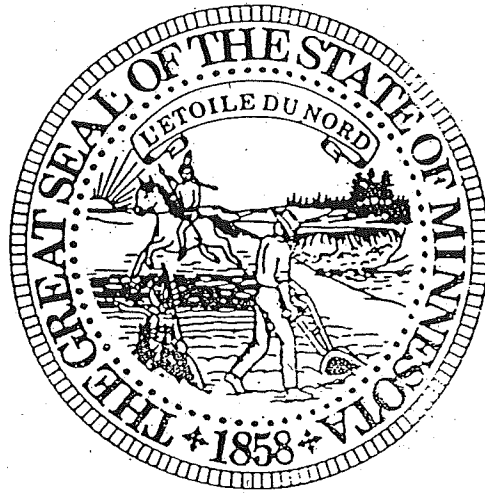


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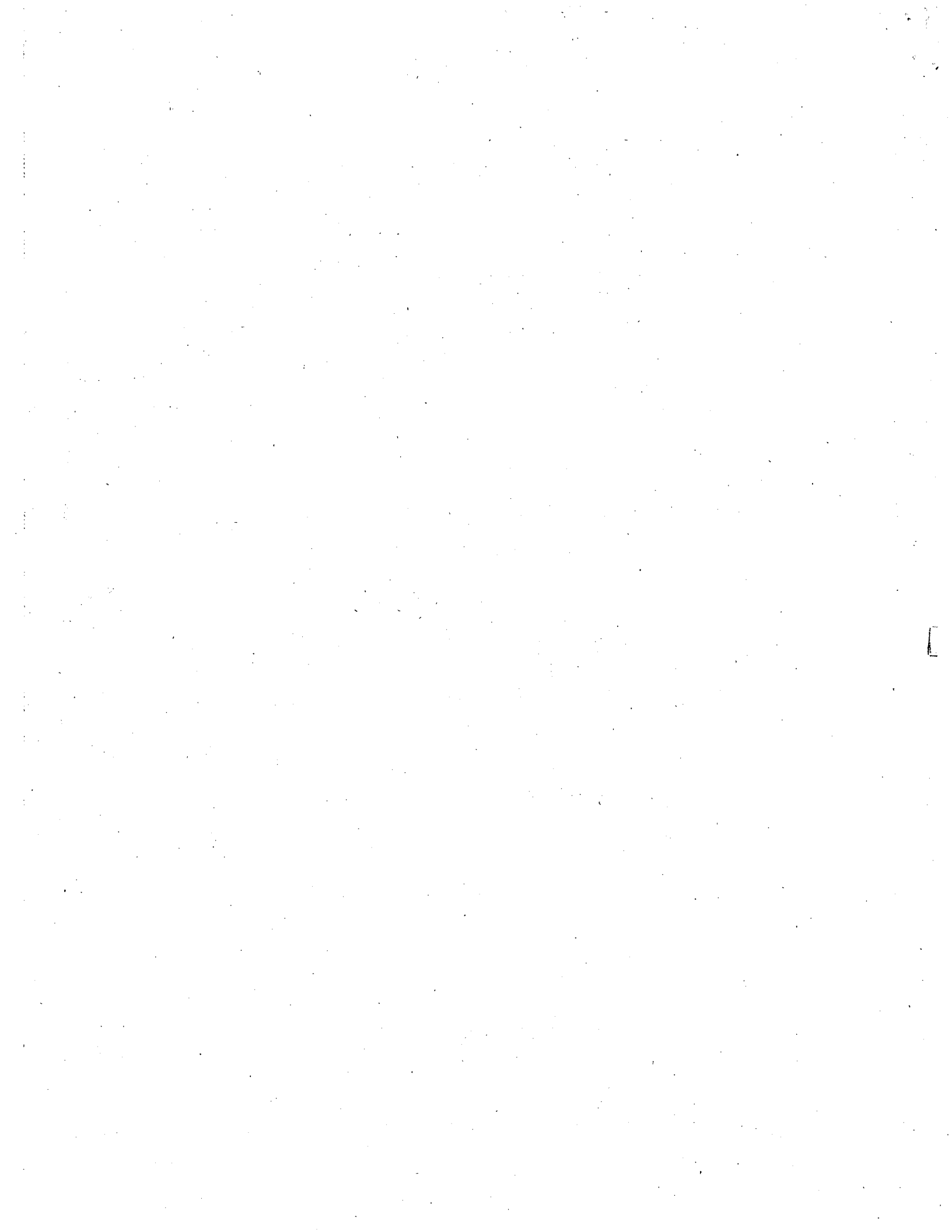
POLLUTION PREVENTION SUMMARY REPORT

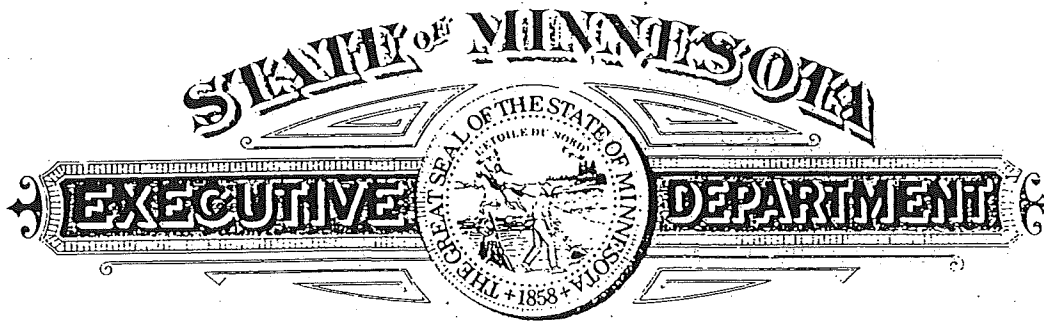
consolidated from reports submitted by
members of the

Interagency Pollution Prevention Advisory Team

August, 1998

**POLLUTION
PREVENTION** *Right From
The Start*





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

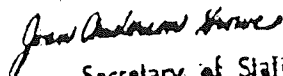
Filed According to Law:



JOAN ANDERSON GROWE
Secretary of State

STATE OF MINNESOTA
DEPARTMENT OF STATE
FILED

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Secretary of State

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Agency Contacts

Department of Administration

50 Sherburne Avenue, St. Paul, MN 55155
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Department of Agriculture

90 West Plato Blvd, St. Paul, MN 55107
Contact: Ed Chromey (651) 297-8052

Department of Corrections

1450 Energy Park Drive, St. Paul, MN 55108
Contact: Jim Weiler (651) 779-1449

Office of Environmental Assistance

520 Lafayette Road, St. Paul, MN 55155
Contact: Emily Moore (651) 215-0201

Department of Health

450 121 7th Place E., St. Paul, MN 55101
Contact: Al Tupy (651) 623-5680

Department of Human Services

444 Lafayette Rd, St. Paul, MN 55155
Contact: Glenn Olson (651) 297-8742

Metropolitan Airports Commission

6040 28th Ave. South, Minneapolis, MN 55450
Contact: Toni Howell (612) 726-5336

Metropolitan Council Transit Operations

515 Cleveland Ave. North, St. Paul, MN 55114
Contact: John Bryan (651) 349-5080

Metropolitan Council Wastewater Services

230 East Fifth Street, St. Paul, MN 55101-1633
Contact: Mike Nevala (651) 602-1065

Military Affairs

P.O. Box 348, Camp Ripley, Little Falls, MN 56345
Contact: David Hamernick (320) 632-7567

Metropolitan Mosquito Control District

2099 University Avenue W, St. Paul, MN 55104
Contact: John Thompson (651) 645-9149

Anoka-Hennepin Technical College

11200 Mississippi Blvd. NW, Coon Rapids, MN 55433
Contact: Thomas Silvers (612) ~~427-2600~~
576-4705

Inver Hills Community College

2500 80th Street E, Inver Grove Heights, MN 55076
Contact: Pat Buhl (651) 450-8500

Minnesota West Community & Technical College

1011 First Street W, Canby, MN 56220
Contact: Laurie Voss (507) 223-7252

North Hennepin Community College

7411 85th Avenue N, Brooklyn Park, MN 55445
Contact: Bob Alexander (612) 424-0702

Red Wing/ Winona Technical College

308 Pioneer Road, Red Wing, MN 55066
Contact: Greg Williams (507) 453-2770

Rochester Community & Technical College

851 30th Avenue SE, Rochester, MN 55904
Contact: Don Supalla (507) 285-7210

Bemidji State University

1500 Birchmont Drive NE, Box 10
Bemidji, MN 56601-2699
Contact: Richard Marsolek (218) 755-3988

Moorhead State University

1104 7th Avenue S, Moorhead, MN 56563-2996
Contact: Alan Breuer (218) 236-2998

St. Cloud State University

720 Fourth Avenue S., St. Cloud, MN 56301-4498
Contact: Patrick Kempen (320) 255-2145

Pollution Control Agency

520 Lafayette Rd, St. Paul, MN 55155
Contact: Jim Brist (651) 297-8331

Department of Public Service

121 7th Place E, St. Paul, MN 55101-2145
Contact: Wally Lyslo (651) 297-2293

Department of Transportation

395 John Ireland Blvd, St. Paul, MN 55155
Contact: David Pehoski (651) 779-5113

University of Minnesota

501 23rd Ave. SE Minneapolis, MN 55455-0447
Contact: Gene Christenson (612) 626-1590

Board of Water & Soil Resources

200 One West Water Street, St. Paul, MN 55107
Contact: Marybeth Block (651) 297-7965

355 W.
Highway 10
Anoka
55303

FISCAL YEAR 1998 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, 1998. 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 (651) 215-0201 or toll-free at (800) 657-3843.

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

Part I

Agency Descriptions

The Following paragraphs include general information about the participating agencies, including size of staff, the number of locations, and the amount of pollution prevention training staff have had during fiscal year 1998.

Department of Administration -- The Department of Administration operates from numerous building locations to provide agency customers with services. Listed below are the department divisions and offices with employee populations, the number of facility locations and the status of pollution prevention training.

<i>Agency</i>	<i>Size of Staff</i>	<i>Number of Locations</i>	<i>Amount of P2 Training in 1998</i>
Building Codes & Standards	33	Housed in One Location	Not Received
Building Construction	31	Housed in One Location	Have Received
Communications Media	100	Housed in Five Locations	Have Received
Council on Technology for People with Disabilities	6	Housed in One Location	Not Received
Employee Assistance Program	8	Housed in One Location	Not Received
Financial Mgmt and Reporting	30	Housed in One Location	Not Received
Human Resources	12	Housed in One Location	Not Received
InterTechnologies Group	260	Housed in One Location	Not Received
Materials Management	81	Housed in Three Locations	Have Received
Minnesota Governor's Council on Disabilities	5	Housed in One Location	Not Received
Minnesota Office of Citizenship & Volunteer	3	Housed in One Location	Not Received
Plant Management	215	Housed in Seven Locations	Not Received
Real Estate Management	11	Housed in One Locations	Not Received
Risk Management	7	Housed in One Locations	Not Received
Travel Management	21	Housed in One Location	Not Received

Department of Agriculture -- The Minnesota Department of Agriculture Currently employs approximately 500 personnel. There are 26 different MDA facilities located throughout the State. This report is primarily for the St. Paul office complex located at 90 West Plato Boulevard.

Department of Corrections -- Approximately 3,416 staff work at this agency, with 11 staffed facility locations. We are participating for the MN Department of Corrections. No pollution prevention training has been received by our staff this past year.

Office of Environmental Assistance -- The Minnesota Office of Environmental Assistance (OEA) was established on July 1, 1994. OEA's predecessor agencies, the Minnesota Office of Waste Management and the Minnesota Waste Management Board, had been in existence since July 1, 1980. The OEA employs a staff of 72 people in the St. Paul office and one staff person in each of 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 appropriately according to the hierarchy of waste reduction, recycling, resource recovery, and landfilling; to help Minnesota's businesses improve their economic efficiency through environmentally sound practices; to promote environmentally sustainable

attitudes and behaviors through education and information; and to promote sustainable, community-based solutions to environmental problems.

The OEA provides funding for the Minnesota Technical Assistance Program (MnTAP). MnTAP employs a staff of 16 within one location at the University of Minnesota. The experienced staff of engineers and other science-related professionals provides technical assistance tailored to businesses' needs, free of charge. Located at the University of Minnesota, MNTAP's nonregulatory status gives its 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.

Department of Human Services -- The Department of Human Services has 6,679 employees. The Department has eight Regional Treatment Centers, over 90 State Operated Community Services (SOCS) sites and the Central Administrative Offices at eight St. Paul locations. This report will include pollution prevention efforts at all of the Regional Treatment Centers and the Central Administrative Office. The SOCS are operated as a household and comply with the solid waste and recycling requirements of their host community. Thirty-one maintenance workers and safety officers received their annual asbestos training that included proper handling and disposal of asbestos containing materials. Several sites were involved in the annual "Waste Reduction Week" activities. Recertification for pesticide use was completed at Willmar Regional Treatment Center. Staff contacts are listed in the 1998 Pollution Prevention Resource Manual.

The Department of Human Services produces a very small amount of hazardous waste. The majority of our pollution prevention efforts are directed toward recycling and reuse of resources. The recycling programs at the Regional Treatment Centers provide work therapy for our clients and a source of funds for some of their activity programs. As an example, Brainerd Regional Human Services Center recycled 6,998 pounds of metal cans and 52,408 pounds of bailed cardboard. State agencies in the Twin Cities metropolitan area are required to recycle 60 percent of their solid waste. All but one of the Human Services' metro locations met that goal, with the 444 Lafayette Road location achieving a 79 percent recycling rate.

Metropolitan Airports Commission -- The Minnesota Legislature created the Metropolitan Airports Commission (MAC) in 1943 as a public corporation and established as its mission 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, of which 13 are appointed by the Governor of the State of Minnesota and one each being appointed by 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, "like 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, which includes Plumbing. 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 Environmental Services -- The Metropolitan Council Environmental Services (MCES) is a division of the Metropolitan Council, the public agency which coordinates regional planning and guides development in Minnesota's seven-county metropolitan area. The MCES operates the regional wastewater collection and treatment system in most of that same seven-county Twin Cities metropolitan area. Additional regional environmental responsibilities include industrial wastewater pretreatment and management, air and water quality monitoring, regulatory compliance, water resources 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 is budgeted for approximately 980 staff (full-time equivalent positions). This report will describe pollution prevention activities for the entire MCES. A separate

report will cover pollution prevention for 1998 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 seventy-eight 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 Prevention, Reduction, and Recycling Advisory Council since its beginning in 1997. In addition to this professional contact and resulting internal sharing of information, some informal pollution prevention training occurs at the treatment plants related to maintenance and all employees in the industrial waste section have been formally trained. This past year, there were no specific pollution prevention workshops sponsored by the state and no annual pollution prevention conference. Pollution Prevention Week was observed in September 1997 with a breakfast, key note speech, and awards presentations.

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 seven county area with a total staff size of 2332. During the past year Metro Transit has increased its ridership by 5 percent and is upgrading its fleet with newer buses. 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 Mosquito Control District -- The Metropolitan Mosquito Control District, established in 1959 controls mosquitoes and gnats (black flies) in the metropolitan counties of Anoka, eastern Carver, Dakota, Hennepin, Ramsey, Scott and Washington. The District operates under the seventeen member Metropolitan Mosquito Control Commission, composed of county Commissioners from the participating counties. A Director is responsible for the operation of the program and reports to the Commission. The District employs 47 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 pollution prevention 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. Emphasis is placed on reducing the use of hazardous materials, replacing materials with less hazardous counterparts, and recycling.

Military Affairs -- The Department of Military Affairs 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 in Appendix A shows the geographic location of these units. The Department of Military Affairs 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 Department of Military Affairs 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.

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 MNARNG 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.

Pollution Control Agency -- The Minnesota Pollution Control Agency (MPCA) has approximately 800 staff that are located in Central Office in St. Paul and 6 Regional offices in Duluth, Brainerd, Detroit Lakes, Mankato, Marshall, and Rochester. This report covers all activities of the Agency statewide. Some staff have received pollution prevention training, most have not. Training has been put on hold until after we complete a reorganization of the Agency structure. It will likely be January of 1999 before training can be revisited.

Department of Public Service -- The department employs 86 staff at the Metro Square location; there are an additional 41 staff employed at the Roseville location. This report covers agency activities at both locations. Staff has not receive any pollution prevention training during the past year.

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

Anoka Hennepin Technical College -- 220 staff members with three facility locations. We are reporting for Anoka-Hennepin Technical College as a whole. All instructional and support staff were trained in the use of recycling containers.

Inver Hills Community College -- We are staffed at approximately 350. Below is a list of departments that would generate hazardous waste. I have attached an organizational chart that shows all other departments.

Physical Plant Services Department	Biology Department	Chemistry Department
Theater Department	Art Department	Copy Center
Emergency Health Services Department	Health Services	Nursing

We have one staffed facility and we are reporting for the entire campus. McNeil Environmental educates us about pollution prevention on a yearly basis.

Minnesota West Community & Technical College -- (*Canby, Granite Falls, Jackson, Pipestone, Worthington*) Minnesota West Community and Technical College is a merged comprehensive community and technical college (formerly Southwestern Technical College and Worthington Community College). The college is comprised of five campuses located in Southwestern Minnesota, Canby, Granite Falls, Jackson, Pipestone and Worthington. The college employs approximately 300 faculty, staff and administrators dispersed among the five campus locations. This summery report is being written as a total college report with no distinction to any particular campus. The college has not had any current employees receive any pollution prevention training during the past year

North Hennepin Community College -- We have approximately 330 staff, with three staffed facilities. We are reporting as a whole for our agency. Pollution prevention training is required of Plant Services and certain para-professional staff; voluntary on part of other staff.

Northland Community & Technical College -- Employs approximately 100 people. We have two staffed facility locations (Main Campus and Aviation Campus). This report is for the entire College as a whole. No one on our staff as received any pollution prevention training during the past year.

Red Wing / Winona Technical College -- Red Wing/Winona Technical College has 111 employees. Departments include instructional, support, clerical, maintenance, administration, student services, financial aid, placement, custom services, marketing, and outreach. Red Wing/Winona Technical College consists of three facilities - Red Wing Campus, Winona Main Campus, and Winona Airport Campus. This report covers the agency as a whole. The college has not offered any formal training on pollution prevention; however, formal policies exist on recycling and hazardous waste management. Trade and Industrial faculty and maintenance personnel receive annual training on hazardous waste management as a component of a comprehensive safety program.

Rochester Community & Technical College -- Rochester Community and Technical College has approximately 400 full and part-time faculty and staff. In addition Winona State University, University of Minnesota, and outside agencies use these facilities. Our facilities are at two locations about one mile apart. This report will cover both locations. To my knowledge, no one at RCTC has received pollution prevention training during the past year.

Bemidji State University (BSU) -- Approximate Employee Count for BSU is as follows:

Faculty and staff (academic year) - 550

Faculty and staff (summer) - 460

Student Employees (academic year) - 850

Student Employees (summer) - 350

There are two staffed facility locations, the BSU main campus and the Center for Research and Innovation. All BSU facilities are included in this report. No specific training was implemented. 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.

Moorhead State University -- Moorhead State University currently employs approximately 600 faculty and staff members, which serve over 6,400 students. MSU has two facility locations, the 120-acre main campus and the Regional Science Center, a 300-acre nature research center located adjacent to Buffalo State River Park. This report reflects both of these locations and includes all departments. Pollution prevention, waste reduction and recycling education continued throughout the year for both staff and students.

St. Cloud State University -- St. Cloud State University (SCSU) employs full- and part-time approximately 1,500 administrative, teaching, clerical, and technical maintenance personnel. The campus consists of 42 buildings and is situated on over 100 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 much training in the area of pollution prevention. During the past year the services of an outside consulting firm, MacNeil-Environmental Inc. (MEI), have been significantly expanded to begin addressing this training and other issues.

Department of Transportation -- Mn/DOT has approximately 4800 employees. In general, Mn/DOT is a de-centralized organization with one central office, seven districts and one metropolitan division. Mn/DOT has 16 major truck stations (A and B headquarters located in each district and the metropolitan division) with 135 additional truck stations. Mn/DOT has 160+ EPA identification numbers. Mn/DOT maintains approximately 12,800 miles of highway and 4,621 bridges. Mn/DOT maintains 11,000 pieces of equipment, 5,500 of which have motors; Of the 5,500 pieces of equipment with motors 4,200 are on-road vehicles and 1,300 are off-road vehicles. This report is intended to represent Mn/DOT as a whole with respect to Mn/DOT's efforts in pollution.

University of Minnesota -- 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, and employs extension agents in approximately 80 out of the 87 counties in Minnesota. The University has 50 EPA identification numbers for hazardous waste generator sites around the State of Minnesota. The University serves 49,184 students with 13,950 full-time faculty and staff and 3,450 part-time faculty and staff. The number of continuing education/extension students is 16,951. This report is for the agency as a whole. Approximately 2,500 staff and faculty have received pollution prevention training during the last year.

Board of Water & Soil Resources -- Approximately 63 staff work for the Board of Water and Soil Resources. 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 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.

1. Absorbents

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

Department of Corrections -- The Department of Corrections management of absorbents is as follows:

MCF (*Minnesota Correctional Facilities, MCF*) -Oak Park Heights - Rags are used to clean up spilled inks which are first scraped up and put into "wet scrap" for disposal with the institution's waste barrel. The industry office estimates that spillage amount to less than one gallon all year.

MCF-Willow River/Moose Lake - Absorbents are used in many areas of the facility to absorb hazardous materials. The facility is currently using a ground up corn cob material vs. clay. The corn cob mixture can be completely incinerated vs. clay. There is no change expected in the area of absorbents.

MCF-St. Cloud - Absorbents are on hand and ready for use. The cost is \$400/year, and it keeps hazardous waste out of the landfill.

MCF-Shakopee - The facility recycles absorbents with Safety Kleen.

MCF-Stillwater - Absorbent products are in ongoing use with some industry and maintenance areas. Absorbents are recycled or disposed of in accordance with EPA/MPCA regulations.

Department of Human Services -- Absorbents materials are provided by vendors and picked up after use.

Metropolitan Airports Commission -- The MAC uses a variety of different absorbents. Wood chips and clay floor dry are used to absorb oil and grease, corncob fractions to collect spilled jet fuel and booms are used as a stopgap to prevent miscellaneous debris and other contaminants from reaching the river. The sorbents are reused as much as possible before disposal. All of these products are incinerable and are used in energy recovery.

Metropolitan Council Environmental 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 percent 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 their frequent reuse. Another facility has analyzed its used absorbent for Toxicity Characteristic Leaching Procedure (TCLP) heavy metals. 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 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 study 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. Metro Transit is again in the process of looking at other types of absorbants that will not be as light weight and easily moved by drafts.

Metropolitan Mosquito Control District -- The District currently uses a sawdust floor dry absorbent in addition to reusable absorbent pads and booms. Improved materials handling and shop procedures have reduced the amount of floor absorbents used by MMCD. 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 District has found the cost of using alternative absorbents is higher than the cost of absorbents previously used. Some of this cost can be offset by reusing the absorbent pads and booms as much as possible before disposal and through improved materials handling to reduce the amount of absorbent needed.

Minnesota State Colleges and Universities:

Minnesota West Community & Technical College -- Because the college offers programs in Auto Body, Auto Mechanics and Truck Driving, we are now monitoring absorbents, antifreeze, automotive fuels and maintenance, batteries, oil, oil filters, paints, coatings, stripping, parts cleaning, and tires. Disposal of waste and unwanted materials in these categories are being picked up by authorized hazardous waste transporters for proper removal and disposal. We will continue to follow this practice in the future.

North Hennepin Community College -- Use of Floor Dry for vehicle shop. Used absorbents are swept up and stored in barrel. Absorbent for oil. Disposed of through contractor.

Red Wing / Winona Technical College -- Absorbents are used in the Aviation technician, Industrial Maintenance technician, Auto Body technician, Auto Mechanics technician, Machine Tool & Die, and Truck Driving programs, as well as, the maintenance department. Absorbents used include pads, socks, and spill sorb. All products used are incinerated. No products containing clay are used any longer.

