



Pollution Prevention Summary Report

Consolidated from reports submitted by members of the Interagency Pollution Prevention Advisory Team for the fiscal year 2000

September 2001

POLLUTION PREVENTION
Right From The Start

For more information on pollution prevention activities
in Minnesota state government, please contact:
Emily Moore
Minnesota Office of Environmental Assistance
520 Lafayette Road North, Second Floor
St. Paul, Minnesota 55155-4100
651-215-0201

Table of Contents

Introduction	1
Part I. Agency Descriptions	2
Part II. Policy and Regulatory Activities	6
Part III. Pollution Prevention Activities during the Fiscal Year	12
1. Absorbents	12
2. Adhesives	14
3. Air Quality, CFCs	14
4. Antifreeze	17
5. Audits	19
6. Automotive Fuels	20
7. Automotive Maintenance	22
8. Batteries	24
9. Cleaning Supplies	26
10. Commuting and Transportation	27
11. Education, Communications and Training	30
12. Electronics	37
13. Energy - Lighting	40
14. Energy - Production	41
15. Groundwater Wells	44
16. Heavy Metals	45
17. HVAC, Indoor Air Quality	47
18. Ice Control, Sanding	49
19. Laboratory	50
20. Landscaping	53
21. Materials Exchange	54
22. Office Supplies	56
23. Oil, Oil Filters	59
24. Paints, Coatings, Stripping	60
25. Parts Cleaning	63
26. Personal Care	64
27. Pesticides, Fertilizers	64
28. Policy Statement	66
29. Printing	70
30. Procurement	71
31. Remanufactured Parts	75
32. Tanks	76
33. Technical Support	78
34. Tires	81
35. Water Treatment and Conservation	82
36. Other	84
Part IV. Matrix of Agencies and Categories	85

IPPAT Agency Contacts

Department of Administration

50 Sherburne Avenue, St. Paul, MN 55155
Contact: Lynne Markus (651) 296-9084

Department of Agriculture

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

Department of Commerce

121 7th Place E, St. Paul, MN 55101-2145
Contact: Mike Taylor (651) 296-6830

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 Human Services

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

Iron Range Resources and Rehabilitation Board

1006 Highway 53 South, Eveleth, MN 55734
Contact: Gordy Dormanen (800) 765-5043

Metropolitan Airports Commission

6040 28th Ave. South, Minneapolis, MN 55450
Contact: Wacek, Mark (612) 725-6428

Metropolitan Council - Environmental Services

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

Metropolitan Council - Transit Operations

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

Metropolitan Mosquito Control District

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

Military Affairs

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

Minnesota Technical Assistance Program (MnTAP)

1313 Fifth Street, SE, Minneapolis, MN 55414
Contact: Donna Peterson (612) 627-1910

Pollution Control Agency

520 Lafayette Rd, St. Paul, MN 55155
Contact: Paula O'Keefe (651) 297-8330

Department of Transportation

3485 Hadley Avenue North, Oakdale, MN 55128
Contact: David Pehoski (651) 779-5113

Board of Water & Soil Resources

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

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Anoka-Hennepin Technical College

1355 West Highway 10, Anoka, MN 55303
Contact: Thomas Silvers (612) 576-4705

Bemidji State University

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

Mankato State University

MSU Box 105, Mankato, MN 56003
Contact: Sheri Prosch (507) 389-5568

Metropolitan State University

700 East Seventh Street, St. Paul, MN 55106
Contact: Bruce Kamperschroer (651) 722-7608

Minnesota State Colleges and Universities (MNSCU)

550 Cedar Street, St. Paul, MN 55101
Contact: Allan Johnson (651) 282-5523

Minnesota West Community and Technical College

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

Moorhead State University

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

North Hennepin Community College

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

St. Cloud State University

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

Southeast Technical College

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

University of Minnesota

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

Fiscal Year 2000 State Government Consolidated Pollution Prevention Summary Report

Consolidated from reports submitted by members of the Interagency Pollution Prevention Advisory Team for the fiscal year 2000, fulfilling the requirements of Governor's Executive Order 99-4 providing for the implementation of pollution prevention and resource conservation by state government

Introduction

The *Pollution Prevention Summary Report* is a consolidation of the summary reports on pollution prevention activities for the fiscal year 2000, submitted by participating Minnesota state agencies.

Purpose of the report. Every year, state agencies are required to prepare a summary of their progress in preventing pollution. This report fulfills the requirements of Governor's Executive Order 99-4 providing for the implementation of pollution prevention by state government. Agency contacts are listed on the opposite page.

