is working with are codling moth, plum curculio, apple maggot, spotted tentiform leafminer, obliquebanded leafroller, and redbanded leafroller. We have established a base line for presence or absence of these apple pests and their natural enemies in orchards and we are continuing to gather information on natural enemies that are best suited for biological control.

A beneficial insect that the biological control program is evaluating as a control agent in orchards is the Japanese lady bird beetle, *Harmonia axyridis* (Pallas). This insect feeds mostly on green peach aphids, soft scale, and pear psylla. The first release of this species in Minnesota occurred in June of 1995 in a Stillwater orchard and was followed by a release in West St. Paul in mid-July. In 1996 three releases of Harmonia beetles were made in Brooklyn Park, Eagan and West St. Paul.

Currently, Dr. Luhman is exploring the possibilities of enhancing the use of biocontrol agents to control pests of plants grown in enclosed areas. We have released biocontrol agents in homes, The Mall of America, Como Conservatory, Minnesota Arboretum, and private greenhouses.

MDA's planned greenhouse on the Metro State University campus will facilitate expansion and implementation of our strategies for the biological control of plant pests.

Appendix B

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, Section 16B.121 mandates that state purchases of commodities and services shall apply and promote the preferred waste management practices listed in Minnesota Statutes, Section 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, Section 115D.02 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