Moorehead State University -- The use of absorbent pads is replacing the more common clay based absorbents. SPILL MATE, a surface and water-borne petroleum/solvent absorbent is being used. SPILL MATE instantly bonds to spills on hard surfaces and floating spills on water, turning them into solids for easy removal. The solid can then be incinerated and used in energy recovery.

St. Cloud State University -- "Thirsty Bananas", absorbent pad and pans or other similar products and launderable rags are increasingly available and used. Absorbent materials to contain hazardous chemical spills near floor drains are being supplemented with drain covers and increased training and inspections.

Department of Transportation -- Mn/DOT 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. Corn cob, paper, wood, cork, pumice, polypropylene (reusable and launderable), peat, cellulose, polymer and clay sorbent have been tested in this research. (A full report of Mn/DOT's sorbent research findings is available). Mn/DOT no longer landfills used oil sorbent material. The burnable sorbents are used as waste derived fuel for the generation of steam and electricity. Mn/DOT has researched and implemented, on a small scale, the use of launderable rags. Mn/DOT has found that the single largest factor in reducing this waste stream is the reuse of rags, whether they are launderable or disposable. Because some Mn/DOT sorbent users prefer clay sorbents to burnable sorbents, Mn/DOT researched the recycling of clay sorbent during fiscal year 1998. 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 Mn/DOT.

Mn/DOT used clay sorbents exclusively up to 1995. In 1994, Mn/DOT purchased approximately 75,000 pounds of clay sorbent which was landfilled. Currently, all Mn/DOT 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. See "14. Energy - Production." Laundering is an easy, cost effective way to manage used oil rags. There is at minimum 27 percent cost savings to Mn/DOT by managing used oil rags by laundering. In addition, there is no storage, transportation or record keeping required of Mn/DOT.

University of Minnesota -- The University is reviewing the use of absorbent materials in vehicle fleet operations, facilities shops, hazardous waste operations, and chemical spill response activities. 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, & vermiculite. Vehicle fleet operations has begun using absorbent pads to clean up small routine spills, in place of and/or in combination with floor-dri. The pads are laundered and reused. Use of floor-dri has been reduced by several drums per year. During fiscal year 1999 and beyond, the University will continue review of pads versus floor-dri. The University disposes of approximately 30 drums of oil absorbents per year in HW landfill. Evaluation of 1) burning for energy recovery and 2) oil recovery with recycling of the absorbent will be done to hopefully save money and conserve resources. The University is using the MnDOT report for cost comparisons. Absorbed oils and fuels can be burned for energy recovery. Recycling by recovery of the oil and reuse of cleaned absorbent appears to be a great resource conservation mechanism.

2. Adhesives

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

Department of Corrections -- Department of Corrections management of adhesives is as follows:
MCF-Faribault - The facility uses Change I, a product line which reduces the need for laminate adhesives by twenty-five percent.

MCF-Oak Park Heights - The Industry programs use environmentally safe glues including a natural animal products glue.

MCF-Stillwater - Adhesive products are in ongoing use within some areas of the facility. Any adhesive residue is disposed of in accordance with EPA/MPCA regulations.

3. Air Quality, CFC's

Department of Administration -- The Division of State Building Construction monitors statewide asbestos control programs based on federal and state standards. The division administers, specifies and carries out air quality standards. The Plant Management Division installed equipment with environmentally safe Freon in the 600 N. Robert Street Building cafeteria. They plan to retrofit existing chillers with non-ozone depleting 134a refrigerant and install a new chiller with non-ozone depleting 134a refrigerant. The InterTechnologies Group requires vendors to comply with federal and state refrigerant recovery statutes for air conditioner refill or replacement.

Department of Corrections -- The Department of Corrections management of CFC's is as follows:

MCF-Lino Lakes - Currently all work performed on equipment containing CFC's is completed by outside vendors qualified to service such equipment. MCF-LL does not have staff who are qualified under the MPCA guidelines.
MCF-Faribault - All maintenance staff working with CFC's have certification as required by law. All CFC's are recovered, recycled and reused.

MCF-Oak Park Heights - Refrigerant oil is recycled with rest of OPH's waste oil and picked up on an as needed basis. A refrigerant reclaimer is used to reclaim freon. The reclaimer is used by a certified staff person on applicable refrigeration and air conditioning units.

MCF-St. Cloud - We are replacing R-12 Freon at the present time at a cost of \$45,000. The benefit is that it would limit CFC's to the atmosphere (greenhouse effect). Ozone depleting chemicals are limited.

MCF-Shakopee - We do preventative maintenance leak detection on all refrigeration equipment. In fiscal year 1999 we will convert R500 (CFC) refrigerant to R134A.

Department of Human Services -- CFC's are contained or isolated before repair to equipment. Some facilities have their own collection equipment. Others hire a contractor to remove CFCs during repair operations

Metropolitan Council Environmental Services -- With the implementation of the federal Clean Air Act Amendments of 1990, all CFC's from vehicles and stationary units have been recovered for recycling since the 1992 effective date. MCES has six recovery/filter units and approximately twenty staff who are licensed CFC technicians. CFC-12, CFC-22, and--more recently--the acceptable HFC-134a are recovered, cleaned, and reused.

Metropolitan Council Transit Operations -- In 1995, the Metropolitan Pollution Control Agency required Metro Transit to submit for air discharge permits as required by the existing Clean Air Act as amended, this was accomplished by a complete stack inventory at all six garage facilities. In 1997, 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 that, no additional reductions can be made at those garages. The third facility, the Overhaul Base, permit is based on the emissions from the boilers installed at the facility and exhausted paint shop emissions. It is expected that when the calculations for air emissions are completed for 1998 the permit for the Overhaul Base may be able to be reduced.

Metro Transit has installed one 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 than 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 in its long term capital planning projects 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.

Pollution Control Agency -- MPCA is working with the Board Plant Industry in Northern Minnesota from the air quality side of things and promoting a new technology of drying wood wafers that has a strong pollution prevention aspect to it. The technology is the use of conveyor-type wood wafer dryers versus the conventional rotary kiln-type wood wafer dryers. One such plant recently got permitted to install one of these units. The existing dryers at the plant are the conventional rotary type but the new one will be the conveyor-type. The net result was that 500+ tons per year of volatile organic would be emitted with the conventional rotary dryer versus about 60 tons per year from the conveyor dryer. This simple choice in technology allowed them to eliminate over 460 tons per year of VOCs. Not only that but the conveyor dryer produces better product yield and better product quality. The MPCA is promoting this technology with every board plant company in the state that does not have this already. Some plants have told me that they think that when their conventional rotary dryers wear out they will replace them with conveyor dryers. Not only does this technology reduce VOC emissions, but formaldehyde emissions are also reduced when using this technology. Contact Brett Balavance (218) 723-4837 or brett.ballavance@pca.state.mn.us

Department of Public Service -- See Education, Communication and Training, Minnesota Energy Code.

Minnesota State Colleges and Universities:

Anoka Hennepin Technical College -- All air handling units, cooling/heating coils, drain pans and interior ductwork were cleaned and disinfected. New disposable filters have been installed and the units have been put on a preventive maintenance program.

Inver Hills Community College -- We have an Air Quality Manager that responds to any questions and or complaints that we do receive. Once a complaint is recognized we will call in an outside source to run a series of tests to determine what is happening within the building and or area. Then the Air Quality Manager will respond to the person that filed the complaint and explain what tests were completed and the results of the test with possible solutions to the situation. The AQM will also give a report to the safety committee for review.

North Hennepin Community College -- North Hennepin uses refrigerants (freon) but does not store refrigerants. Freon R-2 is used in the college's chilling towers.

Red Wing / Winona Technical College -- All work involving refrigerants is performed by licensed contractors on physical plant equipment. In our automotive technician and HVAC technician programs, students learn to work with refrigerants under direct supervision of the instructor following all regulatory guidelines using proper equipment and reclaimers.

Moorhead State University -- MSU is continually making efforts to use adhesives that are low in VOCs or are water based. Contractor adhesives are reviewed prior to interior work to offset any potential IAQ concerns.

St. Cloud State University -- This past spring, SCSU went beyond recycling freon. Construction was started on a new Central Chiller Plant costing over \$2.5 million. It will add capacity to existing systems and reduce CFC's by using R22 refrigerant and allowing the planned retirement this winter of an R12 chiller and an R113 chiller.

Department of Transportation -- In 1993, Mn/DOT put in place an U.S. Environmental Protection Agency approved CFC technician certification program. All Mn/DOT mechanics have completed this eight-hour certification program and are certified technicians to handle CFC's. This insured avoidable releases of CFC's during vehicle maintenance. Also in 1993, Mn/DOT changed all vehicle purchasing specifications to include "environmental friendly" 134 refrigerant in all vehicle air conditioners. CFC's in all Mn/DOT vehicle and building air conditioners are being phased out.

University of Minnesota -- There is an on-going air permit review, in preparation for the modification of existing steam plants and campus emission sources. The University's Center for Diesel Research focuses on reduction of diesel exhaust emissions (<http://www.me.umn.edu/cdr/index.html>).

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. Annually the Twin Cities Campus recycles (recovers then places 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.

The University is remodeling 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 (NO_x) 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. 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. When the heating plants are modified, there will be a reduction of approximately 1,560 to 1,680 tpy of SO₂, NO_x, and CO emissions. CFC's: reduced emissions of global warming chemicals

4. Antifreeze

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

Department of Corrections -- The Department of Corrections facilities handle antifreeze as follows:

MCF-Lino Lakes - Used antifreeze generated by MCF-LL is picked up by a licensed hazardous material contractor for disposal and recycle.

MCF-Oak Park Heights - All vehicles are taken to a local automotive shop for antifreeze testing and replacement when necessary.

MCF-Willow River/Moose Lake - Antifreeze has been collected at Moose Lake for three years. The facility could still legally dispose of antifreeze down the sewer, but the facility wants to protect the environment by recycling.

MCF-St. Cloud - Antifreeze is being disposed of in the local city sanitary sewer proper documentation on file with city notification form. The cost is minimal. The benefit is that it is properly disposed and not thrown in the trash.

MCF-Red Wing - This material is stored in a 55 gallon drum until full. Recycled by state contract.

MCF-Shakopee - Antifreeze is recycled at Rapid Oil Change.

MCF-Stillwater - Antifreeze is an ongoing use item which is recycled for reuse. Any antifreeze waste is disposed of in accordance with EPA/MPCA regulations.

Metropolitan Airports Commission -- MAC Equipment Mechanic staff continues to remove, filter and reuse antifreeze from the automotive fleet. This reduces the anti freeze that must be sent out for disposal thus reducing disposal costs and allowing the employees to use less new product.

Metropolitan Council Environmental Services -- At the Metropolitan Wastewater Treatment Plant (Metro WWTP; St. Paul, Ramsey County); a decision has been made to purchase "long life" antifreeze/coolant which is changed at intervals of 150,000 miles. This will significantly reduce the volume which is disposed of by sewerage. A state law passed in 1998 allows facilities generating an average of less than 50 gallons per month of antifreeze/coolant to dispose of it to the sewer provided that the volume is tracked and it is not prohibited by the operator of the collection or treatment system. All MCES facilities fall into this category.

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 having it recycled.

Military Affairs -- The DMA continues to operate antifreeze recycling units for vehicle maintenance. The DMA uses 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.

Minnesota State Colleges and Universities:

North Hennepin Community College -- Cooling coils are filled with antifreeze at the end of the cooling system. Antifreeze is recaptured for the next year's use.

Northland Community & Technical College -- Antifreeze is used in our automotive shop. Due to the limited amount of antifreeze we use, we can sewer it as long as we notify City personnel. We plan to use this same procedure for fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- Antifreeze is used mainly in the Automotive technician program and is recycled. No antifreeze is sewerage.

Bemidji State University -- University vehicles are maintained through a contract with a local service station. Antifreeze is reclaimed by contract vendor. In fiscal year 1998 BSU's contractor installed antifreeze reclamation equipment. 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.

Moorhead State University -- Used antifreeze from chiller units and automotive fleets is recycled.

Department of Transportation -- Mn/DOT has researched, identified and implemented various recycling options for antifreeze. Most of the antifreeze generated by Mn/DOT is recycled through a filtration technology both in-house and contracted out. The recycled antifreeze is used in Mn/DOT vehicles.

In fiscal year 1998 Mn/DOT's in-house antifreeze recycling program has been moved from Morris to Crookston. This program is being evaluated to determine if Crookston will recycle more than District 2's antifreeze and therefore extending its recycling serve to other Mn/DOT districts, other state, and county and city municipalities. The approximate cost per 55 gallon drum of recycled 50/50 antifreeze from Mn/DOT's antifreeze recycling program in Crookston 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 Crookston facility, Mn/DOT 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 is researching opportunities for antifreeze recycling. 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. The Twin Cities Campus Facilities Management Department could save up to an estimated \$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. 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 and repurchase of the same amount of virgin antifreeze per year on the Twin Cities Campus.

5. Audits

Department of Corrections -- The Department of Corrections facilities undergo the following audits:
MCF-Oak Park Heights - The institution safety officer inspects monthly for a variety of fire, safety and sanitation items which include an inspection of hazardous materials, inventory lists, and disposal procedures. Washington County representatives conduct an annual hazardous waste inspection.
MCF-St. Cloud - Environmental audits are on-going with MPCA, ACA and OSHA requirements. The cost is \$4,000 annually. The benefit is pollution prevention, reduction, and help in finding problem facilities:

Metropolitan Airports Commission -- The MAC is continuing to conduct 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 of reliever tenants. This program was intended to be on going. Opportunities for pollution prevention are noted and incorporated in the CIP process as indicated by the MAC's strategic plan.

Metropolitan Council Environmental 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. Recommendations also have been made for materials management in order to avoid spills.

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, a Minnesota Organizational Readiness Evaluation (MORE), and the third, an environmental compliance inspection called ECAS. All of these help integrate environmental activities into the daily mission.

Pollution Control Agency -- MPCA is part of a national effort to help business conduct self audits of their manufacturing processes. Businesses identify where they are lacking and set up time tables to correct the problems. Contact Randy Hukriede at (218) 828-6076 or randy.hukriede@pca.state.mn.us

Minnesota State Colleges and Universities:

Red Wing / Winona Technical College -- No formal audits have taken place for pollution prevention except for audits mandated by the MPCA, OSHA, and other regulatory agencies.

Bemidji State University -- Information gathered from 1995-1997, through a OEA sponsored grant to conduct waste/pollution audits on campus continues to be used to implement waste and pollution reduction policies and practices on campus. In fiscal year 1998 specific recommendations for waste/pollution reduction policies and procedures were forwarded to the University's Administration for review and action. The audit information will

continue to be used to guide development and implementation of waste and pollution reduction policies and practices. Additional areas of campus will be audited pending funding and staffing. Recommendations resulting from the audits are expected to reduce the University's operational expenses. The original audits were funded by a grant that was matched by in kind funding through salaries and equipment purchases. Continued audit activity will be at University expense. The actual cost is unknown at this time. Implementation of the recommendations based on the audits' findings are expected to generally reduce waste and pollution generation.

Moorhead State University -- The Department of Environmental Health and Safety and members of the Environmental Health and Safety Committee periodically conduct audits of university facilities. Targeted audits are employed when needed. These audits include areas such as hazardous waste, laboratory procedures and energy consumption. Individual departments are also asked to self-audit periodically.

St. Cloud State University -- Last fall SCSU participated in an audit of facilities management by "The Association of Higher Education Facilities Officers" (APPA). Audit environmental suggestions included: HVAC staffing and backlog review; an enlargement and spray booth for the paint shop; a primary electrical system upgrade; and tracking energy costs by building. The University is reviewing staffing, has added metering to buildings and is planning replacement of the electrical system. All possible paint processes are being converted from solvent based to water based.

MacNeil Environmental Inc. (MEI) has also performed some environmental audit functions as part of their EHS contract. These relate to elements of hazardous waste disposal, storage tanks, and the OSHA laboratory standard which encompass pollution prevention.

SCSU also had a Minnesota State Colleges and Universities (MnSCU) facilities condition audit this past spring. Audit environmental recommendations include specific purchases and capital/repair projects to effect HVAC and electrical system revisions and both energy and water conservation measures.

Department of Transportation -- Mn/DOT conducts 80+ internal waste stream audits annually of Mn/DOT facilities. The purposes of these audits are to evaluate Mn/DOT's hazardous and problem waste stream management methods throughout the Department; identify various pollution prevention opportunities that warrant further research; evaluate potential areas of noncompliance with state and federal hazardous and solid wastes, tanks, and water quality laws and rules; make recommendations to correct and/or avoid potential areas of noncompliance; and make recommendations to maintain an effective waste management program. Mn/DOT conducts approximately 25 external environmental audits of facilities that handle Mn/DOT 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. An additional purpose is to determine if the amount of environmental risk and liability associated with using a particular site is acceptable to Mn/DOT. Both Mn/DOT's internal waste stream and external environmental audit programs have costs associated with them. However, based on Mn/DOT'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 Mn/DOT's internal waste stream and external environmental audit programs offer environmental benefits in that they ensure that Mn/DOT 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 waste minimization and pollution prevention via self-audit. The training and audit form is currently available on the web through the DEHS homepage (<http://www.dehs.umn.edu/guidebook/guidebook7.html#wastemin>) and in the hazardous chemical waste guidebook. During fiscal year 1999 and beyond the University's Waste Abatement Committee is working towards a pollution prevention /Resource Conservation web page that will promote self-audits and other techniques.

6. Automotive Fuels

Department of Administration -- The Materials Management Division and the State Patrol developed a contract to refurbish and reuse approximately 130 patrol vehicles. The Materials Management Division purchased E-85 (85% ethanol) vehicles for the Travel Management Division. The Materials Management Division purchased four propane fueled pick-up trucks for the Mn/DOT Highway Helper program. The Travel Management Division uses ethanol 85 Face as an alternative energy source with reduced emissions.

Department of Corrections -- The Department of Corrections facilities manage automotive fluids as follows: MCF-Oak Park Heights - Gas for the vehicles and diesel fuel for the industry truck is purchased at a local station. The diesel fuel used by the groundskeepers is stored on site in an above ground tank on a pad.

MCF-Willow River/Moose Lake - Fueling of vehicles at the facility is done at Willow River and Moose Lake for security and economic benefits.

MCF-St. Cloud - Ninety five percent of this work is done at a public station. We only fuel plant operation vehicles on site. The cost is five cents more per gallon of fuel. This limits the number of fuel spills and explosions and reduces tank maintenance.

MCF-Red Wing - The facility has a 1,000 gallon above ground tank with containment. We use approximately 10,000 gallons per year.

Metropolitan Airports Commission -- MAC is continuously reviewing alternative fuels that can be used in our automotive fleet. And encouraging our tenants to do the same.

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 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 percent ethanol/15 percent 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:

- developing 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.
- creating a statewide network of twelve E85 fueling sites by providing grants to develop E85 fleets and fueling facilities. The network continues to grow and there will be five new sites by December 1998.
- initiating 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.
- offering grants for small demonstration projects to encourage use of alternative transportation fuels.
- participating in US Department of Energy case study regarding early E85 vehicle purchases and infrastructure development in Minnesota.
- producing educational materials to promote alternative fuels including: a report to the State Legislature on alternative fuel vehicle technology; informational brochures on individual fuels, newsletter, "AFV News," and traveling display for shows.

Minnesota State Colleges and Universities:

Inver Hills Community College -- Automotive fuels are stored in underground tanks and monitored

North Hennepin Community College -- Staff at NHCC removed an underground gasoline tank and pump (July 1998) and disposed of it as per IAW State laws, at a cost of \$1,200. Small quantities of fuels are left on site for daily operations, stored in certified containers.

Northland Community & Technical College -- Automotive fuels are used in our fleet vehicles. Employees are encouraged to purchase gasoline containing ethanol. We plan to use this same procedure for fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- Automotive fuels are used for college vehicles and by maintenance, Auto Mechanics, Trucking Driving, and Aviation Mechanic technician departments. Minimum amounts of fuel are stored on site in approved containers. When vehicles are purchased, fuel economy is a factor in selection. Our truck driving program stores trucks in a heated garage during the winter months to reduce warm-up time to improve fuel efficiencies. The college also has installed a state of the art driving simulator in the Truck Driving lab, reducing student time spent in the trucks while learning the basics. The savings on fuel and maintenance on the trucks will cover the cost of the simulator.

St. Cloud State University -- SCSU has four alternative fuel (ethanol E-85) autos in their motor pool which produce less carbon monoxide. An underground storage tank (UST) for gasoline refueling at the Minnesota Highway Safety Center was removed last December and replaced with an above ground double walled tank as part of leak prevention effort to help protect groundwater.

Department of Transportation -- Mn/DOT's heavy equipment is being purchased with computer controlled electronic ignitions which maximizes the vehicles fuel efficiency. Mn/DOT is purchasing lightweight aluminum wheels for its trucks for fuel economy.

University of Minnesota -- 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 (http://www.me.umn.edu/pp/index.html#research_lab). 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 annually reduce gasoline use by about 2000 pounds and prevent approximately 7,000 pounds of carbon dioxide emissions. 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 benefits are reduced air emissions from automobile and bus exhausts and lower fuel consumption.

7. Automotive Maintenance

Department of Administration -- The Travel Management Division recovers and recycles automotive refrigerants for air conditioning units. The Travel Management Division's preventative maintenance program uses an information management system to minimize excessive and/or premature replacement of parts.

Department of Corrections -- The Department of Corrections auto maintenance is as follows:
MCF-Oak Park Heights - Vehicles are taken to Rick's 36 or the Central Motor Pool depending on ownership.
MCF-St. Cloud - Automotive maintenance is done at the automotive dealership, not on site. This limits the chances of spills of oil and fuel and reduces security risks.
MCF-Shakopee - Most work is done through the Department of Administration Central Motor Pool.

Department of Human Services -- See Category 22.

Metropolitan Airports Commission -- MAC uses an approved facility to recycle parts washer solvents, used oil, and used oil filters. Scrap metal and antifreeze are also recycled at the Maintenance shop

Metropolitan Council Environmental Services -- For specific information on pollution prevention at MCES in automotive maintenance activities, see the sections on absorbents, antifreeze, batteries, oil/oil filters, parts cleaning, and tires.

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.

Pollution Control Agency -- MPCA has prepared the Environmental Guide for Automotive Service Providers that includes pollution prevention through out its contents. This also included workshops. MPCA helped to develop the Automotive Collision and Mechanical Repair Shops Self-Evaluation Checklist. (available in the guide book or as a stand alone document)

Minnesota State Colleges and Universities:

Inver Hills Community College -- Automotive Maintenance is done off campus at central motor pool.

North Hennepin Community College -- Maintenance of college-owned grounds equipment and three college-owned vehicles.

Northland Community & Technical College -- All vehicles are serviced at local stations which charge \$1/per vehicle for recycling oil. We plan to use this same procedure for fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- Automotive maintenance is performed in the Auto Mechanics technician, maintenance, and Truck Driving departments. All oil and oil filters are recycled.

Rochester Community & Technical College -- At this time, automotive maintenance is not performed on site or by our personnel. Our fleet is too small for this to be cost effective.

St. Cloud State University -- Our vehicle repair shop has revamped procedures for brake pad/shoe replacement to ensure asbestos fiber release control. Replacement pads are non-asbestos. We also have switched to a water based parts washer that generates only used oil.

Department of Transportation -- See also "24. Parts Cleaning." Mn/DOT is studying various brake cleaners. The purpose of this study is to identify brake cleaners containing chemicals that are harmful to the environment (including human health), identify brake cleaners containing chemicals that are low risk to the environment (including human health), and measure the performance of the 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 goal is protection of groundwater.

Board of Water & Soil Resources -- automotive maintenance is performed at State Motor Pool and certified garages.

8. Batteries

Department of Administration -- The Travel Management Division recycles automotive batteries.

Department of Corrections -- The Department of Corrections battery program is as follows:

MCF-Sauk Centre - Batteries are collected and stored at MCF-SCR prior to being picked up by a state approved recycling or hazardous waste management contractor.