Organization of the report. The *Pollution Prevention Summary Report* is divided into four parts. Part I describes each agency, including the number of employees, locations of the agencies, and pollution prevention training held during the last year.

Part II, which is a new section this year, summarizes each agency's policy and regulatory activities that have incorporated pollution prevention in its broader sense.

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

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.

Part I

Agency Descriptions

Part I includes 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 2000.

Department of Administration — The Department of Administration employees participate in pollution prevention training each year. In fiscal year 1999, approximately one fourth of the department's 900 employees at 36 office locations participated by providing training to other state and local agencies, by receiving refresher training, or by receiving new training.

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

Department of Commerce — The department employs approximately 314 staff in downtown St. Paul and an additional 38 staff in Roseville. This report covers agency activities at both locations. Department of Commerce staff has not received any pollution prevention (P2) training during the past year.

Department of Corrections — Approximately 3,274 staff work at the Department of Corrections throughout ten locations. This report is for all locations. Department of Corrections staff has not received pollution prevention training during the past year. Physical plant staff from both the Minnesota Correctional Facility-Stillwater (MCF-STW) and Oak Park Heights (MCF-OPH) were trained in asbestos abatement in 1998 and recertified in 1999. The general maintenance works and other staff toured the state's resource recovery facility as the department shifted to resource recovery methods to recycle paper, plastic, cans, glass, and corrugated cardboard.

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 the five regional offices. OEA's mission is to "help Minnesotans make informed decisions and take actions that conserve resources and prevent pollution and waste to benefit the environment, economy and society."

The OEA assists those responsible for the generation and management of waste to reduce the amount of waste generated, and to ensure waste is reused, recycled, or managed appropriately according to the hierarchy of waste reduction, recycling, composting, resource recovery, and landfilling. The OEA also helps Minnesota's businesses improve economic efficiency through environmentally sound practices, promotes environmentally sustainable attitudes and behaviors through education and information, and promotes sustainable, community-based solutions to environmental problems.

In addition, the OEA provides funding for the Minnesota Technical Assistance Program (MnTAP). MnTAP helps industrial service and manufacturing businesses prevent pollution and manage waste properly. Rather than focus solely on end-of-pipe treatment or control solutions, MnTAP helps Minnesota companies reduce or prevent—at the source—the amount of waste they generate and find alternatives to using hazardous materials. By implementing waste reduction techniques, Minnesota companies can achieve or go beyond compliance with environmental regulations, reduce their disposal and raw material costs, and make conditions healthier and safer for employees. MnTAP works not only with businesses and generators of waste, but also with business organizations such as trade associations, local governments, and chambers

of commerce that themselves provide assistance or service to businesses. 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 about 6,700 employees. The department has seven regional treatment centers, over 100 state operated community services (SOCS), Minnesota extended treatment options (METO) sites, and the central administrative offices at eight St. Paul locations. This report includes pollution prevention efforts at all of the regional treatment centers and the central administrative office. The SOCSs are operated as households and comply with the solid waste requirements of their host communities. More than thirty maintenance workers and safety officers received annual asbestos training that included proper handling and disposal of asbestos containing materials.

Iron Range Resources and Rehabilitation Board — The Iron Range Resources and Rehabilitation Board (IRRRB) is a state agency that strives to enhance the economic vitality of the Taconite Tax Relief Area (TTRA) through value-driven, cost-effective projects and programs designed for the long-range benefit of the area. The agency, including all departments and locations, employs 96 people as of June 9, 2000. These employees staff three facilities owned and operated by IRRRB.

The main administration building is located two miles south of Eveleth on Highway #53. This building provides office space for the staffing needs of Accounting, Building Demolition, Community Development, Economic Development, Human Resources, Information Systems, Mining and Natural Resources, Purchasing, Shop, Tourism, and Trails programs.

The second facility is Ironworld Discovery Center. Its mission is to preserve, protect, and promote the history and heritage of northeastern Minnesota. The historical theme park is located in Chisholm and attracts about 40,000 visitors annually. Ironworld patrons enjoy this premier attraction, which showcases the ethnic heritage and history of the people and industry of the mining regions of Minnesota through a dynamic program of exhibits, education, and entertainment.