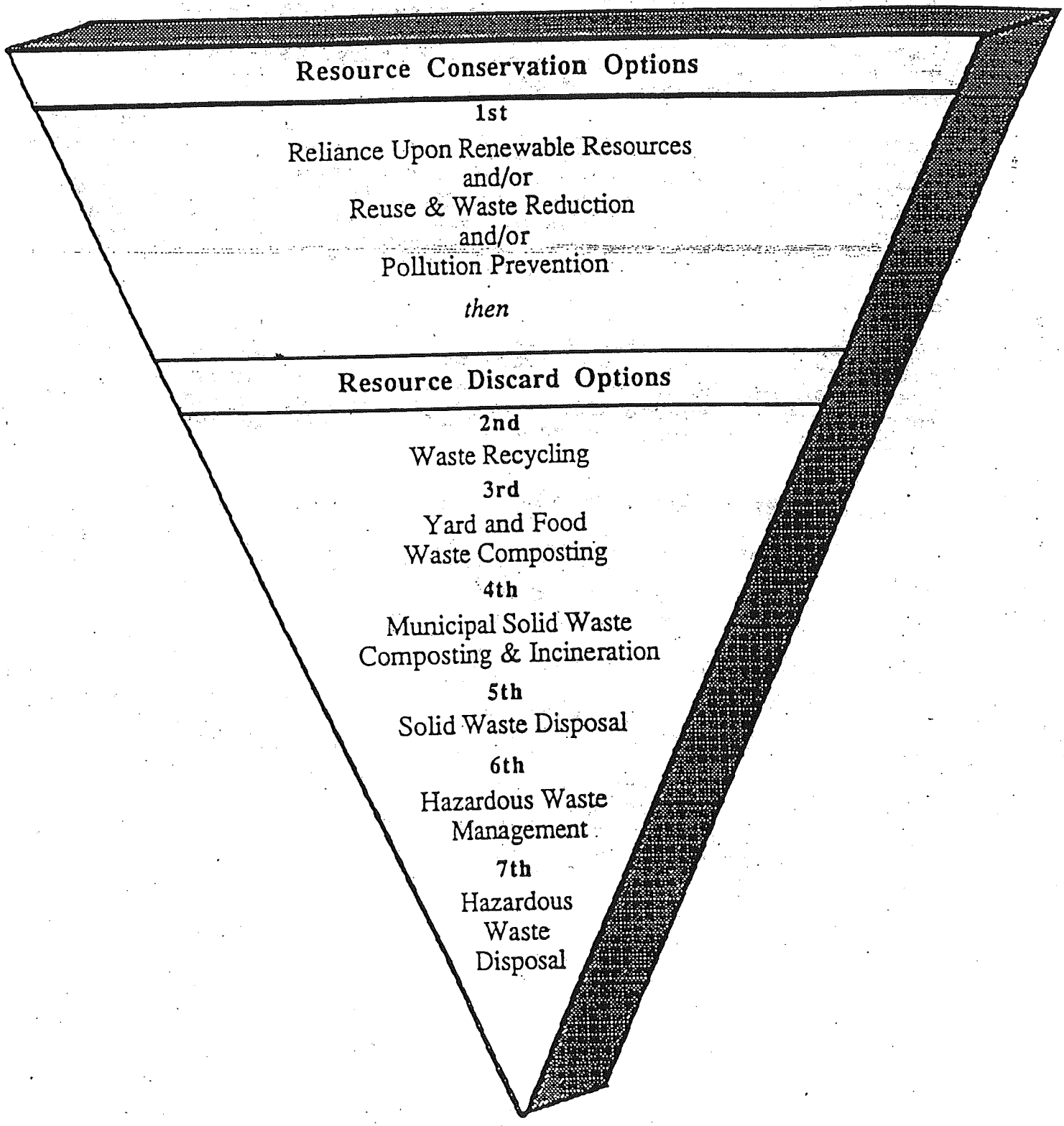
December 31, 1992

Date

Exhibit 2

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.



STATE OF MINNESOTA
Department of Administration

FACILITIES MANAGEMENT BUREAU

Exhibit 3

Plant Management Division

MISSION STATEMENT

Our mission is to deliver consistent quality services to ensure clean, safe and environmentally-sound buildings, grounds and operations.

Our customers are all people who use our services throughout the state of Minnesota.

The services we provide are a continuum of building, grounds and professional services specific to the customers' needs. They include building maintenance, cafeterias, energy management services, grounds, janitorial, materials transfer, parking, administration of the state resource recovery program and special use of state facilities permits.

Our core values are

- High quality professional staff with:
  - accountability
  - honesty and ethics
  - loyalty
  - integrity
  - commitment to teamwork
  - respect of others and ourselves
  - knowledge
- Responsiveness to our customer needs through:
  - communication
  - efficiency
  - timeliness
- Provide quality work through:
  - modern technology
  - employee training
- Responsible business practices that encourage:
  - professionalism
  - cost effectiveness
  - open communication
- Plan for the future, considering:
  - technology
  - employee development
  - establishment of long term goals
  - involvement of clients
- Environmental stewardship with:
  - conservation of resources
  - prevention of pollution
  - promotion and education
  - integration into all work places and services

Created 1/93

Appendix C

METROPOLITAN COUNCIL

ADMINISTRATIVE PROCEDURES MANUAL

Section 2 Page 2.11.1 Date Approved 5/30/95
Subject Pollution Prevention Dept. Responsible Administration

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POLICY: The Metropolitan Council will support pollution prevention by participating in the efforts outlined in the Minnesota Toxic Pollution Prevention Act of 1990, pursuant to 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 as well as the users of its regional operations, programs, services and systems. 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 in the management of its regional operations, programs, services and systems.

- ♦ 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 toward the shared goal of pollution prevention with other governmental agencies and Minnesota citizens, particularly the users of its regional operations, programs, services and systems.

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:

- ♦ Represent the Council's planning, administration and operating activities which currently include the regional housing and redevelopment authority, transit operations and wastewater services;

- ♦ 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 operations, 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;

♦ Prepare annual pollution prevention reports to the Office of Environmental Assistance pursuant to the executive order;

♦ Maintain a resource list indicating deployment at the various Council work locations of staff with specialized pollution prevention expertise; and

♦ Promote pollution prevention by encouraging the involvement of all Council employees as well as the users of its regional operations, programs, services and systems.

Appendix D

POLICY STATEMENT

UNIVERSITY OF MINNESOTA

BOARD OF REGENT'S POLICY

Page 1 of 1

CONSERVATION
Pollution Prevention and Waste Abatement
Adopted: June 11, 1992
Supersedes: Waste Abatement Policy 12/15/85

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 programs and to develop policies, plans and resources to achieve that goal.