MCF-Lino Lakes - All used batteries are collected and delivered to an outside vendor for recycle.

MCF-Faribault - We instituted a change in operating procedures, returning to the use of electric and pneumatic powered tools instead of NICAD powered tools. This change reduced NICAD disposal (recycling).

MCF-Oak Park Heights - The type of alkaline batteries purchased by the institution can be disposed of in the trash. The lead acid and ni-cad batteries are saved and recycled as quantities dictate. A box of recyclable rechargeable batteries were returned to the supplier in accordance with the state's contract in the past year.

MCF-Willow River/Moose Lake - All automotive lead/acid batteries are picked up by an individual to be hauled to a recycler in the twin cities. Alkalines are being placed in the trash and all Ni-Cad batteries are collected or sent back to the manufacturer for recycling.

MCF-St. Cloud - We collect and recycle all our batteries. The cost is \$200 annually. The benefit is proper disposal. Batteries not going to a landfill.

MCF-Red Wing - Automotive batteries are exchanged. All other batteries are recycled at Goodhue County Recycling Center.

MCF-Shakopee - We recycle batteries at Gopher Smelting Co.

MCF-Stillwater - Batteries are an ongoing use item within the facility. Batteries are disposed of in accordance with EPA/MPCA regulations.

Department of Human Services -- Batteries are collected for recycling or returned to the vendor. Rechargeable batteries are returned to Central Stores and disposed by contract vendor.

Office of Environmental Assistance - the OEA has purchased alkaline rechargeable batteries for a year and a half. Staff are pleased with their performance. All rechargeable batteries are recharged as many times as possible and then collected for management by the Department of Administration's resource recovery program.

Metropolitan Airports Commission -- All MAC batteries are recycled. Automotive batteries are not retained on-site but are traded in at the time of service. This virtually eliminates the potential for a hazardous waste spill. All NiCad and alkaline batteries are collected from the various sites and recycled at approved facilities.

Metropolitan Council Environmental Services -- Spent Lead Acid Batteries (SLAB) 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. Over 7,500 pounds of SLABs were recycled from MCES facilities in 1997 mostly through AA Battery in Minneapolis. Dry cell batteries that are currently standard issue contain less than 0.0025 percent 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 Recyclights in Bloomington. 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 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 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. Dry cell batteries are collected and recycled at each District facility.

Military Affairs -- A battery-recycling program reduces 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.

Minnesota State Colleges and Universities:

Inver Hills Community College -- Batteries are saved and deposited through a recycling facility.

North Hennepin Community College -- All batteries are recycled.

Northland Community & Technical College -- Batteries are used in the automotive shop and at aviation. Used batteries are returned to the vendor for recycling. This will continue in fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- When batteries are purchased by the college for vehicles, the old battery is exchanged at time of purchase. Any other lead acid type batteries are taken to a recycling center. Small batteries purchased are the mercury free type.

Rochester Community & Technical College -- Vehicle batteries are recycled through whichever firm the new battery is purchased.

Bemidji State University -- Nickel-Cadmium and Lead-Acid batteries are recycled. Mercuric oxide, silver oxide and large lithium batteries are disposed of as hazardous waste. Recycling batteries reduces our disposal cost by approximately five cents for each pound of batteries removed from the waste stream. The economic costs are expected to be minimal. The environmental benefit is the reduction of toxic metals. It is assumed that the recycling process would require the consumption of some energy and other resources.

Moorhead State University -- All batteries, including lead acid, nickel cadmium, lithium, mercury oxide and silver oxide continue to be collected and recycled.

Department of Transportation -- Mn/DOT 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 -- All batteries are recycled.

9. Cleaning Supplies

Department of Administration -- The Materials Management Division, with assistance from other state agency staff, developed specifications for environmentally safe products that have been incorporated into the cleaning supplies contract. This safeguards the health of custodial workers, building occupants and the environment. All products were scored for environmental attributes based on criteria established by the Office of Environmental Assistance. The Plant Management Division uses janitorial products in operations that are

appropriate to discard in sewers. They use chemicals packaged as concentrates to reduce packaging waste by 85 percent.

Department of Corrections -- The Department of Corrections activities regarding cleaning supplies are:
MCF-Sauk Centre - All cleaning supplies are processed through our stores clerk and a hazardous label is applied to each item.

MCF-Faribault - We have changed the types of chemicals used in housekeeping. We now use MINNCOR Portion Pacs which are biodegradable and have a health hazard rating of two, even in the most concentrated form.

MCF-Oak Park Heights - OPH recently switched to MINNCOR products which are non-polluting and environmentally safe. The concentrated cleaning products are individually packaged in a portion controlled envelope that ensures a 1:1 ratio of pack to water for cleaning purposes. The products mixes with cold water. Portion Pac containers reduce solid waste.

MCF-St. Cloud - We are in the process of changing to MINNCOR (portion pac) cleaner. The cost is somewhat higher, but we should be able to minimize the amount of cleaning products used. This will result in cost savings, less water pollution, and better control of product.

MCF-Shakopee - We buy through state contract and use what we purchase through daily cleaning.

Office of Environmental Assistance -- For the first time, Minnesota has added environmental specifications to the state cleaning supplies contract to better safeguard the health of custodial workers, building occupants, and the environment. During fiscal year 1997 and fiscal year 1998, the OEA, MPCA, MnTAP, and the Institute for Local Self Reliance worked with the Department of Administration on this contract. The contract was finalized in February of 1998 and allows state agencies as well as public entities that are members of the State's Cooperative Purchasing Venture (CPV) program to buy from 33 categories of cleaning products. The state contract covers all purpose cleaners, toilet bowl cleaners, deodorizers, disinfectants, furniture and glass cleaners, and soaps. The OEA plans to continue to work closely with the Department of Administration to incorporate environmental specifications into other state contracts, such as the contracts for pest control, personal computers, and paint.

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 hazardous, special 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.

Minnesota State Colleges and Universities:

Inver Hills Community College -- Cleaning Supplies-Before purchasing we make sure all chemicals that we use are environmentally safe. Sometimes these types of chemicals cost more but they are better for the person using the chemical and the environment.

Minnesota West Community & Technical College -- The campus custodial team is in charge of all cleaning supplies, energy lighting, and HVAC indoor air quality. The college is implementing a new AWAIR policy that all staff and faculty will be trained in and become familiar with the monitoring and filing of manifests for hazardous waste supplies and materials received on each campus. The Canby and Pipestone campuses recently received an energy retrofit of all lighting throughout each campus which has resulted in considerable saving in electrical.

North Hennepin Community College -- Cleaning supplies are environment-friendly. MSDS sheets are maintained in each custodial closet, and safety procedures are adhered to when products are dispersed and used.

Northland Community & Technical College -- Cleaning supplies are used in the maintenance department. We use water-soluble, environmentally-friendly products and will continue to use them in fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- Cleaning supplies whenever possible are purchased from existing state purchasing contracts, which has resulted in safer products being used.

Rochester Community & Technical College -- Trash can liners are replaced on an as needed basis with the exception of hallway trash cans where this might be a safety concern. Soiled rags and mop heads are collected, laundered by an off-site contractor, and reused. Cleaning solutions are purchased with an automatic mixing and dispensing system for the concentrate. All of these methods reduce the amount of waste and the cost of waste disposal.

Bemidji State University -- Steps were taken to standardize the type of cleaning products used on campus and identify products that are safer to use and have more limited environmental impact than older products. The decision was made last fall to use Reckitt and Coleman Inc. products. Coincidentally, Reckitt and Coleman became the States contract vendor for these products later in the year. We will continue to look for effective products that are safe and limit adverse environmental impact. These activities are expected to reduce waste and pollution.

Moorhead State University -- 96% of the buildings on the main campus have general cleaning stations equipped with instruments that accurately dispense the proper amount of concentrate needed. In addition, cleaning supplies that are no longer used by a department are made available to other departments for alternate uses. All chemicals are ordered and stocked on an "as needed" basis. Cleaning supplies that are more environmentally acceptable are being tested and used all the time.

Department of Transportation -- Cleaning supplies are being purchased with automatic system for mixing and dispensing of concentrate. By using automatic mixing and dispensing systems Mn/DOT 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. Facilities Management custodial services will clean out old, unused custodial products as they centralize purchasing of custodial supplies to minimize the number of different products on campus. The goal is to optimize supply management and to enhance worker safety and environmental friendliness through a product selection process, thereby avoiding water pollution and improving worker health.

Board of Water & Soil Resources -- Cleaning operations are performed by private business at all locations.

10. Commuting and Transportation

Department of Corrections --The Department of Corrections activities are as follows:

MCF-Sauk Centre - A van is used when several staff are traveling to the same location.

MCF-Oak Park Heights - A system of medical teleconferencing was put in place during the year to save having to transport an inmate to another health service provider. This will change in fiscal year 1999.

MCF-St. Cloud - We have CVN communication help reduce travel and we carpool to meetings when possible. The cost is \$50,000 for installation. It will save time, fuel, and money over the long term.

Office of Environmental Assistance -- The OEA is among a few agencies that are testing telecommuting for 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.

The OEA won the competition between Lafayette Park agencies of B-BOP (Bike, Bus or Pool) and won the "Gas Miser" Award. On B-bop day 27 percent of OEA employees biked, bused, or carpooled to the office, as compared to 18.7 percent of MPCA employees, 4.9 percent of DNR employees and 4.5 percent of DHS employees.

Department of Human Services -- The Department of Human Services continues its tele-commuting policy. Staff, who have job duties conducive to home office application, have been identified and will be tele-commuting 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.

Metropolitan Council Environmental Services -- Over the past year, a specific program--"Walk the Talk"--was aimed at promoting commuting options to MCES employees. Some survey results from respondents were that 72 percent of employees drive alone to work with a average one-way commute of 14 miles taking 25 minutes. Dependence on the private automobile is not unusual in that most treatment plants are some distance from public transit routes. A corresponding follow-up action is to evaluate the use of registered vanpools using Metropolitan Council vehicles for travel between plants and downtown St. Paul. Among respondents to the same survey, 35 were willing to try the bus and 27 percent were willing to carpool. Employee awareness was increased during "Walk the Talk" week by publicity, commuting pledges, and drawings for prizes. A new challenge week is planned for 1998 to further educate employees on commuting programs and resources.

Minnesota State Colleges and Universities:

Inver Hills Community College -- We have public transportation right at our front door. Many students also car pool. This makes it easier for students or employees of the college to frequent our campus.

Red Wing / Winona Technical College -- The college has purchased two vans to allow larger groups to travel together whenever possible to reduce the number of vehicles used for travel. Interactive video and/or speakerphones are used for meetings between the Red Wing and Winona campuses to reduce travel.

Rochester Community & Technical College -- For the past two years, we have operated a shuttle bus service between our two locations free to students and staff. In addition, use of the area bus service, which makes two stops at each campus location per hour, and carpooling are encouraged. This alleviates some of our parking requirements while lessening the amount of vehicular pollutants.

Moorhead State University -- All faculty, staff and students of the University are encouraged to car pool to meetings that are held off campus. If possible, conference calling and virtual meetings are also supported. The Continuing Studies department utilizes interactive television (ITV) to better reach remote locations where classes are taught.

St. Cloud State University -- Last April, to reduce emissions, SCSU participated in "a leap in the right direction," a community wide Alternative Transportation Week program in conjunction with Earth Day. SCSU also subsidizes bus passes for students and faculty, including evening transportation in the campus area.

Department of Transportation: Mn/DOT has installed various traffic lanes set aside for vehicles with multiple passengers. (See "Electronics.") Mn/DOT has set various park and ride sites promoting car-pooling or busing. Mn/DOT has active Tele-commuting programs both in home based offices as well as a remote facility located in Cambridge, Minnesota. Mn/DOT continues to research and promote various commuting options for the Minneapolis/St. Paul metropolitan area such as light rail, bike trails and pedestrian paths.

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 or in the campus community, rather than commuting.

Parking and Transportation Facts:

- Total cars parked (fiscal year 94/95) 5,761,521
- Non contract parking: 10,501 spaces
- Carpool parking: 923 spaces
- Visitor parking: (fiscal year 94/95) 287 special events, 32,677 parking reservations
- Population served (fiscal year 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
- Bike route maps made available in September 1998

The University's Center for Transportation Studies (<http://www1.umn.edu/cts/>) provides education, research and outreach services in the area of transportation, thus helping people avoid air pollution and fuel consumption.

Board of Water & Soil Resources -- The agency developed telecommuting guidelines and instituted a pilot program in the fall of 1997. Participants submit quarterly evaluations and the management team will be making a decision as to whether or not to institute a permanent program early in 1999.

11. Education, Communications and Training

Department of Administration -- The Plant Management Division 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 conducted pollution prevention training including a September *Government Print Buyers and Design Workshop* for public agencies. This training was co-sponsored by Citizens for a Better Environment. Great Printers Project and Communication.Media. Resource Recovery has committed additional staff time toward this training in fiscal year 99. 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 on-site presentations and in response to agency requests for assistance. The Resource Recovery Office developed a new travel display, promoting environmental purchasing and sustainability concepts in state government. The Resource Recovery Office assisted with pollution prevention week planning, arranged for a pollution prevention message on state employee payroll advices and mailed and posted flyers in buildings about Pollution Prevention Week.

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, the Materials Management Division, 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.

The Materials Management Division, as a part of its Authority for Local Purchasing Training and Professional Technical Overview programs have trained approximately 486 state agency staff in pollution prevention and procurement of environmentally responsible products and services during fiscal year 98. The Materials Management Division will work with the Office of Environmental Assistance to provide additional environmentally responsible information through the purchasing training provided to state employees. The Materials Management Division and the Resource Recovery Office will update the environmentally responsible purchasing section of the Authority of Local Purchasing training manual that is provided to state employees. The Materials Management Division's Acquisition Management Specialists review each of their contracts to include environmentally responsible goods and services whenever practicable.

Department of Correction -- The Department of Corrections activities are as follows:

MCF-Sauk Centre - Annual training includes a review of our policy and procedures on materials management.

MCF-Oak Park Heights - Video conferencing is becoming a preferred means for convening statewide meetings - i.e. safety, policy & procedure drafting, etc.

MCF-Willow River/Moose Lake - Training is ongoing in the areas of hazardous waste. fiscal year 98 training included batteries and used lamps.

MCF-St. Cloud - Most all the vocational teachers on site have received pollution education through continued education and so has the health and safety officer. The cost is \$1,500 annually, resulting in our remaining current with new and existing legislation.

Office of Environmental Assistance -- Many programs within OEA and MnTAP fall under this category. 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 programs and activities described in the following paragraphs.

OEA provided a grant of \$40,000 to the Minnesota Chamber for Commerce for the Minnesota Waste Wise OEA program, a voluntary program designed to help businesses reduce waste. In addition, OEA awarded seven grants for pollution and waste prevention. (See Appendix A.)

OEA staff coordinate Interagency Pollution Prevention Advisory Team, developing agendas and facilitating quarterly meetings, recording minutes, and maintaining the mailing list. In fiscal year 98 IPPAT meetings featured procurement in state agencies and pollution prevention opportunities within buildings and grounds maintenance operations, as well as member agency presentations of their pollution prevention summary reports. The reports were consolidated and organized under 34 categories of pollution prevention programs and activities.

The Toxicity Reduction in Products and Waste Team, established during fiscal year 97, was reorganized during fiscal year 98 to become the Product Stewardship Team. The team is made up of staff from the OEA and the PCA. The goal is to coordinate, educate, and facilitate among state agencies, businesses, units of government and other interested parties, the stewardship of products, so as to reduce the volume and toxicity of the waste stream.

The OEA held a second annual series of regional meetings for the Minnesota Sustainable Communities Network (MnSCN) in June 1998. Over 250 individuals attended six meetings held in Cottage Grove, Duluth, Minneapolis, Montevideo, Moorhead, and Owatonna. The 1,400-member MnSCN, sponsored by the OEA, seeks to encourage networking, information exchange, and better access to assistance on sustainability. One important component of sustainability is pollution prevention.

OEA started a Green Building Workgroup to more comprehensively address this emerging topic. The group provides an organization for our efforts in recycled building materials, toxic reduction in building materials and demolition waste, construction and demolition waste recycling and resource efficient building. The first event offered is hosting a green building workshop titled, "Environmentally Smart Building: Leading by Example" on October 13th for state and local government officials. The office hopes to make green building more of a priority issue in the future.

The OEA, in partnership with the Minnesota Pollution Control Agency, Minnesota Technical Assistance Program, and the Department of Administration's Resource Recovery Office, promoted *National Pollution Prevention Week*, a week-long celebration of pollution prevention to raise the awareness of Minnesota's businesses and consumers. The national theme was "By working together, we can prevent pollution." The partner organizations distributed information packets designed for local government, schools, individuals and businesses. *Pollution Prevention Week 1998* was organized into seven days/seven ways to prevent pollution, with a distinct theme for each day. Governor's Award winners for Excellence in Pollution Prevention were recognized with a formal breakfast ceremony and keynote speaker, William McDonough. The Governor's Award winners were accorded large ad space in newspapers around the state. The OEA and PCA showed a series of videos focused on pollution prevention and reduction to staff and conducted a contest between agencies on individual pollution prevention accomplishments. The OEA also stressed a major expansion of the campaign to all media. It developed pollution prevention ads that aired nearly 50 times; offered video clips of local pollution prevention activities in press packets; and featured the pollution prevention theme at the state fair. The OEA worked with a major utility who agreed to run ads on energy conservation and publish pollution prevention case studies in its newsletters throughout September 21-27.

The OEA received a grant from the US EPA to develop outreach materials for mercury pollution prevention within the healthcare industry. The materials completed during fiscal year 1998 include a video that provides information and raises awareness about mercury in the environment and opportunities for staff in healthcare facilities to practice mercury pollution prevention; the handout *Mercury in Hospitals and Clinics*, which provides more detailed information about the sources of mercury in healthcare facilities; and a table top display for use in hospital cafeterias and at trade association conferences and workshops.

The OEA is developing a Design for the Environment (DfE) toolkit that will help Minnesota manufacturers integrate environmental attributes into products before they are produced. DfE considers the environmental impact for the entire life cycle of a product's life, including premanufacture, manufacture, distribution, use and end of life. Once a product is designed, its environmental attributes are largely fixed. The DfE Toolkit will allow manufacturers to address environmental impacts at the most fundamental level, product design.

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. Other outreach and education materials that have been developed as a result of OEA grants to others are:

"Retail Hardware-Best Practices for Waste Management" Guidebook and video

Based on a year of field work, a guide which documents environmental and cost savings from source reduction, reuse and recycling opportunities in average (11,000 sq. ft.) retail hardware stores. Implementing the actions described in this guide results in saving 74 tons of waste, 22,500 gallons of water, 70 pounds of hazardous waste and \$15,000 each year. Companion 18 minute video was developed in cooperation with ACE Hardware.

"Transport Packing: Cost Effective Strategies to Reduce, Reuse and Recycle in the Grocery Industry"

Based on a year of field work, a guide which documents environmental and cost savings from source reduction, reuse and recycling of transport packaging in average (62,000 sq. ft.) grocery stores. Implementing the actions described in this guide results in saving 400 tons of waste and \$70,000 each year.

"Waste Prevention Pays: Businesses Cut Costs by Cutting Waste" Video from EPA's Teleconference of the same name, produced in participation with OEA. This fast moving 2 hour video is designed to be viewed in segments or as a whole. The segments include case studies of waste sorts, records search, reducing food waste and tracking success, and evaluating environmental and economic results.

Metropolitan Airports Commission -- MAC employees are trained annually on Spill Prevention, Control and Countermeasures (SPCC) and Storm Water Pollution Prevention (SWPP) techniques, as required. There is a pollution prevention team that monitors the outfalls and detention ponds around the airport. These employees have continuous input on how to improve the site and/or operations from the "hands on experience" point of view. There is also annual hazardous material training where basic pollution prevention methods are addressed.

Metropolitan Council Environmental 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. A household water conservation brochure has been developed for printing and distribution.

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 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 by 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 training. The Hazardous Waste Division has received module 1 (of at least 3 modules) training only. The training has been put on hold due to the reorganization of MPCA. It is unclear when the training will be picked up. We also, continue to use fact sheets, mail inserts, and articles in newsletters to raise awareness among businesses. Contact Ray Bissonnette (651) 297-8588 or raymond.bissonnette@pca.state.mn.us

The MPCA salvage yard team conducted training to about 214 people this spring that fall into the categories 1, 3, 6, 7, 8, 16, 22, 30, 31, and 33. The training focused on best management and pollution prevention. The site visits will be continuing for at least the next year also concentrate on these issues. We also handle some of this over the telephone. Contact Gregg Gerhartz (218) 828-6069 or gregg.gerhartz@pca.state.mn.us

In 1999, MPCA will be implementing the guidelines for integrating pollution prevention strategies in the VIC and SF Programs. Implementation will include external outreach and internal training. Contact Cindy Hilmoe (651) 296-7783, cynthia.hilmoe@pca.state.mn.us or Dagmar Romano (651)296-7776, dagmar.romano@pca.state.mn.us

MPCA sponsored an informative session on Hydrogen Fuel Cells. Discussion centered around the topic of how fuel cells may eventually replace piston engines in automobiles which would make this the largest pollution prevention initiative of all time. Contact Daren Zigich (651) 282-5001 or daren.zigich@pca.state.mn.us

The Lake Superior Initiative (LSI) is an EPA funded program. Our mission is to reduce the impact of hazardous materials in the Lake Superior Basin and Lake Superior itself. We are non-regulatory and promote ourselves as purely hazardous waste technical assistance providers. The program is designed to provide this technical assistance to Very Small Quantity Generators located within the Lake Superior watershed.

We have developed a number of tools to help accomplish our mission statement. One of these tools is a technical assistance site visit. A member of the program team makes a site visit that includes identifying any hazardous waste produced, interpreting and explaining hazardous waste regulations and suggesting methods of handling and managing the hazardous wastes. Additionally, we provide presentations on hazardous waste rules compliance that includes identification, reduction, storage, disposal and record keeping of wastes.

One of our goals is to integrate pollution prevention and waste minimization into our site visits and presentations. For example, if we are dealing with an automotive repair shop we may suggest the use of an aqueous based parts cleaner or we may suggest recyclable sorbents verses sorbents that need to be disposed of as hazardous waste. We do both solicited and unsolicited site visits.

We are currently working on a formal audit checklist, creating a data base for the Basin, developing an advertising campaign, developing brochures and renewing local government and business contacts. Contact Chris Butler (218) 723-2358 or chris.butler@pca.state.mn.us

MPCA's Small Business Assistance Program (SBAP) is a non-regulatory program that provides education and training, site visits, and financial assistance to businesses. Pollution prevention is a major element in all of the SBAP activities. Contact Troy Johnson at (651) 296-7767 or troy.johnson@pca.state.mn.us

MPCA is currently developing a web pollution prevention web site. A draft site is being reviewed and edited as of 8/98. The site will contain many site specific projects developed with businesses. Contact Al Innes at (615) 296-7330 or al.innes@pca.state.mn.us

Wood finishing has been targeted by MPCA to receive education and training to reduce VOCs and usage of hazardous chemicals by providing alternatives. Contact Juline Holleran at (651) 296-7701 or juline.holleran@pca.state.mn.us

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 1997. 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.

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 - In a recent survey of 500 Minnesota home builders, most respondents indicated that the State energy code has been an effective tool in making Minnesota homes more energy efficient. In the past year, approximately 2,000 residential contractors, as well as architects and building officials, received training on the code using materials prepared by the Department. The Department has recently amended the Minnesota Energy code to be effective July 1999. The revised code will not only assure buildings will be more efficient, but also will have improved indoor air quality and improved structural durability.

Minnesota State Colleges and Universities:

Minnesota West Community & Technical College -- In the area of education, communications, and training the college Customized Training and Continuing Education Department is working with OSHA representatives on establishing training programs throughout Southwest Minnesota both for college employees and the private industry sectors in OSHA and pollution control requirements. The college requires that all employees have annual training in the following topic areas; blood borne pathogens, sexual violence/harassment, ADA, campus security, tornado awareness, bomb threats, affirmative action, right to know, AWAIR, and fire safety. In fiscal year 1999 it is the goal of the college to make all employees familiar with proper waste handling procedures along with the aforementioned annual training requirements. All policy statements are written by the administration of Minnesota West and reviewed by each faculty association before becoming a final policy.

Red Wing / Winona Technical College -- The college provides training to appropriate staff and students on safe handling and disposal of materials. Posters are displayed in each lab area as reminders.

Rochester Community & Technical College -- Ongoing for several years, copier or printer paper is recycled. This includes old forms, assignments, tests, etc. in addition to the usual "waste". Our campus Health & Safety Web site has a new look for 1999. Plans for the site include waste prevention tips to be changed at least monthly with the old tips being archived. Also training for employees will be provided over the web in hazardous

waste management. In addition, electronic communication is encouraged over paper communication wherever practical.

Bemidji State University -- The University continues to maintain a curriculum that offers a number of courses that address a wide range of environmental topics. During fiscal year 1998 the University adopted a requirement to include an environmental component in its Liberal Education curriculum. Beginning with the Fall 1998 Semester, "Focus on the Environment" will be one of seven areas in the University's Liberal Education Program. Students pursuing a bachelor's degree must take a minimum of one, three credit course from this area. 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. The University Environmental Task Force was granted permanent committee status and was renamed the Environmental Advisory Committee. The committee expanded its membership to include a representative from the student environmental club, Students for the Environment. The committee also drafted a revised environmental policy statement for the University, which was accepted by the cabinet. The Students for the Environment arranged for a Native American Environmental Issues forum which took place in April. The Environmental Advisory Committee will make recommendations to the University Cabinet on pertinent environmental issues and works to promote environmental awareness. Plans are pending to expand the committee's membership to provide more people with the opportunity to be involved and expand activities on campus. 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 our behavior and attitudes. Student exposure to and participation in, these activities, is expected to extend these benefits far beyond the campus, through their example and teachings, when they leave the University.

Moorhead State University -- The Department of Environmental Health and Safety continues to educate University department personnel on local state and federal pollution and hazardous waste standards and requirements. Compliance options are mandated and have become individual department policy. A new student organization, the MSU Environmentalists, have become involved on the Environmental Health and Safety committee and have initiated recycling and other programs of their own. The University also educates the student body on environmental issues through a variety of classes. Department of Environmental Health and Safety staff will attend numerous training sessions and conventions involving pollution control and hazardous waste topics. The information acquired will be used in staff training and informational workshops.

St. Cloud State University -- Recently our former Industrial Studies department was renamed to "Environmental and Technological Studies" to reflect increased pollution prevention emphasis.

Department of Transportation -- Mn/DOT conducts quarterly meetings with district/division waste management coordinator, see "32. Technical Support." Mn/DOT publishes several environmentally focused newsletters:

- *Waste Matters* (Nationwide distribution) -- a newsletter that focuses on waste management, pollution prevention and waste minimization issues.
- *Environmentally Speaking* -- a newsletter that focuses on storage tank compliance issues and maintenance site investigations.
- *Minnesota Roadsides* - A newsletter for roadside management

Mn/DOT produced a Bio-mound training video to aid in the construction of compost piles to treat petroleum-contaminated soil. See "26. Pesticides, Fertilizers" and "31. Tanks (storage)." Mn/DOT provides training to cities and counties on traffic management systems. See "12. Electronics."

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 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, covering the basics of pollution prevention. Approximately 2,000 employees are trained annually. The training is offered through classroom presentations and over the web. The web based training program is available on the Environmental Health and Safety home page (<http://www.dehs.umn.edu/slide1.htm>). The Waste Abatement Committee, made up of members from many key departments, coordinates pollution prevention projects at the University of Minnesota. The committee informs new employees through orientation programs and 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 University's Waste Abatement Committee is working towards a Pollution Prevention /Resource Conservation web page that will promote and provide instruction and information about self-audits and other pollution prevention /resource conservation techniques. Education of the current and future generations on the importance of pollution prevention and resource conservation is one of the most important thrusts in developing a sustainable world.

12. Electronics

Department of Administration — The Materials Management Division contracts provide Energy Star compliant computers and copiers. The Materials Management Division provides for the reuse of computers and other electronics through its Surplus Services program. Computers are provided to Minnesota K-12 schools via the joint efforts of the Materials Management Division's Surplus Services, MinnCorr and the Department of Children, Families and Learning. The Computers for Schools Program implemented by these three agencies accepts personal computers no longer needed by state agencies and private businesses and with the use of prison inmate labor, refurbishes them and distributes them throughout state K-12 schools. Surplus computers are also distributed to Minnesota township government offices from the Materials Management Division's Surplus Services, a 1997 Partnership Minnesota Cooperative Public Award for outstanding achievement. Executive Order 12999, which focuses on providing used computer equipment to public and private secondary education.

Department of Corrections — The Department of Corrections activities are as follows:

MCF-Oak Park Heights - Electronic toilets and showers are used where applicable for the dual purpose of saving energy through regulation of water and reduction in inmate vandalism.

MCF-St. Cloud - We recycle the following electronic devices: TV's, fluorescent bulbs/lights, two computerized radios. The cost is \$3,000 - \$4,000 annually, providing the benefits of compliance with legislation, reduced landfill costs and the amount needed to be disposed.

MCF-Shakopee - Outdated computers are sent to MCF-Stillwater.

Office of Environmental Assistance — In fiscal year 1998, the OEA continued its active engagement in state and federal environmental policy initiatives in the computers and electronics manufacturing sector. These efforts include Design for Environment (DfE), pollution prevention (P2), source reduction and end-of-life management strategies for computers and other electronic appliances. Ongoing efforts begun in fiscal year 1998, continuing in fiscal year 1999, include product stewardship discussions; direct involvement in drafting language for relaxed regulations for old CRTs managed for the purpose of recycling back into CRTs (rules now being promulgated by US EPA); market development efforts for material found in waste electronics; broader education for governments, businesses and residents on options for managing waste electronics; work to develop contract language with Department of Administration for purchase or lease of new computer equipment and for disposal of old equipment.

Department of Human Services -- Electronic equipment (computers, printers, calculators) are donated to schools. The Department of Human Services has donated its surplus computer equipment to agencies that have sustained equipment damage from the 1997 floods and the 1998 tornadoes. The Department of Human Services developed a "Brown Goods Disposal Policy". That policy outlines the procedures for disposal of obsolete or damaged electronic equipment. According to that policy, equipment that cannot be donated is picked up by an electronics recycling vendor for recycling and disposal.

Minnesota State Colleges and Universities:

Inver Hills Community College -- Electronics- Computers that are no longer in use are stored and either passed on to another institution, scrapped out or donated to be rebuilt and reused by someone else.

Red Wing / Winona Technical College -- Old computers are sold to the public through advertised sales. Scrap electronic equipment is recycled through vendors from the MnTAP list.

Rochester Community & Technical College -- For the past few years, outdated computers and peripherals have been sold to the community at a campus "yard sale". In addition to electronics, furniture and equipment which are no longer used are available for purchase. This enables us not to be required to pay for disposal and to receive a small amount of return on the items.

Bemidji State University -- The University has a continuing program for recycling obsolete and non-functioning electronic equipment. During fiscal year 1998 approximately 3.5 tons of non-functioning or obsolete electronic equipment and 48 computer monitors were recycled. The process involved recovery of recyclable metals and other materials. None of the material was landfilled. The recycling of electronic equipment will continue. Approximately \$50 was credited to the processing bill, for recovery of usable material. Processing of recycled material cost approximately \$850. Associated labor and shipping is estimated to be an additional \$400. Recovery and reuse of these materials prevents the introduction of the metals and other waste materials into the environment and reduces the demand for virgin material. An unquantified amount of energy and other resources are involved in the processing and handling of these materials.

Moorhead State University -- Electronics are updated as much as possible until the machine becomes obsolete. Unwanted electronic equipment is often sold or donated to local schools and organizations in order to keep those materials out of the landfill system. Departments are also encouraged to trade with others within the University itself or other public agencies. In some instances, the equipment is sold as scrap and is therefore recycled.

St. Cloud State University -- Our business office provides for the reuse of some computers, electronic equipment and other property through the surplus property resale program. Other electronic equipment (two shipments totaling about 8400# and costing us \$829.41) is recycled for somewhat offsetting commodity and precious metal credits. Styrofoam from computer, electronic, and other shipping cartons is recycled.

Department of Transportation -- An extensive evaluation of the highways traffic management system has occurred in the 1970's and 1980's. Several things were implemented as a result from these studies; the most noticeable to the traveling public are metered ramps. Mn/DOT conducts a traffic management and development program. This program includes evaluation of high occupancy vehicles (HOV) lanes and programs, incident management research, new product evaluation, traveler information research, simulation and modeling and traffic management studies. Traffic management program benefits have been identified from a number of sources.

- **Volume, Speed and Accidents** - Ramp metered systems have shown to increase freeway capacity, increase typical peak hour speeds as well as reduce the peak hour accident rate by about 40 percent or 1000 per year.
- **Fuel Consumption and Air Pollutants** - It is estimated that the reduction in peak hour accidents alone results in a savings in fuel consumption of 1.8 to 2.0 million gallons per year, and a reduction in air pollutant emissions of 2.8 to 3.1 million pounds per year.
- **Road User Cost Benefits** - Applying the cost of accidents (property damage, personal injury and fatal crashes) to the reduction in peak hour accidents, an estimated savings to road users of \$21.6 million per year on metro area freeways.

University of Minnesota -- The University of Minnesota statewide system collects all electronic equipment, redistributes what it can within the University, then pays to have the rest sent to a licensed recycler. The recycler redistributes a portion of the equipment (sells the equipment as is or as OEM components), recycles a portion (particularly scrap and 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. Recycling electronic material avoids heavy metal contamination of soil and groundwater.

13. Energy - Lighting

Department of Administration -- The Division of State Building Construction participates with utility companies to complete retrofitting of existing building lighting systems to achieve energy consumption reduction. The Division of State Building Construction specified automatic turn-off switches for all overhead lighting in their remodeled offices.

The Plant Management Division recycles incandescent bulbs to prevent solid waste disposal. The Plant Management Division coordinates building lighting retrofits with the Division of State Building Construction and Northern States Power Company to reduce energy consumption, thereby decreasing pollution levels. The Materials Management Division has established multi-year contracts for state agencies and for political subdivisions to purchase energy efficient, low mercury lamps. The Materials Management Division purchased solar-powered highway warning signs for Mn/DOT. The Travel Management Division minimizes lighting through the use of energy efficient lights.

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Sauk Center - Facility staff collected and stored fluorescent lamps at MCF-Sauk Centre prior to being picked up by a state approved recycle or hazardous waste contractor.

MCF-Lino Lakes - Approximately three years ago, MCF-LL received a lighting retrofit through the Northern States Power (NSP) Energy Conservation Program. The anticipated annual savings in electrical consumption is \$26,000.

MCF-Oak Park Heights - New clear lenses were installed in inmate rooms to increase foot-candles to meet American Correctional Association (ACA) requirements without the need to increase bulb wattage. Fluorescent bulbs are recycled through Recyclights.

MCF-Willow River/Moose Lake - Used lamps (fluorescent/high intensity discharge) are continuously collected. A shipment of approximately 2,000 used lamps was made in June 1998.

MCF-St. Cloud - The facility light system was replaced in 1993 via NSP conservation lighting retrofit program. The cost is \$252,000, with long term cost savings in energy conservation of about \$2,000/month after a seven-year payback.

MCF-Shakopee - The facility recycles fluorescent lamps through Recyclights (state contract).

Office of Environmental Assistance -- The OEA encourages energy conservation via its grants.

Department of Human Services -- Regional Treatment Centers continue to upgrade their lighting from incandescent lights to fluorescent lighting.

Metropolitan Council Environmental Services -- Several retrofits to energy-efficient fluorescent lamps or high intensity vapor lamps have taken place at MCES facilities. However, unlike incandescent lamps, these alternatives are considered as a special hazardous waste due to their mercury content. In 1997, over 6,000 lamps were recycled through Recyclights in Bloomington. Various fluorescent lamp change-out programs have been underway to replace older lamps with the new, thinner varieties (F30T8) that contain less mercury and are even more energy-efficient. Some facilities have installed motion sensor switches which turn off room lights if no motion is detected within 15 minutes.

Military Affairs -- The DMA, contracted for energy audits for facilities on 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 has 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.

Minnesota State Colleges and Universities:

Anoka Hennepin Technical College -- In recent remodeling projects old style light fixtures have been replaced with new electronic ballast fixtures and energy efficient T8 fluorescent bulbs.

Inver Hills Community College -- Energy Lighting- We have been through an energy retrofit program on campus. All of our light fixtures have electronic ballast's and many of the rooms are setup with switch sensors. We will be adding our parking lot light timers onto the energy management system. We will not see a pay back until the seventh year. Our bills show that we are consuming less energy.

North Hennepin Community College -- NSP retrofit of energy maintenance program, with fixtures and sensors. New energy-efficient lighting included in remodeling of ES and LB campus buildings. All used lamps are recycled through Recycle Lights, at a cost of \$900 per year.

Northland Community & Technical College -- Energy-Lighting applies to offices and classrooms campus-wide. All fluorescent tubes are recycled. This will continue into fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- The college has installed and continues to upgrade an energy management system to monitor HVAC systems to improve efficiencies. In 1996, all campus buildings were included in the Northern States Power Company energy retrofit program for state owned buildings. Lighting retrofits included both interior and exterior fixtures. The energy savings achieved will pay for the retrofits within 8.5 years for combined electric and natural gas savings. As part of the retrofit project, hot water heaters were installed to allow the boiler to be off-line during summer months and a thermo-ice storage unit was installed to allow the chiller to make ice during off-peak times from 11:00 p.m. -6:00 a.m. and then cool the building during the day from stored ice providing chilled water circulated through HVAC coils. Other major retrofits included replacing electric fryers, steamers, and grills to natural gas units. Boiler efficiencies were also gained by installing oxygen trim control to improve combustion efficiency and turbulators to reduce heat loss through flue.

Rochester Community & Technical College -- In fiscal year 1998, RCTC replaced approximately 400 magnetic ballasts with electronic ballasts and T8 bulbs.

Bemidji State University -- Exit lights in all academic buildings have been relamped with high efficiency LED lights, replacing incandescent bulbs formerly used. Reduced energy costs are estimated to save \$2500/yr as compared to use of incandescent bulbs, based on 1997 rates. It cost approximately \$5000 to replace all lights. These changes will contribute to benefits associated with reduced energy consumption such as less demand for new power plants, and reduced impact from acquiring and using fuels. Some environmental impact will result from the production and marketing of the lights.

Moorhead State University -- The University is currently undergoing a lighting retrofit in order to provide better lighting at a lower energy consumption rate. The overall cost of the project is approximately \$1.5 million and will be repaid over 9 ½ years with savings from reduced electrical consumption. MSU and revenue agencies will also receive approximately \$28,000 per year during the repayment period in the form of rebates. After 9 ½ years, annual savings should exceed \$250,000.

St. Cloud State University -- As part of a \$3 million energy conservation project with NSP, SCSU has shaved peak demand by about 25percent. Occupant sensors, LED exit lights, high efficiency fluorescent lights, and variable frequency motor drives also reduce consumption and pollution! So does the computerized energy management

system we've replaced and upgraded. Also, we recycle bulbs. And our trash is burned in Elk River to produce electricity.

Department of Transportation -- Mn/DOT is in the process of retrofitting existing buildings with energy efficient lighting.

University of Minnesota -- The University will change out older, less efficient lighting as remodeling of buildings is undertaken at all campuses and facilities. Energy is saved by switching from 40 watt lamps to 32 watt lamps coupled with more efficient electronic ballasts.

14. Energy - Production

Department of Administration -- The Division of State Building Construction specifies and incorporates, where possible, the use of energy efficient triple-glazed windows to save on energy loss and heat gain in facilities. The Materials Management Division created a contract for window mounted self-contained room air conditioners to emphasize performance, rather than design, establishing a minimum energy efficiency rating requirement for each size unit.

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Lino Lakes - The facility is under contract with NSP to provide "peak saving" on an on-call basis using the facility's diesel generator to pick up the facility's entire electrical load during utility peak. Annual cost savings are not available at this time.

MCF-Oak Park Heights - The institution changed from electric to gas appliances in the main kitchen and changed HVAC supply fan motors from constant to variable speed drives in an attempt to conserve energy over a long term period.

Office of Environmental Assistance -- The OEA is conducting life-cycle analysis research to document the resource conservation benefits (including avoided greenhouse gas emissions) associated with MSW source reduction, recycling, processing, and landfilling. A draft copy of the Phase 1 report, which investigates benefits from 1996 management, is currently available for review and comment. Copies can be obtained by calling Karen Harrington at 651-215-0233.

Metropolitan Council Environmental 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 percent. 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.

Significant energy savings were realized at the Metro WWTP - one of Northern States Power's largest single electric customers - in 1997 due to changes in wastewater handling technology. Air is added to wastewater tanks during secondary treatment to promote the growth of beneficial aerobic bacteria and other microorganisms which consume dissolved solids. Conversion of the air delivery system to fine bubble diffusion has doubled the oxygen transfer rate and decreased the power required for the air compressors. Projected power demand by 1999 will be 25 percent less and savings are anticipated at \$1.9 million per year with capital payback in 5 1/2 years. Overall power demand at the Plant will be 25 percent less than it was in 1996.

Pollution Control Agency -- Pollution Control Agency staff have prepared a paper on Renewable Energy: Biomass Power and Biofuels as Alternative Sustainable Energy Sources. Contact Jim Kolar (651) 297-8663 or jim.kolar@pca.state.mn.us

MPCA is working at a site that was a coal gasification facility in Minneapolis. Coal tar and oils were spilled on the soils or buried on the site. The coal tar contaminated soil and wastes could be burned as fuel at an NSP plant in place of coal, so that the polycyclic aromatic hydrocarbons (PAH) compounds in the soil could be destroyed while providing energy and conserving coal resources. About 20,000 cubic yards of soil and tens of thousands of gallons of tar and oil were treated in this way. Contact Jim Pennino (651) 296-7399 or james.pennino@pca.state.mn.us

Department of Public Service -- Solar/Wind Resources - The goal of this two year project was 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.

Wind Resource Assessment Program - The goal of this 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.

Tall Tower Study - This program conducted 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 was 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 will be incorporated in the next Wind Resource Assessment Program report to be published this summer.

Monitor and evaluate solar energy resources in Minnesota - The goal of the program is to provide information to the general public and to utilities and others interested in developing this resource.

Beginning this year, the DPS Renewable energy program will monitor and evaluate solar energy potential. Four schools were selected as the first sites for equipment to measure and record solar radiation, and the information will be incorporated into the schools' science curriculum. DPS will correlate the collected data with data currently collected by satellite-based monitors operated by the space agency NASA. The project may lead to future wide scale use of photovoltaic technology to provide electricity in Minnesota.

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 (CO₂), volatile organic compounds (VOC), particulates (PM-10), and nitrogen oxides (NO_x). The Department also recommended that no values be established for sulfur dioxide (SO₂) 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 CO₂. A group of utilities and other parties appealed the Commission's environmental-cost values, but the Minnesota Court of Appeals recently stayed the Commission Decision.

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 Northern States Power (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 percent 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, and
- residential central air conditioner efficiency projects for Northern States Power Company.

Environmental Benefits
Avoided Emissions due to Electric CIP
1995-1997

<u>Emission</u>	<u>lbs/k Wh</u>	Total 1995	Total 1996	Total 1997	Total 1998	Total
		<u>Tons</u>	<u>Tons</u>	<u>Tons</u>	<u>Tons</u>	<u>1995-1998</u>
SO2	0.0043	1,065	881	594	462	3,002
Nitrogen Oxides	0.0078	1,933	1,471	1,077	838	5,319
PM-10	0.0009	223	170	124	96	613
CO2	2.9	718,551	547,084	400,592	315,952	1,982,179

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, 1997 and projected kWh savings for 1998 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 Actual (kWh)	1998 Projected (kWh)
Interstate	8,347,380	6,014,737	4,842,000	4,643,000
MP	44,072,581	105,550,369	159,723,000	33,649,000
OTP	11,961,683	13,470,907	17,958,000	167,285,000
NSP	431,162,000	252,236,000	304,626,000	9,322,000
Total	495,543,644	377,299,013	487,149,000	214,898,000

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	7,739	8,170
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)				
		1996	1997	1998
	Tons/Mcf	Total Tons	Total Tons	Total Tons
SO2	2.85E-07	0.185	0.127	0.130
Nitrogen Oxides	4.49E-05	41.443	28.504	29.220
Volatile Organic Compounds	.34E-06	3.046	2.095	2.148
Total Solid Particulates	4.39E-06	3.969	2.730	2.798
CO2	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 Public 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 1998, the Department reviewed and commented on the resource plans of Northern States Power Company, Cooperative Power, Southern Minnesota Municipal Power Agency and Interstate Power. 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.

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.

Minnesota State Colleges and Universities:

Anoka Hennepin Technical College -- City water and sewer service has been installed at our Horticulture campus. The septic tanks were removed and the private well is used for irrigation.

Inver Hills Community College -- During the retrofit we have added three phase motors that use less energy to run and can be controlled by an energy efficient management system. We are developing policies on when and at what temperatures should the air conditioning be activated at.

Rochester Community & Technical College -- RCTC has four boiler rooms and a generator. At this time pollution prevention is achieved by keeping the equipment well-maintained.

Moorhead State University -- Last year NSP completed an energy retrofit project that has resulted into a reduction in natural gas consumption. That project cost in excess of \$1.4 million and is being paid for with energy savings. The payment period is ten years and is projected to result in future natural gas savings of \$150,000 per year. Moorhead State University has signed up to buy clean, renewable wind-generated electricity from Moorhead Public Service, the municipal serving the community. As a Charter member of the Capture The Wind Program, MSU is purchasing 83,000 kilowatt hours of electricity each month at the wind power rate. MSU's commitment has a substantial impact on the environment, reducing the amount of greenhouse gases being emitted into the air by an estimated 723,000 pounds each year. That is equivalent to planting 99 acres of trees each year or taking 72 cars off the road each year by reducing pollution. MSU has made a 10-year commitment to the Capture The Wind Program. At the end of 10 years, the University will have prevented an estimated 7.3 million pounds of green house gases from being emitted into the air, which is equivalent to planting 986 acres of trees and removing 723 cars from the road over that 10-year period.

Department of Transportation -- Mn/DOT has installed approximately 20 waste oil burners in several maintenance shops. The waste oil burners allow Mn/DOT to burn waste oil as a supplemental heat in our maintenance shops, which results in lower utility bills. Mn/DOT has changed from using nonburnable clay sorbent, which was landfilled, to a burnable sorbent. These burnable sorbents are now used as waste derived fuel for the generation of steam and electricity. Used oil sorbents were being landfilled. Now they are being burned to generate steam and electricity in an environmental sound waste to energy technology. *See also "22. Oil, Oil filters."*

15. Groundwater Wells

Department of Administration -- The Materials Management Division developed a contract to obtain the materials and labor for installation of dedicated groundwater monitoring systems at closed landfill facilities throughout the state.

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Faribault - Well head protection is being planned.

MCF-St. Cloud - The facility has one groundwater well not in use which needs to be capped. It will cost \$6,000 to cap the well, but the cap will seal off possible sources of contamination.

MCF-Red Wing - There are two wells at this facility. We pump approximately 12 million gallons per year. Monthly and quarterly samples are drawn and sent to the Minnesota Department of Health for analysis.

Department of Human Services -- Cambridge Regional Human Services Center has terminated its use of groundwater wells and is now supplies by the municipal water system. The last groundwater well has been turned over to the DNR.

Metropolitan Council Environmental 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 percent reduction in groundwater use and a cost savings of almost \$5,500 over four years for permit fees and electricity to operate pumps. This project received a MN GREAT! (Minnesota Government Reaching Environmental Achievements Together) award for its accomplishments in pollution prevention in 1995.

Pollution Control Agency -- The MPCA received twelve calls regarding issues related to the Class V (underground injection control) well program. These businesses are car washes and vehicle repair shops. Pollution prevention Information included using less hazardous soaps (i.e., biodegradable); no undercarriage or engine washing (reduces the hydrocarbons/VOCs going to the septic system; recycle wastewater; sweep versus washing

shop floors with water (reduce hydrocarbons or VOCs going to system). Contact Jackie Deneen (651) 296-5696 or jackie.deneen@pca.state.mn.us

MPCA's entire Closed Landfill Program is designed to promote pollution prevention through installing enhanced covers to reduce leachate/groundwater contamination generation and installing passive and active gas systems to reduce groundwater contamination. The program made it possible to keep many landfills out of the Superfund process. This made realization of remedial actions much more efficient and therefore reduced the production of paper waste (RI/FS reports, etc.) At a few of our landfills where ground water pump and treat systems were necessary we constructed systems which used gravity flow and wetlands for treatment as opposed to mechanical systems requiring large energy inputs. Contact Joe Julik (651) 296-8454 or joseph.julik@pca.state.mn.us

Minnesota State Colleges and Universities:

North Hennepin Community College -- One well is used by the campus underground sprinkler system for irrigation. Domestic water obtained through the City of Brooklyn Park.

Red Wing / Winona Technical College -- One well, which has required permits from MPCA and DNR, is located on the Winona main campus and is used for once through cooling for the condenser on the chiller units. In 1997, a study was conducted on possible ways to reduce well water consumption. It was determined that a variable frequent drive motor would reduce water consumption by approximately 40 percent during times when only one chiller was needed on line. The system uses on average around 4 million gallons of ground water per cooling season. The savings would average around one million gallons per year when installed.

Department of Transportation -- Numerous Mn/DOT maintenance facilities have underground monitoring wells installed in order to determine if aquifers have been impacted by petroleum releases. Additional underground monitoring wells will be installed as warranted by future environmental investigations. These monitoring wells provide data required in evaluating whether costly clean-up actions at a site are necessary.

16. Heavy Metals

Department of Corrections, The Department of Corrections activities are as follows:

MCF-Oak Park Heights -: Lead and mercury generated by health services x-rays and dental activities are recycled through Strickland. These are the only known heavy metals.

MCF-St. Cloud - We collect all mercury switches and lead base paint chips for proper disposal. The cost could be very large if a lead paint were removed. There is a \$500 annual cost for mercury removal. These practices reduce environmental pollution to waterways, landfills, etc.

MCF-Stillwater - Heavy metals are an ongoing end product from some areas of the facility. They are recycled or disposed of in accordance with EPA/MPCA regulations. Industry staff are continuously looking for ways to reduce their heavy metals residue, usually by using new coating products with no heavy metal content.

Office of Environmental Assistance -- During fiscal year 1998 OEA staff continued to work at the state and national level to develop policies and systems for managing mercury-containing wastes. MPCA and OEA staff coordinated the Listed Metals Advisory Council, an advisory group helping implement Minn. Stat. § 115A.9651. The statute requires users or manufacturers of specified products in Minnesota to file a product review report and annual status reports that describe the amount used and the technical reasons why mercury, lead, cadmium, or hexavalent chromium is justified in their formulations of inks, dyes, pigments, paints, or fungicides.

OEA staff have continued to work with representatives from the Minnesota healthcare community to distribute outreach materials promoting mercury pollution prevention within the healthcare sector and are working with county environmental administrators and educators to reach hospitals and clinics throughout Minnesota.

Department of Human Services -- Mercury from dental amalgams and silver from x-ray fixer recycled. Fluorescent light tubes recycled for mercury recovery.

Metropolitan Council Environmental Services -- The MCES' IWS is responsible for enforcing the pretreatment program for over 800 permitted industrial waste dischargers to the region-wide 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 METRO WWTP From INDUSTRIAL USERS

METAL	1981	1996	REDUCTION (Pounds)	REDUCTION (Percent)
Cadmium	6,666	434	6,232	93.5%
Chromium	65,752	7,692	58,060	88.3%
Copper	45,234	14,067	31,167	68.9%
Lead	6,603	4,526	2,077	31.4%
Nickel	44,646	6,775	37,871	84.8%
Zinc	71,199	11,695	59,504	82.9%
TOTAL	240,100	45,189	194,461	81.2%

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. To further the reduction in metals loading, small volume dischargers--whose aggregate pollution load may be significant--are being studied. A survey was conducted and meeting held with furniture strippers. Similar efforts will be aimed at printers and radiator repair shops.

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, specifically for evaluating amalgam separation equipment. The IWS drafted a chapter to be included in the Water Environment Federation (WEF) monograph entitled "Controlling Dental Facility Discharges to Wastewater" intended to assist in identifying and minimizing sources of mercury. Activities in 1997 included presentations to the dental assistants society, WEF technical conference, and a seminar with subject matter experts from the University of Illinois. Also in 1997, MCES joined the Minnesota Pollution Control Agency's (MPCA) Mercury Contamination Reduction Initiative, a cooperative effort of twenty-seven environmental and industry representatives to address mercury concerns and to arrive at practical solutions. The pollution prevention efforts regarding mercury have also included surveys of commercial laboratories, sampling companies, and environmental consultants. A survey of medical clinics was conducted and the results entered into a database. In its own operations, MCES has adopted a Mercury Reduction Strategy and formed an interdepartmental Mercury Core Team. Specific surveys have been conducted to identify all activities using mercury and inventory all equipment containing mercury for the purposes of reducing use and for replacement with mercury free equipment.

Metropolitan Mosquito Control District -- Planned activities for fiscal year 1998 include purchasing non-mercury thermometers for use by the District. The non-mercury thermometers will replace mercury thermometers used in the past. The goal of MMCD is to have zero generation of waste mercury in fiscal year 1998.

Military Affairs -- The DMA operates both medical and public affairs operations that utilize various types of photographic chemicals. The Guard disposes 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.

Pollution Control Agency -- Industries that produce heavy metals as a waste are being targeted by the Agency under the Environmental Performance Partnership Agreement (EnPPA). Under this agreement with EPA, we will be working with industry to reduce the amounts of waste they produce. Metal finishers are another target. MPCA along with the Metal Finishing Association of MN have become part of EPA's Common Sense Initiative

(CSI). CSI is a program developed to take an in depth look at the industry and find ways to reduce waste while keeping or creating a competitive edge. Andy Ronchak (651) 296-3107 or andrew.ronchak@pca.state.mn.us

Minnesota State Colleges and Universities:

North Hennepin Community College -- Hazardous waste disposal for instructional chemicals is handled through the University of Minnesota.

Rochester Community & Technical College -- Light bulbs which contained mercury are recycled. In the science labs, thermometers containing mercury have been phased out wherever possible.

Moorhead State University -- Silver is reclaimed from the photo development areas. Thermometers containing non-toxic liquids have replaced mercury thermometers.

St. Cloud State University -- Campus-wide, we are working to minimize mercury use and mercury thermometers. Waste photographic paper and chemicals are processed off-site to render them non-hazardous and recover silver. Several conventional darkrooms across campus including ones in Public Relations, the Learning Resources Center, and the Publications Office were removed and replaced with electronic imaging systems. This will further reduce our silver metal waste stream! Minor amounts of gold, silver, copper, and palladium are recovered from our electronic recycling program.

Department of Transportation -- Mn/DOT is researching various methods of removing leaded paint from steel structures (bridges, radio towers, and vehicles). Mn/DOT has tried wet blasting, dry blasting, hand and power tools, various chemical blasting and striping. Each method has various degrees of success in the areas of employee exposure, paint removal rate and the amount of waste generated. A report is available. Mn/DOT is researching ways to recycle lead-contaminated waste generated through various removal technologies. Mn/DOT sign shops have changed from inks containing heavy metals to heavy metal free inks. This eliminated a hazardous waste stream. See "28. Printing," See "23. Paints, Coatings, Stripping" and "29. Procurement, Materials Management."

University of Minnesota -- The University of Minnesota-Duluth is taking part in the Great Lakes '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. This proactive program of minimizing mercury on campus should result in a reduced potential for mercury discharge to the environment.

17. HVAC, Indoor Air Quality

Department of Administration -- The Division of State Building Construction specifies and administers proper flame spread materials for interior finishes to reduce or eliminate the spread of fire and toxic fumes. The Building Codes and Standards Division 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. The Building Codes and Standards Division enforces flame-spread rating for materials on interior finishes. The Plant Management Division replaced vacuum cleaners with higher filtration units for improved indoor air quality.

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Lino Lakes - Facility staff are in the process of updating building HVAC controls and equipment in order to provide a better climate for building occupants. Providing adequate ventilation rates has become a priority.

MCF-Faribault - The facility is in compliance with building codes.

MCF-Oak Park Heights - Fans and duct liners are cleaned and coated as part of an ongoing plan to encapsulate fiberglass ductliners on which microbial material has grown. Dryer exhaust vents were cleaned in seven units. Air quality was specifically tested in the mail room, Ind 3 and the welding area in the physical plant department shop in 1998. Cx 4 & MHU supply and return fan ducts serving inmate rooms were cleaned and coated in fiscal year 1998.

MCF-Shakopee - We have preventive maintenance programs to clean HVAC equipment. Filters are changed quarterly.

Department of Human Services -- DHS Central Office location at 444 Lafayette replaced its cooling towers. A roof mounter air system serving part of the building was upgraded to a heat-pump system.

Metropolitan Council Transit Operations -- Metro 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 for the Snelling Garage, in 1995, and at the South and Heywood Garages, in 1997. Metro Transit is currently studying the air quality in the body shop area of the Overhaul Base with the intent to control the dust in the area and improve the working conditions. When this project is completed, Metro Transit will focus on the saw dust produced in the carpenter shop at the Overhaul Base.

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

Minnesota State Colleges and Universities:

Inver Hills Community College -- Filters are changed every three months. There is an added cost to this but the real benefit is that it helps keep repairs down to our equipment.

North Hennepin Community College -- Indoor air quality tests were performed in 1997-1998 by Legend and Maxim. Modifications were made to 2 buildings (August 1998) to improve fresh air supply.

Northland Community & Technical College -- We performed air quality testing in the fall of 1997 and will continue as necessary.

Red Wing / Winona Technical College -- To improve air quality in our lab areas, HVAC improvements have been implemented and exhaust systems were installed. In our Auto Body lab, we have installed a vacuum system to capture sanding dust. Plans are underway to remove all ducts lined with fiberglass, replacing them with exterior lined ducts.

Rochester Community & Technical College -- New vacuums purchased for the janitorial staff do have HEPA filtering capability. We have an air quality monitoring apparatus with which we analyze air quality in different departments periodically.

Bemidji State University -- Several HEPA vacs will be purchased to use in routine cleaning operations. Costs associated with indoor air quality complaints should be reduced with improved indoor air quality. The HEPA vac manufacturing process does require the consumption of energy and other resources

Moorhead State University -- The University is continually moving towards non-perfumed, low VOC chemicals for cleaning purposes. Vacuums with HEPA filters have replaced traditional vacuums, reducing airborne particulate matter. Carpet installations are being reviewed by the Department of Environmental Health & Safety prior to work beginning, insuring low VOC adhesives compliance with the Carpet and rug Institutes indoor air quality emission guidelines.

St. Cloud State University -- SCSU purchased a carbon dioxide chart recorder to assist in ventilation troubleshooting. Custodial staff and HVAC personnel have become much more involved in complaint response. Many special forms are being used to procure and track occupant data. MacNeil Environmental Inc. (MEI) has performed three air sampling surveys expanding to four buildings. Water based paints and varnishes and strict new carpet emission controls are used extensively to limit VOC's.

Minnesota Department of Administration, Facilities Management Bureau "Building Air Quality" 5/95 guidelines for building owners and facility managers have been extensively studied and implemented. We have high efficiency vacuum cleaner bags and HVAC filters.

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. The University hosts an IAQ web page (<http://www.dehs.umn.edu/resources.html#Indoor>) and web links (<http://www.dehs.umn.edu/links.html#Indoor>) to disseminate information about various aspects of indoor air quality (design, health effects, contaminants, etc.) These measures will reduce IAQ complaints and improve worker health.

18. Ice Control, Sanding

Department of Administration -- The Materials Management Division and Mn/DOT will develop a new contract for deicing products. Four different types of deicer alternatives are being evaluated by Mn/DOT for use on Minnesota roads.

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Sauk Centre - The City of Sauk Centre does our sand/ice control.

MCF-Faribault - We have reduced our use of road salt 50 percent.

MCF-Oak Park Heights -- The groundskeepers switched to magnesium chloride ice preventer this year for use on walks. Sand is the principle product used in the units and on roadways when needed. Each spring the roads and parking lots are swept and the sand disposed of so it does not wash down the drains to the St. Croix.

MCF-Willow River/Moose Lake - All roads and sidewalks are sanded and salted to prevent slippery conditions. The front entrance uses a slab heat piping system which circulates condensate from steam lines to provide a slip-free walking surface.

MCF-St. Cloud - We use a no salt base product on sidewalks into the facility. The annual cost is \$5,000, with the benefit of reduced groundwater contamination, less grass kill, and less tracking of salt into the facility.

MCF-Red Wing - Roads are sanded as needed, using sodium chloride provided by the Minnesota Department of Transportation.

MCF-Shakopee - We use supplies from the Department of Transportation for parking lots. For ice melt control we purchase through Cargill (state contract).

Department of Human Services -- Potash is used by the Cambridge RHSC and Brainerd RHSC for ice control on sidewalks. The material provides grit for traction, melts the ice, is less damaging to carpet and floors 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, potassium acetate and the reduced usage of urea are avenues continuing to be 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 first deicing pad will be operational during the 1998-1999 snow season. There are currently three glycol recovery vehicles (GRV) being used to sweep up excess glycol that is not contained.

Metropolitan Council Transit Operations -- During the 1997-1998 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. This is still being investigated in conjunction with the removal of sand and grit from the bus wash area. Scheduled completion for the pilot project is in the spring of 1999.

Minnesota State Colleges and Universities:

Inver Hills Community College -- We use the best environmental safe snow melt that we can find. This product costs more but we have less tracking and less slipping because the product works so well.

North Hennepin Community College -- Sidewalks are cleared of snow and ice, and Ice Melt is applied as needed. No environmentally hazardous materials are used. Plowing contractor uses sand and salt mixture as needed; residue is swept up in Spring and disposed of as hazardous waste. The yearly cost is \$1,250 for sanding; \$1,300 for sweeping; and approximately \$10,000 for plowing.

Northland Community & Technical College -- We purchased a sanding truck for use in fiscal year 1999.

Red Wing / Winona Technical College -- Ice control for walkways is done by using a calcium chloride type ice melter. Sanding with sand/salt mixture is used on roadways and parking areas. Sanding is done only when needed and amounts vary depending on season.

Rochester Community & Technical College -- Ice melt is used on the sidewalks. A mixture of sand and salt is applied to roadways when needed.

Moorhead State University -- MSU continues to use sand only methods of ice control, with the residue being swept up in the spring of each year and recycled at the city compost site.

St. Cloud State University -- We have experimented with granite grit and found it too abrasive on our equipment. However, concrete sand works well. We minimize salt use by controlling salt content based on outside temperature. Also we stockpile little mix and keep it on a slab and covered with tarpaulins to control salt leeching.

Department of Transportation -- Mn/DOT conducts extensive research annually on ice control equipment, materials and methods. This research has shown some dramatic results. Mn/DOT has seen approximately a 25 percent reduction in salt applied per lane mile from the 1992/1993 to 1995/1996 snow and ice seasons. The largest success to date comes from the research into pre-wetting of salt or salt/sand mixes for snow and ice control. Pre-wetting methods have shown a 20 percent or more reduction in salt/sand usage. It is anticipated that with equipment innovations such as zero velocity spreader, greater use of road weather information, anti-icing and pre-wetting as well as operator training, the deicing chemical and abrasive use can be reduced even further. A report is available.

University of Minnesota -- The University's Facilities Management Grounds services group has started closing off unnecessary walk ways and stairs in the winter to reduce the snow removal and ice control efforts at the University. Less salt is used and therefore less salty runoff is generated. Less snow removal means fuel savings from snow removal machinery. Less labor, salt and fuel costs balanced against very little loss in utility or safety.

19. Laboratory

Department of Administration -- The Materials Management Division's hospital and medical supplies contract is consistently updated to introduce environmentally appropriate products. Recent additions include non-latex alternatives, such as gloves, syringes, bandages, and blood pressure cuffs. Sharps containers made from recycled plastic and non-pvc-produced tubing and IV bags are now available. The Materials Management Division's laboratory supplies contract, where scientifically possible, provides alternatives to laboratory media containing formaldehyde and heavy metals.

Department of Agriculture -- The Agronomy work unit has now purchased an ICP/MS which will help in further reduction of the heavy metals mercury waste stream that has been created by the use of the Kjeldhal apparatus. This equipment should be in operation by the beginning of 1999. The Microbiology work unit is still looking at alternatives for selenite cystine, which creates selenium, a known heavy metal hazardous waste stream.

Department of Corrections — The Department of Corrections activities are as follows:

MCF-Lino Lakes - All bio-hazardous material generated from the infirmary is collected for pickup by a qualified hazardous waste contractor for proper disposal on a monthly basis.

MCF-St. Cloud - All our biohazard laboratory products are collected and disposed of properly (incinerated), reducing the chances of health contamination. The annual cost is \$2,000.

MCF-Red Wing - There is only one laboratory in the school science room. The program has been eliminated.

MCF-Shakopee - Fixer from dental lab is recycled through Silver Pockets.

Metropolitan Council Environmental Services — MCES operates its own analytical laboratory at the Metro WWTP. Approximately 250,000 analyses are conducted annually in biological, physical, organic, and inorganic chemistry to support plant operations, industrial waste monitoring, water resources management, and research and development. Pollution prevention progress has resulted from the incorporation of microanalytical techniques, automation, solid phase extraction (SPE), and supercritical fluid extraction (SFE). For example, by utilizing the unique properties of carbon dioxide (CO₂) 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 a liter of solvent can now be performed with a few milliliters.

In 1997, the SFE system of PCB analysis was brought on-line. Reductions in the use of methylene chloride have been over 90 percent and reductions in the use of acetone have approached 75 percent. The SPE florasil cleanup technique has reduced the use of acetone and hexane and has eliminated the uses of mercury and ethyl ether altogether for that procedure. The SPE Empore™ disk will enable the Lab to eliminate methylene chloride from the PCB/Pesticide method. A constant goal is to reduce the use of organic solvents such as methylene chloride, hexane, and acetone to the lowest levels possible. The problem still remains, however, in obtaining the approval of new techniques from regulatory agencies for use as standard analytical methods. It is ironic that the U.S. EPA promotes pollution prevention yet retains old laboratory methods that generate hazardous waste!

Pollution Control Agency — The MPCA air and water labs have inventoried their chemicals and are evaluating them to determine which are no longer useable. This will also help when ordering new chemicals and exploring alternatives for chemicals currently used. Contact Joel Chirhart at (651) 296-7357 or joel.chirhart@pca.state.mn.us

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.

Minnesota State Colleges and Universities:

Inver Hills Community College -- The biology, chemistry and photography labs all produce hazardous waste as they perform their experiments. This waste is collected and stored in the appropriate containers and disposed of through a hazardous waste recycler. This is a very expensive process. We have been purchasing less hazardous chemicals to use for these types of experiments to help reduce the amounts of hazardous waste we produce.

North Hennepin Community College -- We hold a contract with MacNeil Environmental, with a yearly retainer of \$2,600.

Red Wing / Winona Technical College -- The college does not have any science laboratories where hazardous chemicals would be used. Laboratories for the college consist of shop areas for trade and industrial programs where students can gain hands on experience in their chosen technical program.

Rochester Community & Technical College -- It is a continuing process to design laboratory experiments using less toxic materials and less quantity of chemicals. One way we are achieving this is by performing microscale experiments in place of macroscale ones where practical. Whenever the same concept is able to be taught using these waste control procedures without detriment to the student's learning experience, these practices are applied.

Bemidji State University -- BSU is using microscale techniques in chemistry laboratories. The Chemistry Department is reviewing its laboratory classes and plans to incorporate new experiments and procedures that will reduce chemical waste generation. The project began in June 1998 and has been made possible by the OEA's intern program. The laboratory class review will continue and alternative experiments will be incorporated during the school year, resulting in reduced hazardous waste costs and reduced chemical costs. Equipment costs are somewhat higher for microscale experiments as compared to macroscale experiments. It reduces the volume of waste generated as compared to macroscale techniques.

Moorhead State University -- The amount and type of chemical wastes generated in laboratory settings continues to change significantly. Incorporating student recovery wastes in their experiment or neutralization producing sewerable product as allowed by regulatory agencies plans further reduction.

St. Cloud State University -- MacNeil Environmental Inc. (MEI) trained Biology and Chemistry staff and faculty last winter on pollution prevention and waste minimization as part of OSHA Laboratory Standard training. They have assisted the expansion of our hazardous waste disposal and recycling program. The Chemistry Safety Committee has been instrumental in fostering better lab user training and hazardous waste control.

Department of Transportation -- Mn/DOT materials laboratories are researching analytical procedures that eliminate various chemicals used during quality assurance testing of bituminous. Several successes have been experienced. Several Colorado vacuum extractors have been replaced with Ploog Centrifugal extractors. This change in equipment resulted in approximately 60 percent reduction of 1,1,1-trichloroethane used. We are conducting research to find a substitute chemical for 1,1,1-trichloroethane. The laboratory test results achieved by using Zecol, along with a few procedural changes, appears the same as when 1,1,1-trichloroethane is used. Further research to reduce the amount of chemicals used during quality assurance testing was conducted. Mn/DOT purchased 9 nuclear density machines for the materials laboratories statewide. These machines are hoped to drastically reduce or possibly eliminate the use 1,1,1-trichloroethane or Zecol. Several analytic furnaces have been purchased for testing. The results of these tests will be used to compare results from the current method using 1,1,1-Trichloroethane or Zecol. These furnaces are hoped to drastically reduce or possibly eliminate the use of 1,1,1-trichloroethane or Zecol. One Mn/DOT materials laboratory has substituted vinegar for Muriatic acid. Muriatic acid was used to clean air pots and other laboratory equipment. It was found that if the equipment were allowed to soak in vinegar overnight, the equipment would wipe clean the next day. The amount of analysis run by Mn/DOT's Material Laboratories, requiring the use of 1,1,1-trichloroethane, has decreased due to a change in quality assurance testing specifications. This has decreased the amount of 1,1,1-trichloroethane used.

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 (<http://www.dehs.umn.edu/guidebook>).

20. Materials Exchange

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

Department of Corrections -- The Department of Corrections activities are as follows:
MCF-Sauk Centre - We have Medical Safety Systems pick up our medical waste disposal.
MCF-Oak Park Heights - Rechargeable batteries are returned to the vendor per state contract.

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.

During fiscal year 1998 the materials exchange program received 482 calls and facilitated 182 materials exchanges. The weight of exchanges was 211 tons, with a success rate of 10 percent and a savings of \$330,000. The overall

statewide success rate was 32 percent. The contact numbers for the materials exchange programs in Minnesota are located in the 1998 Pollution Prevention Resources Manual.

Department of Human Services -- Brainerd RHSC's x-ray machine will be donated or sold for a nominal fee to another user.

Metropolitan Council Environmental 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, through 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.

Minnesota State Colleges and Universities:

Red Wing / Winona Technical College -- Materials exchange newsletters are read to determine if any materials listed could be used for college needs. So far, we have not been able to find a use for any surplus materials, or materials to dispose of through the materials exchange program.

St. Cloud State University -- Carpet and cardboard are recycled. So also are lard and cooking oil. A local farmer uses pigs to recycle left over food.

University of Minnesota -- The University Department of Environmental Health and Safety operates a chemical redistribution program (<http://134.84.147.126/recycle.html>) 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. The University Facilities Management Como Recycling Facility operates a redistribution program for unwanted computers, office furniture and equipment, and laboratory furniture and equipment. The target audience is the University community and non-profits.

21. Office Supplies

Department of Administration -- The Division of State Building Construction specifies the purchase of soy based inks for all writing instruments, if available. Also, the division purchases water soluble, non-toxic marking instruments, whenever available. The Materials Management Division's Central Stores and S&T Office Products sold 2226 recycled product line items, up from 1854 products in fiscal year 1997. The Risk Management Division continues to request soy-based ink for printing orders. This Division also recycles printer and typewriter toner cartridges. The InterTechnologies Group refills small spray bottles with glass/desk cleaner from gallon containers to avoid the use of aerosol cans. The InterTechnologies Group uses recycled laser printer cartridges.

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Oak Park Heights - Laser cartridges are recycled.

MCF-St. Cloud - We use Shred-It for recycling a large portion of our office products. The annual cost is \$8,400. The benefits are cost savings to landfill and products recycled for reuse.

MCF-Shakopee - We recycle office paper, shredded paper, aluminum, plastic, glass, cardboard, etc. per our policy.

Office of Environmental Assistance -- The OEA internally has purchased alkaline rechargeable dry cell batteries for general office use. 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 whenever possible. Printer toner cartridges are returned to the manufacturer for remanufacturing. Recycled paper is used in the copy machines, whenever possible. MAC employees separate recyclable paper from non-recyclable paper. The private cleaning companies are required to keep these two materials separate. Dumpsters are supplied to aid in this process.

Metropolitan Council Environmental Services -- Office supplies--particularly paper goods--are frequently purchased with recycled and post-consumer recycled content material. Laser toner cartridges for personal computer printers are collected and sent to a vendor (new contract is being awarded) where they are prepared for re-use at the MCES.

Metropolitan Mosquito Control District -- The District specifies paper with a minimum 25 percent 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 printer cartridges are collected and returned to office supply vendors for reconditioning when ever possible.

Minnesota State Colleges and Universities:

North Hennepin Community College -- We recycle as much as possible: paper, cans, glass, plastic, cardboard. This is covered by the trash hauling contract, the actual cost of which depends on the amount hauled. We also use Security Shred-It to destroy (for recycle use) confidential data at an annual cost of \$3,600.

Northland Community & Technical College -- Office Supplies are used throughout our many offices. We recycle as much paper as possible and stress the purchase of recycled products. This will continue for fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- Office supplies are purchased off state contracts or obtained through surplus properties whenever possible. The business office provides a central store for all college office supplies. Any supplies needed are requisitioned by staff.

Rochester Community & Technical College -- All printer toner cartridges are recycled. As stated before, electronic communication instead of paper communication is being strongly encouraged. All paper is encouraged to be recycled instead of trashed.

Bemidji State University --The science departments eliminated mass mailings of campus information to the building and instead, installed bulletin board strips for the posting of single copies of the information in a common area. Attempts will be made to improve the mail reduction program and expand to other areas of campus, thus reducing printing costs by 4 cents per sheet or about \$2.00 per mailing. The bulletin board strips cost \$14.00 each. Their use will result in reduced demand for paper and reduced waste generation. Some environmental impact will result from the production and marketing of the bulletin boards.

Pencils with a barrels made from 100 percent recycled newspaper fiber and cardboard - 60 percent post-consumer waste are available as an alternative to wood barrel pencils, through our Central Stores and Inventory Center. The recycled product pencils will be the standard type supplied with wood barrel pencils provided only when specifically requested. These pencils are approximately 12 cents per box more than wood pencils. Their use reduces the use of landfills and the environmental costs associated with the wood pencil manufacturing process, including logging. Some environmental impact will result from the production and marketing of the pencils.

Moorhead State University -- The University has an agreement to recycle all printer and toner cartridges. Recycling of paper is encouraged throughout all of the departments. Departments have been encouraged to purchase on a "need only" basis reducing stock surplus and storage time. Departments are also encouraged to purchase items that can be recycled or are manufactured from recycled products.

St. Cloud State University -- SCSU extensively uses paper with 50 percent recycled content and 20 percent post-consumer fiber content. Office and computer paper is recycled. Recycled photocopier toner cartridges are purchased. Ink and toner cartridges are recycled. We encourage using e mail to post surplus and obsolete supplies for use in other departments.

Board of Water & Soil Resources -- All offices participate in recycling newsprint, office waste paper, aluminum cans, batteries and typewriter/printer cartridges.

22. Oil, Oil Filters

Department of Administration -- A team comprised of Materials Management Division, Travel Management Division, State Patrol, Department of Natural Resources, and Mn/DOT staff developed a contract for oil change and lubrication for government vehicles that offers re-refined oil and new oil at the same price. The Materials Management Division has a contract for bulk re-refined motor oil. The Travel Management Division oil filters are drained for 24 hours so as to qualify for solid as opposed to hazardous waste. Re-refined oil is also used for oil-changes.

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Sauk Centre - Used oil is collected and stored at MCF-Sauk Centre prior to being picked up by a state approved recycle or hazardous waste contractor.

MCF-Lino Lakes - Both waste oil and filters are picked up by a qualified hazardous waste contractor for disposal and recycling.

MCF-Oak Park Heights - Approximately 50 gal/year of used oil and 25 gal. of recyclable refrigerant oil are picked up and recycled by a local vendor. He will also recycle grounds equipment oil filters. Automotive oil filters recycled by Rick's 36.

MCF-Willow River/Moose Lake - Oil and oil filters have been collected since the onset of the facility. Oil is collected in 55 gallon drums as are oil filters. The oil is pumped from the drums and burned for energy recovery. This service is free. Oil filters have a cost of \$75 per 55 gallon drum for disposal. 175 gallons of oil were disposed of in 1997. Two hundred gallons of oil have been disposed of in 1998. Four hundred pounds of oil filters were disposed of in 1997.

MCF-St. Cloud - Our oil and oil filters are collected for recycling with Eastside Oil Company in St. Cloud, MN. The annual cost is \$2,000, and oil is not disposed of in landfill and there is no ground contamination.

MCF-Red Wing - Oil and oil filters are all recycled.

MCF-Shakopee - We recycle oil and oil filters through Rapid Oil Change, Loe's Oil, and First Recovery.

MCF-Stillwater - Oil and oil filters are ongoing use items within some areas of the facility and are recycled or disposed of in accordance with EPA/MPCA regulations. Most vehicles utilizing oil and oil filters are serviced at a retail service center.

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. Moose Lake SOS has contracted out its oil changes, thus eliminating that waste stream.

Metropolitan Airports Commission -- MAC recognizes that there is a need to collect used oil from non-business tenants at the Reliever airports. Used oil is collected from the MAC specific sites. The used oil is recycled and/or re-refined, reducing the chances of possible ground water and soil contamination from the oil being "dumped out back" or thrown into the dumpster. Oil filters are drained, crushed and recycled by an approved facility.

Metropolitan Council Environmental 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 eventually recycled with scrap iron and steel by a licensed hauler such as OSI Environmental, Inc. In 1997, over 6,000 gallons of used oil were transported and approximately 2,000 pounds of used oil filters were recycled.

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

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. MMCD 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 procedure has been in effect for almost 3 years. During this time MMCD has not experienced any fleet problems related to the extended mileage program. MMCD 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 sees 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.

DMA maintenance activities generate 15,000 gallons/yr 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. The oil burner was moved to a different building in 1998.

Pollution Control Agency -- The MPCA has written a paper titled Petroleum Contaminated Soil. Contact Jim Kolar (651) 297-8663 or jim.kolar@pca.state.mn.us

Department of Public Service -- See batteries.

Minnesota State Colleges and Universities:

Inver Hills Community College -- Our automotive fleet (one car, van and 4 ambulances) are serviced at Central Motor Pool. Our lawn equipment oil is collected and saved in barrels and brought to a service station for disposal and recycled. The oil filters are collected and drained and disposed of.

North Hennepin Community College -- We store used oil and filters in approved containers, and recycle them through a local recycling vendor. The annual cost is \$300.

Northland Community & Technical College -- Oil, Oil Filters are used in the automotive shop and at aviation. These items are recycled through Safety Kleen Services and this practice will continue for fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- Oil and oil filters are recycled following all current regulations. Oil changes on customer vehicles in our Auto Mechanics technician program are kept to a minimum to reduce amount of oil and oil filters collected.

Rochester Community & Technical College -- All oil and oil filters are recycled.

Bemidji State University -- 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. This practice reduces contractors heating fuel costs and the potential for oil and toxic metal pollution. In addition, it reduces negative environmental impacts associated with producing fuel that would otherwise be used to heat the contractor's premises. Energy and other resources will be consumed during the production and use of the equipment and supplies used to manage the oil recycling activities.

Moorhead State University -- All used oil and oil filters are recycled through a recovery vendor.

St. Cloud State University -- Oil filters are drained for over 24 hours to qualify as special hazardous waste. All oil is collected and recycled.

Department of Transportation -- Mn/DOT has installed approximately 20 waste oil burners in several maintenance shops. The waste oil burners allow Mn/DOT to burn waste oil as a supplemental heat in our maintenance shops. This has resulted in lower utility bills. Mn/DOT has changed from using nonburnable clay sorbent, which was landfilled, to a burnable sorbent. These burnable sorbents are now used as waste derived fuel for the generation of steam and electricity. Used oil sorbents were being landfilled. Now they are being burned to generate steam and electricity in a more environmental sound waste to energy technology. See "14. Energy - Production." Mn/DOT recycles all oil filters.

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

23. Paints, Coatings, Stripping

Department of Administration -- The Materials Management Division specifies no-lead paint for traffic marking and equipment paint. The Plant Management Division canceled the Toluene contract because Mn/DOT has significantly reduced the amount of alkyd paint used on road surfaces. We make solvent-free paint available to state agencies and political subdivisions through its state contract. The Plant Management Division tests the use of latex-based duct sealant compounds. We also use nut chips with shot peening equipment to remove paint and gasket materials.

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Sauk Centre - Facility staff collected and stored at MCF-Sauk Centre prior to being picked up by a state approved recycle or hazardous waste contractor.

MCF-Faribault - During fiscal year 1998 we purchased a solvent reclaimer to recycle waste paint thinner in auto refurbishing shop.

MCF-Oak Park Heights - Latex paint products are used where possible. Oil based paints are used only in those locations with heavy use. Paint residue and waste is disposed of through the institution's hazardous waste hauler and incinerated by the hazardous waste vendor. MCF-OPH is a VSQG, generating only about 100 gallons of paint waste each year.

MCF-Willow River/Moose Lake - Paints/solvents are collected and removed from the facility by an MPCA licensed hazardous waste hauler. The facility averages about 15-20 gallons of paint and waste solvent monthly. This average is consistent. Paint booth sludge is collected and removed by the same hazardous waste hauler. This waste averages 50 gallons per year and the average is not expected to fluctuate.

MCF-St. Cloud - Painting, coating, and stripping sludge are collected/reduced of disposal properly at a cost of \$2,000 annually. This keeps hazardous products out of the landfill and ditches.

MCF-Red Wing - The facility has a limited quantity.

MCF-Shakopee - We recycle paint through Aptus.

MCF-Stillwater - Paints, coating, and stripping are ongoing use items within some areas of the facility. Waste material is recycled or disposed of in accordance with EPA/MPCA regulations.

Department of Human Services -- Moose Lake SOS has eliminated all of its oil based paint and has substituted water based coatings.

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. The Paint Department also uses paint that has been inadvertently left by contractors after construction is complete. The painters will use viable paint as a base coat thus reducing the amounts of paint disposed of as a hazardous waste.

Metropolitan Council Environmental Services -- The Paint Shop at the Metro WWTP continues in its relevant on-going pollution prevention activities such as direct-to-metal, water-based paints 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, eliminating one hazardous waste stream entirely.

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 from the MN GREAT! 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 (8) 25 lb. bags/hour compared with sodium bicarbonate which used four (4) 25 lb. 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 sewerred. This should reduce the waste stream from four tons per year to 400 pounds per year.

A soda blasting treatment unit has been installed at the CSMS in Camp Ripley in 1998. A new paint booth was also constructed 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.

Minnesota State Colleges and Universities:

Inver Hills Community College -- Paints, coatings, stripping- We purchase Glidden Lifemaster 2000, which is an environmentally safe paint. It is virtually odor free and it is not an oil base paint. Thinners are filtered and reused.

North Hennepin Community College -- We use latex paint only; no oil-base paint. Opened paint is stored in approved containers and, as needed, disposed of through Hennepin County.,

Northland Community & Technical College -- Paints, Coatings, Stripping are used in the automotive shop and at aviation. These items are recycled through Safety Kleen Services and this practice will continue for fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- Latex paints are used whenever possible by our maintenance department instead of oil base paint products and old paint is often used as a primer rather than purchasing primer paint. The auto body technician program is using automotive paint with lower VOC ratings. Band and String Instrument repair technician and Carpentry programs use strippers and refinishing products. Safer products are considered when possible. All products are stored, used, and disposed of following regulatory requirements.

Rochester Community & Technical College -- Left over paint is kept to be used on small jobs. Empty paint cans are disposed of through our hazardous waste program.

Bemidji State University -- Electrostatic paint spraying equipment was purchased for use by maintenance personnel. We expect that there will be a reduction in the amount of paint used and the associated costs. The equipment cost approximately \$3400. This equipment greatly increases the efficiency of spray painting operations, resulting in the use of less paint and reductions in the associated VOC and paint waste generation.

Moorhead State University -- MSU has eliminated the use of all lead-based paints in traffic marking and equipment paint. MSU uses latex paints almost exclusively and continues to research and experiment with other water-based products.

St. Cloud State University -- SCSU has converted all possible coatings to water based products to limit VOCs including paint, varnish, and traffic stripping paints.

Department of Transportation -- Several Mn/DOT districts are using 110-gallon returnable paint totes instead of 55-gallon single use drums. This eliminated waste 55-gallon paint drums. Several Mn/DOT districts have switched entirely to a heavy-metal-free latex pavement marking/stripping paint. This eliminated an entire hazardous waste stream (lead, chrome, and toluene) generated during pavement marking and stripping operations in these districts. See "16. Heavy metals." Mn/DOT has replaced several "bleeding" paint guns with "airless" paint guns located on the road stripping trucks. The change in equipment results in a reduction of the amount of toluene used for cleaning/flushing by approximately 50 percent. Mn/DOT then reuses the used toluene, by one of two methods, which further reduces the amount of toluene purchased. **Method 1:** The paint solids in the used toluene are settled out in the bottom of a 55-gallon drum, creating two distinct layers. The top layer of toluene is then taken off and reused for cleaning or thinning and the bottom layer is managed as a hazardous waste. **Method 2:** The used toluene that has not separated into two layers and was generated by flushing/ cleaning the paint lines, can be reused as a thinner when thinning of solvent based stripping paint is needed. Mn/DOT has purchased a new parking lot pavement stripping machine that is capable of utilizing latex paint, thus eliminating the use of toluene as a cleaning solvent. Mn/DOT has purchased a new road stripping truck and is retrofitting older road stripping trucks to be capable of utilizing latex paint thus eliminating the use of toluene. All vehicles purchased by Mn/DOT are specified to have heavy metal free coatings/paints. See "16. Heavy metals."

University of Minnesota -- The University of Minnesota is currently segregating and evaluating its waste latex and oil-based paint streams -- in anticipation of sending the latex paint for latex recovery or paint reformulation.

24. Parts Cleaning

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

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Sauk Centre - Parts cleaning solvents are collected and stored at MCF-Sauk Centre prior to being picked up by a state approved recycle or hazardous waste contractor.

MCF-Lino Lakes - Parts cleaning solvents are picked up by a qualified hazardous waste contractor for disposal and recycling.

MCF-Faribault - We have changed solvent use for parts cleaning in maintenance. We now use a non-toxic, non-corrosive, non-polluting type.

MCF-Oak Park Heights - A recyclable parts cleaning process is used.

MCF-Willow River/Moose Lake - The facility has four parts cleaners and one spray gun cleaner. Currently the solvent which is being used is recycled to provide an environmental benefit. During the next year the facility will be researching new parts washers which will provide the same results and provide an economic, as well as an environmental benefit.

MCF-St. Cloud - Our parts washer uses a small amount of product, about 30 gallons/year, and it is disposed of as a hazardous waste. The cost is \$200 annually, with the benefit of compliance with legislation so as to eliminate groundwater and soil contamination.

MCF-Red Wing - Parts cleaning solvents are stored for recycling.

MCF-Shakopee - We recycle through Safety-Kleen Corp.

MCF-Stillwater - Parts cleaning is an ongoing process in some areas of the facility. Waste material is recycled or disposed of in accordance with EPA/MPCA regulations.

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

Metropolitan Airports Commission -- This program continues to be managed by a solvent part washing vendor. However, MAC Maintenance is continually using more environmentally friendly solvents and plan to incorporate more solvent free parts washers (with recirculating filters) into the system. Maintenance personnel would eventually like to eliminate solvent parts washers from the maintenance shop.

Military Affairs -- The Department of Military Affairs (DMA) continues to use 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 (40 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 (20 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 been utilized by various other maintenance activities to replace solvents being used also.

Metropolitan Council Environmental Services -- There are over two dozen parts washers at MCES facilities. The solvent is petroleum-based and is serviced by Safety-Kleen, Inc. 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. However, 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.

Minnesota State Colleges and Universities:

Northland Community & Technical College -- Parts Cleaning applies to the automotive shop and aviation. The solution is recycled through Safety Kleen Services and this practice will continue for fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- Parts cleaning is done using a Safety Kleen parts cleaning solution that requires only two-three changes per year compared to six in the past.

Bemidji State University -- A water based parts cleaning solvent with a 0 percent volatiles component is being tried on a trial basis in our maintenance area. The cost is \$200 per 15 lbs of solid concentrate. The benefit will be reduced air pollution.

Moorhead State University -- The University continues to use a non-chlorinated, non-fluorinated, non-flammable parts cleaning solution.

St. Cloud State University -- We are experimenting with more environmentally friendly brake cleaner and parts washer fluids in our auto repair shop. Our Art Department and print shop use a solvent recycling service which provides them pollution prevention "WE CARE" ® training.

Department of Transportation -- Mn/DOT is actively researching substitute products/systems to reduce (by 90% or more) the amount of hazardous waste generated through parts washing in maintenance shops. Both petroleum and aqueous solvents and systems are being tested and evaluated. The systems currently being used/tested are: petroleum solvent with a separate filtration system, petroleum solvent with a detachable filter, aqueous solvent with continuous in-line filtering and a heated pressurized aqueous system (dishwasher type). More than 24 different solvents, soaps and systems are being evaluated. See "29. Procurement, Materials management."

University of Minnesota -- 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. U of MN - Duluth Facilities Management switched from a solvent recycling service to a product (ZEP Z-140) 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. They have been able to eliminate 120 gallons of solvent waste per year.

25. 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 result 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.

Minnesota State Colleges and Universities:

Red Wing / Winona Technical College -- Personal care products are used in the Cosmetology department. Students are taught proper usage and application methods. Material safety data sheets are kept on all products used. Past dated products are disposed of properly. Most can be sewerred after receiving approval from our local wastewater official.

26. Pesticides, Fertilizers

Department of Administration -- The Plant Management Division follows pollution prevention practices during the planting and care of landscaping by Grounds Services. The Plant Management Division has a representative participate on a Public Land Task Force addressing Integrated Pest Management Practices. The Materials Management Division has undertaken an extensive process change in the area of pest control services by moving to an Integrated Pest Management (IPM) process. IPM is a process for achieving long-term, environmentally sound pest suppression and prevention through the use of a wide variety of technological and management practices.

Department of Agriculture -- The Agronomy Services Division has ongoing projects that are instrumental in educating rural, suburban and urban Minnesota in the proper best management practices (BMP) of pesticide use and disposal. Enclosed is a copy of the Lake Harriet Watershed Project which deals with the proper use of pesticides on lawns within the Lake Harriet watershed district and the results obtained by the use of BMP's. The ongoing empty pesticide container and pesticide waste programs within the Agronomy Division have educated many rural farmers on the best use and proper disposal of pesticides. The Sustainable Agriculture program is now in its tenth year of existence and is a good example of how farmers can learn alternative practices to pesticide applications by receiving grants to help them in becoming a sustainable farm. A copy of this years Greenbook can be obtained from the Minnesota Department Of Agriculture.

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Faribault - We use no pesticides in grounds maintenance. Fertilizers are applied only as need is indicated by soil testing.

MCF-Oak Park Heights - Only the amount needed and that can be used within the season is purchased to eliminate need to store between seasons and possible pollution through spillage.

MCF-St. Cloud - Our pesticide and fertilizers are applied only by trained personnel. The annual cost is \$100. The benefit is that trained personnel use less product and this also minimizes soil/water contamination.

MCF-Red Wing - We use pesticides as directed. We apply all materials on lawns.

MCF-Shakopee - We don't use pesticides. Fertilizers are used as purchased.

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 manufacturer 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 -- MMCD 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 MMCD for use in controlling pest insects do not display any "hazardous" characteristics. By selecting control materials that rate high in environmental compatibility, MMCD has reduced the risk of environmental pollution and has eliminated significant costs associated with storing, transporting and disposing of hazardous wastes. MMCD is currently testing Lagenex, a promising new biological mosquito control product based upon the fungal mosquito parasite Lagenidium. Large scale tests will begin in late August 1998. Lagenidium is totally specific to mosquitoes meaning that it will not harm non-pest organisms in the environment. Lagenidium contains no toxic chemicals, preservatives or inert ingredients.

Minnesota State Colleges and Universities:

Inver Hills Community College -- We use a product called confront which I have been told is the safest herbicide on the market these days. We only apply one application. We also use Roundup Pro. Our groundskeeper carries a herbicide license and attends many classes on pesticides and herbicides and their applications.

North Hennepin Community College -- All herbicides, pesticides, and fertilizer are applied by licensed contractors. Annual costs are \$1,800 for herbicide; \$1,200 for pesticide; \$4,500 for fertilizer.

Red Wing / Winona Technical College -- The college has reduced applications of pesticides and fertilizers from two to one per year, except for the lawn area by the buildings. This area is currently being done by a contractor who is a licensed applicator. When the remaining stock of product is used up we plan to contract all of this work out to a licensed professional.

Rochester Community & Technical College -- Pesticides, herbicides, and fertilizers are applied by a licensed operator using accepted standard procedures.

Moorhead State University -- MSU continues to use the best environmentally safe chemicals possible for pesticide application. These yield residues posing shorter active residence times in the environment. Products are measured accurately and diluted according to manufacturer's instructions.

Department of Transportation -- Mn/DOT uses tons of animal manure annually as a nutrient source in the compost treatment of petroleum contaminated soils. After these soils have been treated, the soil is used as topsoil amendment along Mn/DOT right-of-way. See "31. Tanks." Mn/DOT is researching biological control of various weeds as an alternative to herbicides used on roadside vegetation. Flea beetles are being used to control leafy spurge in the twin cities metropolitan area. Biological control will hopefully reduce or eliminate the use of some herbicides. Mn/DOT is researching biological control of rodents as an alternative to pesticides used along roadsides. American Kestrel nest boxes have been installed on Mn/DOT right of ways in the twin cities metropolitan area. The purpose is to provide habitat and encourage the American Kestrel "Sparrow Hawk" to nest along the right of way. Part of the Kestrels diet is meadow voles. Meadow voles create numerous problems with roadside vegetation. Poisonous rodent baits have been used in the past with various successes. These nesting boxes will hopefully reduce or eliminate the use of such poisons.

University of Minnesota -- The University of Minnesota is a world leader in agriculture research and education which includes extensive efforts in the development of and safe and environment-friendly use of pesticides and fertilizers. The University's College of Agriculture, Food and Environmental Sciences (<http://www.agri.umn.edu/>), Extension Services (<http://www.extension.umn.edu/>) and Biosystems and Agricultural Engineering (<http://www.bae.umn.edu/>) are major providers of training, research and outreach services to Minnesota and the world in this area.

27. 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 in Appendix A) and the *Minnesota Department of Administration Priorities for Environmental Materials Management* (Exhibit 2 in Appendix A). The Resource Recovery Office in the Plant Management Division 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. The Plant Management Division's Mission Statement encompasses pollution prevention and other environmental concepts (see Exhibit 3 in Appendix A). The Plant Management Division 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 prevention of pollution, promotion and education, and integration of environmental stewardship into all workplaces and services.

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

Department of Corrections - The Department of Corrections policies are as follows:

MCF-Sauk Centre - Pollution prevention is covered by our Policy & Procedure Statement 1106 & 1107

MCF-Oak Park Heights - Our Policy & Procedures R-21/Recycling is attached.

MCF-St. Cloud - We currently have a Hazardous Waste Control and Pollution Prevention Plan Operating Procedure to make facility employees aware of environmental concerns and proper controls.

MCF-Shakopee - Our facility has a policy on recycling.

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 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 Environmental Services — Page 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 in Appendix A.

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 workplace for our employees. Environmental protection is everyone's responsibility. The MMCD is committed to being a good neighbor and operate in strict compliance with federal, state, and local environmental laws. Meeting this commitment requires the cooperative effort of all MMCD employees. Technologies and methods that substitute nonhazardous materials and utilize other source reduction approaches will be given top priority for integration into MMCD operations.

Military Affairs — The Department of Military Affairs is committed to actively protecting the environment. We intend to accomplish the following: provide a clean and safe environment in our community; ensure a safe and healthy workplace for our staff; comply with all applicable laws and regulations; efficiently accomplish our mission; reduce waste management costs; and reduce future liability for waste disposal. To accomplish these

objectives, we will implement programs for reducing or eliminating generation of waste through source reduction and other pollution prevention methodologies. This policy extends to air, wastewater, solid and hazardous wastes. In addition to meeting these objectives, there are other important benefits to pollution prevention.

The Department of Military Affairs is committed to reducing its production of waste by weight and toxicity. Priority is given to source reduction. Where source reduction is not feasible, other pollution prevention methods such as recycling will be implemented. The wastes that are produced will be converted to useful products or used beneficially, when possible. Remaining wastes for which no pollution prevention option is warranted will be effectively treated (to decrease volume or toxicity) and responsibly managed.

The Department of Military Affairs will select waste management methods that minimize present and future effects on human health and the environment. Pollution prevention is recognized as a responsibility of all of our staff. We are committed to identifying and implementing pollution prevention opportunities through solicitation, encouragement, and involvement of all employees.

The MNARNG believes strongly that it is important to continue our proactive approach in keeping with the Army National Guard (ARNG) Environmental Vision:

The Army National Guard is committed to promoting military readiness, national stability, and environmental stewardship. Our vision is to lead the way in protecting and enhancing our resource while maintaining the highest degree of military readiness.

Pollution Control Agency -- Beginning in 1998 and continuing through October 1999, MPCA with the assistance of a community/stakeholder work group will be developing guidelines to integrate pollution prevention strategies into remedial investigation and corrective action plans at sites enrolled in the Voluntary Investigation and Cleanup Program (VIC) and the Superfund Program (SF). Contact Cindy Hilmoe (651) 296-7783, cynthia.hilmoe@pca.state.mn.us or Dagmar Romano (651) 296-7776, dagmar.romano@pca.state.mn.us

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.

Minnesota State Colleges and Universities:

North Hennepin Community College -- NHCC maintains a MacNeil Environmental contract.

Red Wing / Winona Technical College -- A policy does exist on recycling. Through recycling efforts the college reduced rubbish removal services from twice a week to once a week service, mainly through recycling office paper and cardboard and increasing some dumpster sizes.

Bemidji State University -- The University first adopted an environmental policy statement in 1991. A new statement was adopted in 1998. The BSU cabinet approved the following environmental policy statement as proposed by the Environmental Advisory Committee. 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:

1. conserve natural resources and support sustainable practices,
2. conduct affairs in ways which safeguard the environmental health and safety of students, faculty, staff, and

members of the broader community,

3. 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:

1. foster an understanding of and responsibility for the natural environment,
2. convey knowledge regarding environmental and health issues relevant to various academic disciplines,
3. encourage environmental research,
4. conduct teaching and research in an environmentally responsible way,
5. 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. Policy provisions will be implemented. If successfully implemented, the provisions of the policy should initiate a broad range of environmental benefits.

Moorhead State University -- The Department of Environmental Health and Safety is Moorhead State University's advocate in protecting the environment. Pollution prevention is a component of our effort to deliver a safe work environment. Successful pollution prevention activities rely on the cooperation and participation of the campus community to ensure a safe and healthy workplace and continued protection of the environment. The Department of Environmental Health and Safety is committed to the preservation, protection, and where possible, the enhancement of our environment in all matters of operation. This includes the goals of meeting or exceeding all applicable local, state, and federal requirements; as well as fostering responsible stewardship by our personnel of all natural resources both in the work place and at home in the community. We promote a proactive policy in environmental matters, one that anticipates and addresses problems before they become a regulatory matter.

Department of Transportation -- Mn/DOT is committed to excellence and leadership in protecting the environment. In keeping with this policy, our objective is to reduce waste and emissions. We strive to minimize adverse impact on the air, water, and land through excellence in waste stream management. By preventing wastes, we can achieve better protection of the environment, a safe and healthy work place for employees, and more efficient operations. Mn/DOT's environmental guidelines include the following:

- Preventing pollution by reducing and eliminating the generation of waste and emissions at the source is a prime consideration in research, design, and field operations. Mn/DOT is committed to identifying and implementing pollution prevention opportunities by involving all employees. These opportunities include: new methods, technologies, and product substitution.
- Mn/DOT is committed to developing a waste stream management system that proactively addresses the wastes that are unavoidably produced in our operations.
- Environmental protection is everyone's responsibility and is highly valued at all levels within Mn/DOT.
- Mn/DOT seeks to demonstrate its commitment by adhering to all environmental regulations. We promote cooperation and coordination between industry, government, and the public toward the shared goal of preventing pollution at its source.

University of Minnesota -- See Appendix A.

28. 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 "no VOC" replacements for litho wash and deglazer. The Materials Management Division participates in the Great Lakes Governors Purchasing Council. Its mission is to collectively improve the environment of the Great Lakes states through positive purchasing decisions. The Minnesota Office of Citizenship and Volunteer Services continues to use soy-based inks for all its stationery, brochures, and other publications.

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Sauk Centre - Chemicals associated with printing are collected and stored at MCF-Sauk Centre prior to being picked up by a state approved recycle or hazardous waste contractor.

MCF-Oak Park Heights - Industry's printing program consists of lettering on vinyl. Only the amount of ink to be used is distributed daily and strictly accounted for by staff.

MCF-Willow River/Moose Lake - MINNCOR Industries has a print shop at Moose Lake. A change was made in the area of press wash chemical. A new chemical is now being used so that the rags no longer need to be handles as hazardous waste. This was an economic benefit.

MCF-St. Cloud - Our print shop personnel are investigating the use of soy oil inks. These personnel also recycle and minimize the use of paper products. Use less paper products and soy inks are more environmentally friendly.

MCF-Red Wing - Materials are stored and recycled.

Office of Environmental Assistance -- As part of its internal practices, the OEA communications team designs projects for minimum paper use and maximum recyclability. The main printer used by the OEA (PrintComm) is also a participating "Great Printer". 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 that has been manufactured using no chlorine or chlorine derivatives and specifies soy-based ink for all printing jobs.

Metropolitan Airports Commission -- The MAC continues to utilize companies that use soy-based inks and environmentally friendly products.

Metropolitan Council Environmental Services -- MCES staff has attended a workshop sponsored by the Minnesota Environmental Initiative (MEI) on the "Great Printers Project". A "Great Printer" makes a voluntary commitment to comply with environmental regulations and to practice pollution prevention. Vendors who are participants in the project are always considered when a bid request is going out.

Metropolitan Mosquito Control District -- The District currently asks printing vendors to use paper that has high post consumer content and is chlorine free. The District also asks for environmentally safe inks for District brochures, informational pamphlets, fact sheets and yearly reports. During fiscal year 1998 MMCD specifically targeted Minnesota Great Printers for the majority of printing projects that were undertaken.

Pollution Control Agency -- Great Printers Project: The primary goal is to achieve environmental compliance through pollution prevention.

CSI PrintSTEP: This is part of the US EPA's Common Sense Initiative for the printing industry. PrintSTEP is the Printing industry Simplified Total Environmental Partnership. One of the tools that CSI PrintSTEP recommends is pollution prevention. This is not yet operational anywhere in the county, but MPCA staff have participated fully in the development of this project. (These two programs also deal with 1. Absorbents, 3. Air quality and 5. Audits as part of the printing pollution prevention practices) Contact Ed Meyer (651) 297-8365 or edward.meyer@pca.state.mn.us

Minnesota State Colleges and Universities:

Red Wing / Winona Technical College -- The college does not have a printing department; however, it is encouraged that staff make double sided copies when possible.

Rochester Community & Technical College -- Employees are encouraged to submit printing jobs electronically and to print on both sides of the paper

Moorhead State University -- Printing Services has moved to a vegetable based ink, using paper products that have recycled components and press/roller washes and fountain solutions that are water based and low in VOCs. They are also using a safer plating chemistry and recycling their aluminum plates.

St. Cloud State University -- SCSU recycles books, directories, and newsprint.

Department of Transportation -- Mn/DOT sign shops have changed from inks containing heavy metals to heavy metal free inks. This eliminated a hazardous waste stream. Mn/DOT sign shops have changed from a hazardous screen wash (MEK) to a nonhazardous screen wash. This eliminated a hazardous waste stream. The elimination of two hazardous waste streams has saved hundreds of dollars annually in disposal costs. Furthermore, a potential hundred of thousands of dollars has been saved through the elimination of the environmental liability associated with the generation, handling and disposal of hazardous waste.

29. Procurement

Department of Administration -- The Materials Management Division has developed environmentally responsible products and services contracts that are estimated to be in excess of \$24 million per year. (See the attached Environmentally Responsible Products and Services list.)

Department of Agriculture -- The Laboratory Services Division continues to utilize the 20 liter nowpack container system. This has helped in reducing the amount of glass to be disposed of, 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 possibility for container breakage. Laboratory purchasing personnel continue to work with senior staff to find other alternatives than glass containers for chemicals that are purchased in large quantities.

Department of Corrections -- Staff at MCF-Shakopee have been trained on procurement and waste is reduced by use of good purchasing techniques.

Office of Environmental Assistance -- Since the creation of its market development program, the OEA has promoted buying recycled products as a means of supporting the recycling infrastructure. Over the years, staff have held "Buy Recycled" trade shows and conferences, developed fact sheets, and trained state purchasers about recycled content products. 1998 efforts have included updating the *Minnesota Recycled Products Directory*, which lists recycled products made in Minnesota, and working with the Dept. of Administration to develop measurable objectives to track the state's progress in purchasing recycled-content products. The OEA has expanded its procurement focus beyond promotion of products with recycled content and is looking at other environmental characteristics, such as toxicity reduction, durability, recyclability, energy efficiency, etc. This is referred to as environmental preferable purchasing (EPP). OEA is working closely with the Department of Administration's acquisition specialists to incorporate environmental specifications into several state purchasing contracts. The state contract for cleaning supplies was finalized in February 1998. The approved cleaners were screened to avoid some of the more serious products which may be harmful to humans and the environment.

The Department of Administration's contract for purchasing personal computers expires in 2000. Discussions are already underway to revise the bid specifications. The OEA is working with the Department of Administration to incorporate such environmental considerations as energy saving requirements, take-back language, design for disassembly, etc. The Department of Administration will begin developing a disposal contract this fall for waste electronic appliances, including personal computers. The OEA will assist in addressing environmental considerations.

The OEA also working with the Department of Administration to encourage the use of reusable crates, rather than disposable boxes, when state agencies contract with professional movers. The OEA is working with the Department of Administration to promote environmental purchases and building practices in state-leased buildings.

Through a grant to the Institute for Local Self-Reliance, the OEA is helping to promote environmentally preferable chemicals via the Internet. When appropriate, the OEA documents and shares its results with other states as well as MN businesses, schools, and general consumers. Examples include presenting the results of our state cleaning supplies contract at Wisconsin's state procurement conference; promoting "green" cleaners via Pollution Prevention Week; promoting recycled content products via America Recycles Day; and setting a grant priority related to corporate-wide and school-district wide environmentally preferable purchasing. The OEA has made procurement information available via its website and links to the Department of Administration's site.

The OEA is working with architects to encourage that new state buildings under construction use resource efficient materials and practices. OEA is working with DNR to incorporate recycled products and environmentally preferable building practices into two new DNR area office buildings. An OEA grant facilitated the building by Habitat of Humanity of two twin homes in South Minneapolis that incorporate environmentally preferable design and construction practices. Another OEA grant with Hennepin county is developing a green building rating system that will be available for use by architects to incorporate environmentally preferable building practices into commercial construction projects. An OEA grant for a deconstruction crew pilot project through the Reuse Center is allowing many more building materials to be salvaged and reused rather than relegated to construction and demolition waste.

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 Council Environmental Services -- Procurement and materials management are essential to the beginning and sustaining of a pollution prevention program. In previous sections of this report, various efforts have been described in the purchasing of recycled and recyclable materials and in product substitutions.

Recycling of paper, metal cans, and clear glass containers occurs at all MCES locations. At the larger facilities plastic and metal drums, scrap metal, wood pallets, cardboard, and packing materials are reused as much as possible and eventually recycled. A new materials management information system is being installed which has the capabilities for "screening" purchases for pollution prevention considerations such as environmental and health rankings and recyclability and recycled content material.

Metropolitan Mosquito Control District -- MMCD 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 MMCD for user/environmental friendliness. The team locates and purchases users/environmentally friendly replacement products for products determined to be unsuitable for use by MMCD staff.

The District was negotiating with primary vendors who supply the District with Bti, a dry granule control material, for material packaging that is recyclable or returnable. In an average year the District will dispose of 20,000 paper Bti bags (15,000 lbs.) 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. The two options under consideration were;

1. Converting to bulk bags of 1,600 lb. or greater capacity which could also be returned to the vendor for re-use.
2. Package the BTI granules in plastic poly bags which would be recyclable with local recyclers.

The District's primary vendor of Bti was unable to develop a completely recyclable poly bag that would satisfy all the participants involved. For fiscal year 1998 MMCD continued to use paper/poly bags for 90 percent of the control material used. The remainder of the control material was ordered in bulk bags for testing in the field. The bulk bag option is considered the best alternative but did present some special material handling and inventory problems. Additional costs for new equipment needed for material delivery in the field operations are yet to be finalized.

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.

Pollution Control Agency -- The MPCA Executive Team created an internal team that also includes advisors from the Central Supply System (run by the Department of Administration) to develop draft recommendations in a guidance document for MPCA office support staff on products which have environmentally preferable alternatives, with a focus on procurement of products with source reduction alternatives. MPCA is expected to have the guidance done by the end of August, 1998. Implementation will be focused around training the support staff with purchasing responsibilities on recognizing and purchasing environmentally preferable products,

working with the Department of Administration Central Supply System's vendor show to highlight environmentally preferable products (October 1998), and setting up a tracking system for performance. Contact Cathy Moeger (651) 296-9631, or cathy.moeger@pca.state.mn.us.

MPCA has an internal Waste Reuse and Recycling Committee (WRRC). They are attempting to improve the Agency culture toward recycling. MPCA recently purchased duplexing printers capable of producing two sided print jobs. They have talked about a state surplus procedure similar to MnTAP's Waste Exchange, for state agencies only. Other goals include composting cafeteria food waste, changing purchasing practices to allow more environmentally beneficial product and product usage. Contact Paula O'Keefe at (651) 297-8330 or paula.okeefe@pca.state.mn.us

Minnesota State Colleges and Universities:

Red Wing / Winona Technical College -- Procurement of products is done through a competitive bidding process following state contracts when possible. Materials management practices involve relocating products/equipment to other departments, trading, selling at public sale when possible rather than disposing of materials.

Moorhead State University -- The Physical Plant has centralized all of its chemicals and supplies. This process has created less volume in storage and enables the University staff to use the improved products that are continually coming onto the market. University personnel have been educated on purchasing materials high in environmental compatibility. Pollution risk and hazardous waste disposal costs are emphasized. Departments have been encouraged to purchase on a "need only" basis reducing stock surplus and storage time.

Department of Transportation -- Mn/DOT has made available to all Counties and Cities that use Mn/DOT's striping paint contract, metal free water based pavement marking/striping paint. This provides for pavement marking and striping operations to be regulatory nonhazardous by eliminating all lead, chrome, and toluene. Mn/DOT has made available to all Counties and Cities Mn/DOT's sorbent contract, sorbents that are burnable as waste derived fuel for the generation of steam and electricity. See "1. Absorbents." Mn/DOT has made available to all Counties and Cities Mn/DOT's Zep parts washing contract, a Zep parts washing filter. This filter allows part washing solvent to be recycled on site within existing parts washing equipment. See "24. Parts Cleaning." Mn/DOT has developed and implemented a strategy to expedite the process of eliminating and/or reducing waste streams. This strategy is designed for involvement and input from all interested parties, including other governmental agencies, up front. It is a nine-step process that ends with a report that includes a full circle cost analysis, product(s) recommendation, and in some cases vendor contracts. The report aids Mn/DOT buyers in making purchasing decisions that are environmentally and economically sound. Mn/DOT has completed two studies/reports (sorbents and asphalt release agents). A study on parts washer solvents and systems is continuing. The final report on parts washing is expected in 1998. Mn/DOT has worked with the Department of Administration to design a program that would allow Mn/DOT, and any other state agency, to run a report giving the total volume of a commodity purchased. This will aid in calculating cost saves after implementing a pollution prevention/waste minimization project. A base line of dollars spent on hazardous waste disposal for fiscal years 1996, 1997 and 1998 have been compiled. The following shows a decrease in the generation of hazardous waste through the decrease in annual dollars spent on hazardous waste disposal:

- fiscal year 1996 dollars spent, \$208,275.25
- fiscal year 1997 dollars spent, \$199,259.68
- fiscal year 1998 dollars spent, \$139,623.93

Mn/DOT saved \$9,015.57 in fiscal year 1997 and \$59,635.75 in fiscal year 1998 through various pollution prevention projects. The next step is to break down the total dollars spent on hazardous waste disposal to dollars spent on disposal of a specific waste. This will allow the success of a specific pollution prevention/waste minimization project to be measured.

30. Remanufactured Parts

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

Office of Environmental Assistance -- Internally 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. Brainerd RHSC recycled 420 plastic fifteen-gallon laundry barrels.

Minnesota State Colleges and Universities:

Red Wing / Winona Technical College -- Remanufactured parts are used when possible by our Auto Mechanic technicians and maintenance departments.

Bemidji State University -- Remanufactured printer cartridges continue to be used. The use of remanufactured printer cartridges was promoted. Complaints about their effectiveness were found to be related to the lack of routine maintenance on the printers. Use of remanufactured printer cartridges will continue to be promoted. We plan to work with the product vendor to develop information and directions on routine printer maintenance that can be performed by the users. Remanufactured printer cartridges are approximately 50 percent the cost of new cartridges. This activity is expected to reduce costs and waste generation and exert less demand on energy and resources than that required to produce virgin material. This activity is expected to reduce environmental costs.

Moorhead State University -- MSU uses remanufactured printer cartridges and Xerox copier dry ink and toner cartridges.

St. Cloud State University -- We use remanufactured photocopier cartridges. Carpet is recycled.

31. Tanks

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

Department of Corrections -- The Department of Corrections activities are as follows:

MCF-Lino Lakes - Underground storage tanks for gasoline, diesel fuel, and #2 fuel oil have been replaced with new tanks in the last two years, in order to comply with the MPCA guidelines.

MCF-Faribault - Removal and closure of underground fuel storage tanks is under way.

MCF-Oak Park Heights - The underground diesel tank was emptied, flushed and tested two years ago. The tank contents are checked monthly to determine level and ensure there is no leakage.

MCF-Willow River/Moose Lake - The four storage tanks; one gas, two heating oil, and one standby fuel, are scheduled to be replaced by year end, being December of 1998. The gas tank will be above ground and the oil tanks will be double walled and underground. All tanks will be equipped with required monitoring equipment to meet MPCA requirements.

MCF-St. Cloud - We have removed a number of underground and above ground tanks. All tanks are currently reported per MPCA requirements. Removal cost is \$23,000. Removal of the tanks reduces the risk of an oil/fuel spill and reduces groundwater and soil contamination.

MCF-Shakopee - We have electronic leak detection on two underground storage tanks. On the other tank we use preventive maintenance and monthly checks for leaks.

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. Cambridge Regional Human Services Center removed two 1,000 gallon underground storage tanks in 1998.

Metropolitan Airports Commission -- To comply with federal regulations the MAC will remove, replace or upgrade all MAC owned and operated regulated underground storage tanks. 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

Metropolitan Council Environmental Services -- December 22, 1998, is the regulatory deadline for a phased-in ten-year national program to upgrade existing underground storage tanks (UST), remove them, or replace them with new tanks. Over this period of time, MCES has done all three options with 40 USTs removed and 30 remaining in place and upgraded as needed with state-of-the-art measures for leak detection, spill/overflow prevention, and corrosion protection. Tanks which were removed mainly have been replaced with smaller aboveground tanks (AST). These are more easily observed for releases and represent a reassessment of true stand-by energy needs which were over-estimated during the petroleum embargoes and energy "shortages" of the 1970s.

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.

Pollution Control Agency -- MPCA offers a hotline for tank owners or operators and concerned parties to get technical questions answered. The Tanks hotline number is (651) 297-8367. Efforts to prevent pollution include on-site visits by inspectors to make sure facilities conduct proper leak detection for both aboveground and underground storage tank systems.

MPCA has a leak-detection manual that explains acceptable methods for monitoring tanks. This manual is available to anyone who calls requesting a copy. Inspectors hand these manuals out on site visits occasionally. The MPCA also plans to conduct workshops to make sure that facilities understand the proper methods to use. Contact Michael Rafferty, Outreach Coordinator for Metro District - Regular Facilities Section at (651) 297-8616 or e-mail michael.rafferty@pca.state.mn.us

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 be emptied due to contamination. The material was then treated as hazardous waste.

Minnesota State Colleges and Universities:

Anoka Hennepin Technical College -- In 1997 two ten thousand-gallon fuel oil storage tanks were removed and replaced by one ten thousand-gallon tank. New suction and return lines and air electronic monitoring system was installed. It has been the policy that whenever possible and practical recycled paper products are purchased for use in all departments. We are evaluating alternative oil absorbents that are more environmental friendly to replace the clay-based material that is presently being used.

The machine trades program has purchased barrel pumps for their cutting oil containers. These pumps have substantially reduced the amount of spillage in the transfer of cutting oil to the machines.

In the fall of 1997, 20,000 square feet of building roof was replaced and miscellaneous area of roofing was repaired. The existing construction was two layers of ¾" perlite insulation ribbon moppings of asphalt and a four-ply gravel surfaced asphalt membrane. This was replaced with two layers of 1 ½" perlite insulation and four plies of fiberglass felts in asphalt moppings with an asphalt flood coat and gravel surfacing.

Inver Hills Community College -- Tanks-in ground tanks are monitored at all times and storage we two on campus on for diesel and the other for gasoline. Above ground tanks that store oil and fixer are inspected once per week for leaks.

North Hennepin Community College -- NHCC has a 10,000 gallon ≈2 diesel fuel in-ground tank (1992)

Northland Community & Technical College -- Tanks (Storage) applies to our above ground oil storage tank. All oil is recycled and will continue to be recycled in fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- A new underground fuel oil tank with electronic monitoring was installed at the Winona main campus in 1993 meeting all current requirements. An underground used oil storage tank was also removed at that time. Now used oil is stored in 55-gallon drums with a secondary container for spill control. We are still waiting for funding approval to remove and replace the tank at the Red Wing Campus.

Rochester Community & Technical College -- RCTC has a 10,000 gallon underground storage tank for fuel oil which is constantly monitored. In addition, we have a 250,000 gallon above ground diesel tank which is visually monitored.

Moorhead State University -- All non-vaulted underground tanks have been either closed or removed and replaced with above-ground tanks in accordance with the 1998 deadline.

St. Cloud State University -- SCSU removed two underground storage tanks (UST)s containing fuel this past year. A single unused tank remains on campus. It is empty and below the basement floor of an occupied building.

Department of Transportation -- Salt brine tanks are used to produce and store salt brine. Currently, salt brine production systems are of double-walled construction. This greatly reduces the possibility of a release from the system. Mn/DOT fueling systems are comprised of double walled underground or aboveground petroleum tanks and pipes. Many underground storage tanks that were not needed have been taken out of service and removed. By either replacing or removing outdated single walled underground storage tanks the potential for a petroleum release to the ground or groundwater is greatly reduced. Furthermore, the underground petroleum storage tanks are equipped with leak detection, spill prevention and overfill prevention equipment. Initial costs are high. However, Mn/DOT expects to see reduction in future cleanup costs as a result of decreased petroleum release incidents. Also, up to 90% of cost incurred in investigating petroleum release sites are reimbursable through the Minnesota Petrofund. Mn/DOT uses tons of animal manure annually as a nutrient source in the compost treatment of petroleum contaminated soils (from leaky underground storage tanks). After these soils have been treated, the soil is used as topsoil amendment along Mn/DOT right-of-way. As an environmental benefit, Mn/DOT has developed a technique which not only cleans petroleum-contaminated soil, but also provides a reusable material. Mn/DOT will remove all outdated petroleum storage tanks by December 1998.

32. Technical Support

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

Department of Corrections -- The Department of Corrections activities are as follows:
MCF-Oak Park Heights - MNTAP and Washington Co. Department of Health, Environment and Land Use Management (HELM) are consulted whenever disposing of a questionable waste, to ensure proper procedures are used. The safety officer and HELM staff person work closely in discussing and disposing of any unusual waste.
MCF-St. Cloud - We have used MNTAP and outside vendors to shift liability for testing, etc. The annual cost is \$2,000. The liability is shifted.

Office of Environmental Assistance -- The Minnesota Technical Assistance Program (MnTAP) helps industrial service and manufacturing businesses prevent pollution and manage waste properly. Rather than focus 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 1998, MnTAP responded to over 1,400 calls (30 percent of these specific to materials exchange) requesting pollution prevention and waste management information, conducted 100 site visits to businesses, and delivered 77 seminars. In addition, MnTAP placed 7 interns in companies which resulted in a projected reduction of 103,058 pounds of waste and emissions and 215 million gallons of water with a projected cost savings of over \$361,777.

The OEA provides technical assistance to counties in solid waste management planning and reporting on progress in achieving source reduction and recycling goals. The OEA revised the SCORE Source Reduction Checklist, a list of strategies and programs that counties can implement to reduce waste, to include over 40 different strategies and programs to reduce waste at the local level. Counties can receive credit towards their recycling goals for implementing activities on the checklist. It is intended to be used as a planning tool in county solid waste management planning. OEA staff have begun to work closely with county planners to plan and implement source reduction programs.

The EPA awarded a \$60,000 federal grant to the OEA to increase source reduction technical assistance. The materials targeted by the grant include: food waste, old corrugated containers, office paper and wood waste. The project, entitled the "Source Reduction Challenge," focused on the development of eight material specific fact sheets and an office paper reduction kit, a direct mailing to over 10,000 businesses, and technical assistance as requested. The grant also researched the use of economic indicators to measure source reduction activity and conducted a food waste generation survey to identify opportunities to reduce food waste in the grocer, restaurant, and institutional setting.

The council "Counties and Cities Implementing Source Reduction and Recycling" (CISRR), the Materials Exchange Alliance, and Minnesota Waste Wise (MWW) meet six times a year at various locations throughout Minnesota. Each meeting focuses on new topics and provides opportunities for networking and assistance. The OEA continues to publish the CISRR Newsletter. The Newsletter appears three times a year, providing highlights from CISRR meetings and updates from the materials exchange, Waste Wise, and county programs.

In 1996, the OEA and ERC were delegated responsibility for administering the Pollution Prevention Progress Report (P2PR). The ERC collects the forms from reporting facilities and works with the OEA to review them for completeness. The OEA uses the P2PR along with the Toxic Release Inventory Form R reports to analyze pollution prevention trends, determine success stories, and establish targets for technical (in conjunction with MnTAP) and financial assistance efforts. A new tool incorporated into pollution prevention analysis during fiscal year 1997 was the inclusion of toxicity data for the chemicals reported through the Form R and P2PR. This allows the OEA to perform analysis on not only the volume of wastes being generated, but also to consider the hazard potential of the waste streams as well.

Metropolitan Airports Commission -- The Environment Department provides technical support to all MAC offices/divisions as well as airport tenants, whenever possible. Assistance is through phone calls, regulatory liaison, informational meetings and resources. These all assist the tenants in recognizing and understanding their obligations to the regulatory agencies.

Metropolitan Council Environmental 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 discuss 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 1997, a database to track pollution prevention activities by industries was created and a specific newsletter for industries is being planned.

In 1992, IWS received one of five nationwide grants for promoting pollution prevention at publicly owned treatment works (POTWs). 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 Committee (PPAC) brought together representatives of industry, communities, and citizen groups bimonthly 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.

The IWS has participated in national, regional, and local pollution prevention conferences and has cooperated with Wakota CAER (Community Awareness and Emergency Response) and MnTAP (Minnesota Technical Assistance Program) in sharing of information and public displays. An intranet site is in place for the Environmental Planning and Evaluation Department (EPE) within MCES which includes "Pollution Prevention Pages" to promote pollution prevention and encourage new ideas. Last, but not least, at a departmental meeting, the IWS distributed fortune cookies with customized pollution prevention bits of wisdom on the inside.

Pollution Control Agency -- There are a number of ongoing projects. They include:

Regulatory Integration - This effort attempts to integrate pollution prevention into our daily regulatory activities.

MPCA continues to educate businesses on pollution prevention practices during enforcement inspections. We also utilize Supplemental Environmental Projects (SEPs) where a portion of an enforcement penalty may be used for a pollution prevention project. Contact Daryl Weakley (651) 297-8497 or daryl.weakley@pca.state.mn.us

Minnesota Twist Drill - This is an experiment where a portion of the hazardous waste generator fee is being used to pay for a pollution prevention project to reduce barium waste. It has run into delays due to County concerns with molybdenum in their waste water. Contact Jim Brist (651) 297-8331 or jim.brist@pca.state.mn.us

Mercury Reduction Initiative - A continuing effort to reduce Mercury from all sources. Contact Carol Andrews at (651) 297-8333. or carol.andrews@pca.state.mn.us

Pollution prevention - We are continuing to review our rules to remove or change portions that may prevent businesses from starting or implementing a pollution prevention project. We have discovered the best way to do this, is to allow the business to propose a project and then look at the specific barriers. Contact Jim Brist (651) 297-8331 or jim.brist@pca.state.mn.us

Small Business Assistance Program - This program provides loan interest loans for businesses to purchase equipment that will reduce or eliminate existing waste. Contact Charlie Kennedy (651) 297-8615 or charlie.kennedy@pac.state.mn.us

Site Response Section (SRS) staff have distributed MnTAP Intern Program brochures to VIC and Superfund (SF) customers and referred them to MnTAP staff for additional assistance. Costs of implementation and the economic and environmental benefits from the resultant prevention activities were not measured or measurable. Contact Cindy Hilmoe (651) 296-7783, cynthia.hilmoe@pca.state.mn.us or Dagmar Romano (651) 296-7776, dagmar.romano@pca.state.mn.us

Minnesota State Colleges and Universities:

Minnesota West Community & Technical College -- Minnesota West has been aware of the needs involved in pollution control and in the past has relied on each campus to monitor and implement their own control activities. This college was merged on January 1, 1997, and since that time has attempted to report as one college not five separate identities.

Pollution control along with OSHA requirements have become priority areas of concern for the college. We have attempted to establish common compliance, maintenance and reporting activities throughout the 1998 year and will continue to strive to achieve these goals in the future. Minnesota West has established a college wide health/safety committee with representative from each individual campus health/safety committee to represent their campus needs in these areas. The committee meets on a periodic as needed basis, usually quarterly to discuss pollution control and OSHA issues. The college is also attempting to establish a workplace safety coordinator that can monitor and relay information and concerns uniformly throughout all campuses. During the 1998 year the college contacted Advanced Environmental Tech Services (AETS) in Blaine, MN for the testing and removal of contaminated containers from the Jackson campus. To date this agency has not visited the campus to evaluate and remove the waste materials. It is

the college's plan to gather all unknown materials and contaminants on each campus and store in properly labeled containers until such time as testing and removal of these containers can take place. We do not know at this point what the total cost has been or will be for implementing pollution prevention activities. Each campus has used funds allocated for maintenance to cover these costs. The college has not done a good job in previous years keeping track of what has been done or the results from these efforts. This is an area we will be attempting to correct through the campus health and safety committees and the college wide pollution control and OSHA committees.

North Hennepin Community College -- Right to Know training is provided through MacNeil Environmental.

Red Wing / Winona Technical College -- Technical support is provided through MnTAP, MPCA, and other state agencies as needed.

Department of Transportation -- Mn/DOT's Waste Minimization reports are available to all governmental agencies as well as private companies. Mn/DOT has received numerous requests for the Waste Minimization Report on Sorbents from small and large private companies as well as other state government agencies. See "1. Absorbents" And "29. Procurement, Materials management." Mn/DOT has a statewide Waste Management Team (25 staff) that meet quarterly to discuss waste management issues such as waste minimization, pollution prevention; hazardous, solid and problem waste; air quality and water quality issues. This group actively integrates waste minimization/pollution prevention into all of the Department's functions. Mn/DOT has developed a waste management procedure poster. This poster incorporates general waste minimization techniques for each hazardous or problem waste generated. These posters will be distributed and posted at all Mn/DOT facilities and are available to any state agency or local municipality. Mn/DOT has dedicated the equivalent of one and a half full time position to study, coordinate, and evaluate pollution prevention opportunities within Mn/DOT. The key task of these positions is to research and evaluate new products and/or procedures as they relate to Mn/DOT and recommend changes to existing products and/or procedures when they prove to be more effective from an environmental, economical, and/or regulatory standpoint. Mn/DOT publishes several environmentally focused newsletters (See "11. Education, Communication, & Training") Bio-mound training video -- Mn/DOT produced a Bio-mound training video to aid in the construction of compost piles to treat petroleum-contaminated soil. See "26. Pesticides, Fertilizers" "31. Tanks (storage)." Mn/DOT conducts workshops to assist staff in complying with federal and state regulations associated with aboveground and underground storage tank systems.

33. Tires

Department of Administration -- The Materials Management Division has developed a contract for tire recovery and a contract for retread tires for the Travel Management Division, Mn/DOT, and other state agencies.

Department of Corrections - The Department of Corrections activities are as follows:

MCF-Sauk Centre - Dealers take in oil tires on purchase of new ones.

MCF-Oak Park Heights - Tires are recycled at the vendors.

MCF-St. Cloud - Tires are recycled at an annual cost of \$500. The benefit is reduced landfill costs.

MCF-Red Wing - All used tires are taken to the City of Red Wing for disposal.

Metropolitan Council Environmental Services -- When not exchanged directly with a vendor, used vehicle tires are transported to GreenMan Technologies of Minnesota, Inc. in Savage, where they are processed into a fuel source. Large tires from the diesel tractors and trailers used in the various biosolids programs are retreaded. This includes up to three times retreading 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 the cost were too much. The belts were landfilled.

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

Pollution Control Agency -- Paper, Alternatives to Waste Tire Dumps. Contact Jim Kolar (651) 297-8663 or jim.kolar@pca.state.mn.us

Minnesota State Colleges and Universities:

Inver Hills Community College -- Tires are saved and brought to Central Motor Pool for disposal.

North Hennepin Community College -- Recycled as needed through various vendors. Annual cost \$35.

Northland Community & Technical College -- Tires are used by our fleet vehicles and are recycled at the cost of \$1/per tire. This practice will continue for fiscal year 1999 and beyond.

Red Wing / Winona Technical College -- Tires are installed off site. We pay to have old tires recycled. The Auto Mechanic technician department no longer has a tire changer, which has reduced the number of old tires we need to recycle.

Rochester Community & Technical College -- Unusable tires are taken to the Olmsted County Recycling Center.

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 results 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. The environmental benefits are 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.

Moorhead University -- All used tires are recycled.

St. Cloud State University -- About 95 tires are recycled each year at a cost of about \$1.25 each. They are ground up and become components in other products.

Department of Transportation -- Mn/DOT recycles all waste tire generated by Mn/DOT as well as the tires that the public has lost along Mn/DOT right-of-way. Mn/DOT does re-cap a small percentage of waste tires. However, due to the conditions under which Mn/DOT vehicles are operated, i.e. plowing snow, only a limited amount of re-capped tires can be used. Mn/DOT has researched the possibility of using ground tires as a base material in highway construction. It appears that the cost of this technology is prohibitive to Mn/DOT. Research articles are available.

34. Water Treatment and Conservation

Department of Administration -- The Plant Management Division completed the separation of sewer and storm water systems within the Capitol Complex. The Plant Management Division rebuilds parking lots and structures to meet water division guidelines. The 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 Corrections -- The Department of Corrections activities are as follows:
MCF-Sauk Centre - Water temperatures are not to exceed 130 degrees Fahrenheit.
MCF-Faribault - The facility operates its own water works which is licensed as "municipal".

MCF-Oak Park Heights - Water saving toilet fixtures with a timed flushing device have been, or are being, installed in inmate cells. The institution has used timed shower valves since opening.
MCF-St. Cloud - An outdoor sprinkler is on timers and inmates are written up for wasting water resources. Leaks are repaired ASAP. These practices reduce our water bill and save resources.
MCF-Shakopee - We work with Fremont Industries (state 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 Airports Commission -- The MAC has included a truck wash with a complete water recycling system in the addition to the Field Maintenance building.

Metropolitan Council Environmental 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 104 communities and over 2 million people. The MCES operates about 550 miles of interceptor sewers, 65 lift (pumping) stations, 178 metering stations, and nine treatment plants. Clean effluent is discharged to four area rivers--the Mississippi, Minnesota, St. Croix, or Vermillion. 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 in MCES operations is the beneficial reuse of residual solids from the wastewater treatment process. Biosolids at the two largest treatment plants are incinerated in multiple-hearth furnaces resulting in a 80 percent reduction in volume of residual solids. The on-going ash utilization program incorporates the ash from incinerated biosolids into flowable fill, cement/concrete, structural fill, and asphalt projects. In 1997, a total of 15,540 dry tons from the Metro WWTP and 427 dry tons from the Seneca WWTP (Eagan, Dakota County) was utilized for those purposes. A total of 57 dry tons from the Metro WWTP and 2,919 tons of ash from the Seneca WWTP were used to make NutraLime, a soil amendment for agricultural and horticultural applications. Prior to the success of both these utilization programs, the ash was landfilled.

N-Viro Soil is a program which blends alkaline admixtures--a previous "waste" product from cement manufacturing--and biosolids also for use in agricultural and horticultural applications. In 1997, 2,783 dry tons of biosolids from the Seneca WWTP were blended with admixtures to produce approximately 20,769 wet tons of N-Viro Soil. Straight biosolids--without any blended components--are typically landspread on farm fields. A total of 153 tons from MCES Plants was land-applied in 1997.

Two of the regional 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 percent 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 storing 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 eliminated 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 saves \$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 attain zero discharge, and therefore eliminate any possibility for NPDES violations or need for a permit. There also is a reduction in the amount of fresh water needed to perform this mission. The MNARNG designed and installed a system at the AASF in 1995, and installed a system in 1997-1998 at the MATES facility in Camp Ripley.

Several stormwater improvement projects were completed at the Duluth Air National Guard Base. The POL facility was upgraded to provide secondary containment and treatment of discharged water. The floor drains were re-routed in several buildings to discharge into the sanitary sewer system. The first phase of stormwater improvement project was also initiated at the Organizational Maintenance Shop in Arden Hill, MN.

Pollution Control Agency -- MPCA coordinates a process called the Annual Evaluation and Planning System (AEPS) for Minnesota municipalities with permitted wastewater systems (~450). The pilot project of this process was funded with a pollution prevention grant from EPA. It is similar, although not identical, to the WIC-CAM process.

The process works as follows. The municipalities receive a scannable form (fill in the dots) and a discharge monitoring report summary from us in early June. The form has 8 sections: physical treatment system, loadings and performance, collection system, sludge, septage, financial and ordinance status, and future needs. The wastewater superintendents and city clerks complete the applicable parts of the form and review the summary for errors and then return the form to us by 8/1. We scan the form and produce a report based on their responses in the form. The responses are canned, but they only get a response based on their completion of the form, so the report is personalized to their community (kind of). The report is sent back to the operators who then take it to a municipal council meeting and use it as a communication tool with the council to help plan for the future. It encourages councils to act on issues ranging from inflow/infiltration of their current wastewater system to planning for funding a future rehabilitation of their system.

MPCA is currently using the future needs data to report needs to the legislature. There is potential to use some of the other data for staff workload planning (that was the intent when it was created, although we've never really used it that way). We are intending on changing this form for next year based on clientele input this year. Contact Deb Lindlief (651) 296-8766 or deb.lindlief@pca.state.mn.us

Minnesota State Colleges and Universities:

North Hennepin Community College -- Treated water is used in boilers, chilling towers; SC building closed loop heating system.

Red Wing / Winona Technical College -- Some water conservation has been achieved by removing vacuum type gravity flush tanks, which ran continuously, and installing automatic flush valves on the urinals. Other conservation has included installing rain sensors on in-ground sprinkler systems.

Rochester Community & Technical College -- Cooling towers are treated and monitored by Fremont. Wastewater from the science labs is neutralized before being added to the city's wastewater stream.

Bemidji State University -- A diversion will be constructed to divert storm water from one of the campus' 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. The project was funded by Beltrami County Soil and Water Conservation District. The diversion 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.

Moorhead State University -- A computer managed watering system has been installed on the athletic field and the center mall area of campus. This system initiates watering at night, thereby reducing water evaporation.

A storm water retention pond and underground drainage system was recently completed. This system will significantly reduce the amount of contaminated run-off water directly flowing into the city's storm sewer.

St. Cloud State University -- This coming year we expect to replace restroom urinal flushing systems in up to eight buildings to reduce water use. Payback is about a year! Extensive lead-in-water testing has been done campus wide. Our computerized energy management system has been linked with our lawn watering system to reduce water use. A MnSCU audit this past spring made some water conservation suggestions for us to investigate.

Department of Transportation -- Mn/DOT'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 re-used as make-up water in the production of salt brine. See "18. Ice Control Sanding".

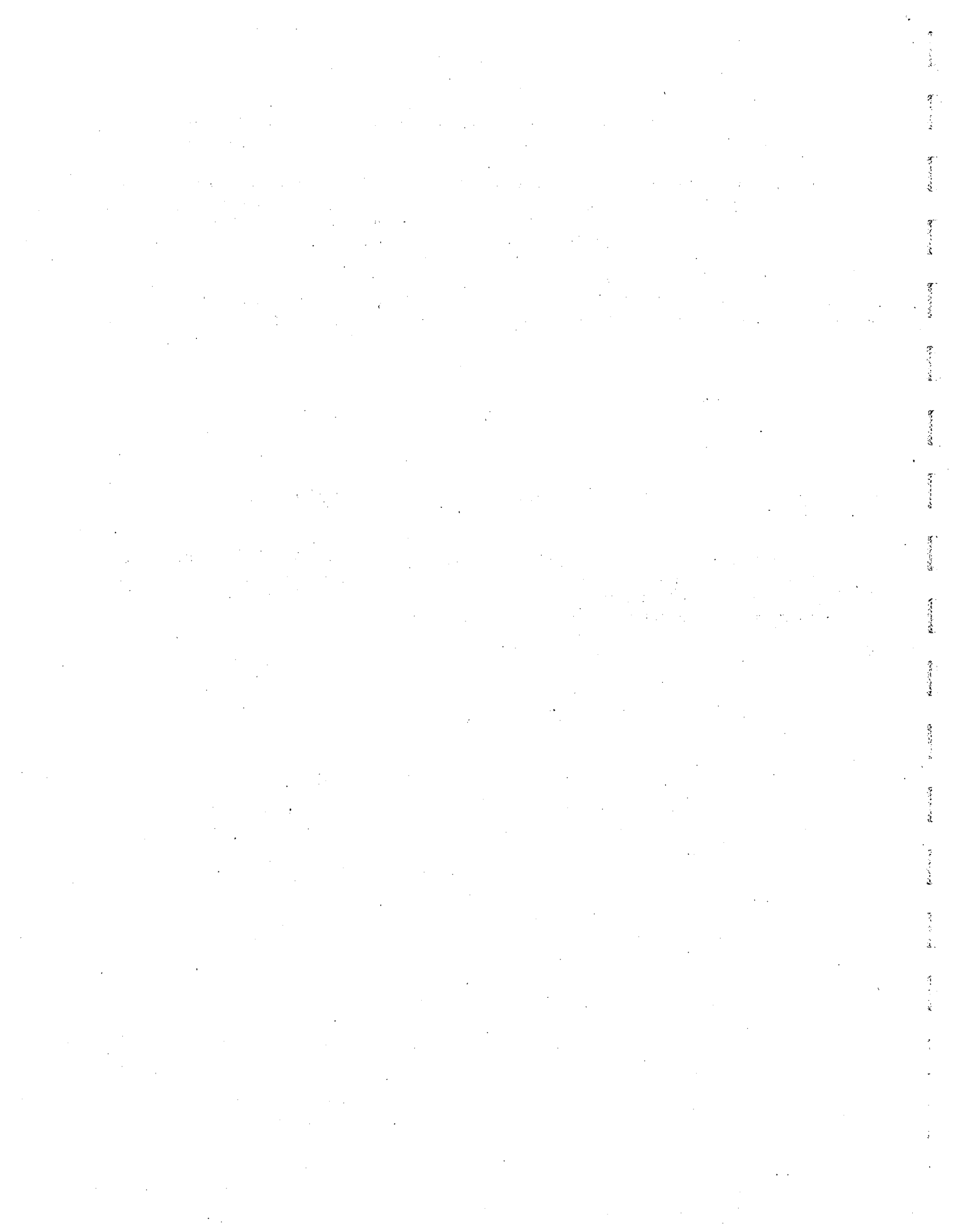
Part III

Matrix of Agencies and Categories

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 next page.

Part IV

Part IV contains the signatures of each agency. Each agency's signed copy is on file at the Office of Environmental Assistance.



Activity Type	Dept of Administration	Dept of Agriculture	Dept of Corrections	Office of Environmental Assistance	Dept of Health and Safety	Dept of Human Services	Metropolitan Airports Commission	Met Council Environmental Services	Met Council Transit Services	Military Affairs	Metropolitan Mosquito Control	Pollution Control Agency	Dept of Public Services	Anoka Hennepin Technical College	Inver Hills Community College	MN West Community & Technical College	North Hennepin Community College	Northland Community & Technical College	Red Wing / Winona Technical College	Rochester Community and Technical College	Bemidji State University	St. Cloud State	Moorhead State	Dept of Transportation	University of Minnesota	Board of Water & Soil Resources
Plans (Storage)																										
** Ongoing	X		X			X	X	X	X				X				X									
** FY98	X		X			X		X	X																	
** Planned	X		X				X		X																	
Titles																										
** Ongoing	X		X														X									
** FY98	X		X														X									
** Planned	X		X														X									
Technical Support																										
** Ongoing	X		X			X											X									
** FY98	X		X			X											X									
** Planned	X		X			X											X									
Water Treatment Conservation																										
** Ongoing	X		X			X		X	X							X						X		X		
** FY98	X		X			X		X	X							X						X		X		
** Planned	X		X			X		X	X							X						X		X		