The third facility is Giants Ridge Golf and Ski Resort located near Biwabik, Minnesota. Giants Ridge is a year-round recreation destination offering quality downhill and cross-country skiing and snowboarding runs. The resort also offers an 18-hole championship golf course and a 93-suite lodge. It is nestled in the Superior National Forest and many of the holes abut natural hazards, in the form of wooded wetlands and Wynne and Sabin Lakes. Golfers in 1999 played 29,000 rounds, which has had a very beneficial impact on the economy of northeastern Minnesota. For this report, the IRRRB is reporting for the agency as a whole. No member of the IRRRB staff has received P2 training during the past year.

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 and promote the overall goals of the state’s environmental policies and minimize the public’s exposure to noise and safety hazards around airports.” MAC is governed by 15 commissioners, thirteen of which are appointed by the governor and one each of which is appointed by the mayors of Minneapolis and St. Paul.

MAC owns and operates six reliever airports and the Minneapolis/St. Paul International Airport (MSP). While MSP handles commercial air traffic, the reliever airport system handles the majority of the “general aviation” traffic. In 1999, MSP serviced more than 34 million passengers and supported 510,000 flight operations. The reliever airport system supports more than 875,000 flight operations per year.

MAC presently employs approximately 500 people who are responsible for a wide variety of duties. The airport system has been likened to “running a small city.” The organization can basically be divided into three areas—landside, airside, and administration. Landside includes Ground Transportation, the Airport Director’s Office, Energy Management, and Facility Management. Airside consists of Operations, Carpentry, Communications, Electrical, Fire, Police, Maintenance (field and mechanical), and the Paint

Shop. Administration includes Airport Development, Environment, Commercial Management, Executive, Finance, Human Resources, Insurance/Risk, Labor Relations, Legal, IS, Public Affairs, and Purchasing.

This summary constitutes a report for the agency as a whole. Staffed facility locations include the Lindbergh and Hubert H. Humphrey terminals at MSP International, as well as Maintenance, Trades, and two administrative locations. MAC continually reevaluates and updates all pollution prevention methods and practices. Communication and topic-specific training is ongoing.

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, environmental education, water resources planning, and non-point source pollution abatement.

MCES operates eight treatment plants in addition to three maintenance facilities, a field office, and administrative headquarters for a total of 13 staffed facility locations. MCES is budgeted for approximately 740 staff (full-time equivalent positions). This report describes pollution prevention activities for the entire MCES. A separate report will cover pollution prevention for 2000 for Metro Transit, the division of the Metropolitan Council, which provides public transit, i.e. bus service and a planned light-rail system, for Minneapolis, St. Paul, and surrounding suburban areas including 78 cities.

MCES is an active member of the Interagency Pollution Prevention Advisory Team (IPPAT). Michael Nevala, P2 contact for MCES, also has been a member of the Minnesota Office of Environmental Assistance's (OEA) Prevention, Reduction, and Recycling Advisory Council (PRRAC) since its beginning in 1997. In addition to this professional contact and resulting internal sharing of information, some informal P2 training occurs at the treatment plants related to maintenance, and all employees in the industrial waste section have been formally trained. P2 Week was publicly observed in September 1999 with a breakfast, keynote speech, and awards presentations, all organized by the OEA with MCES participation.

Metropolitan Council - Transit Operations — Metro Transit is the major supplier for mass transit in the seven-county metropolitan area, operating more than 1,000 buses over 109 routes. To accomplish this service, Metro Transit operates five service garages, one overhaul facility, one police station, and an office building with a total staff of 2,340 employees.

During the past year, Metro Transit has increased its ridership by 5 percent and is upgrading its fleet with newer buses. This report covers all of the buildings that are operated by Metro Transit. During the last year, no formal P2 training was conducted by Metro Transit, but opportunities were given to staff to attend programs put on by other agencies pertaining to pollution prevention.

Metropolitan Mosquito Control District — The Metropolitan Mosquito Control District (MMCD) controls mosquitoes and black flies in the metropolitan counties of Anoka, eastern Carver, Dakota, Hennepin, Ramsey, Scott, and Washington. The district employs 48 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 small fleet of vehicles. This report covers pollution prevention activities for all the facilities operated by Metropolitan Mosquito Control District. Pollution prevention training for MMCD staff during the past year is reported under section #11, the *Education, Communications, and Training* category, contained in Part III of this report.

Pollution Control Agency — The Minnesota Pollution Control Agency (MPCA) has approximately 800 staff located in the central office in St. Paul and seven district offices in Duluth, Brainerd, Detroit Lakes,

Mankato, Marshall, Rochester, and Willmar. This report covers all activities of the agency statewide. Some staff have received pollution prevention training, but most have not.

Department of Transportation — The Minnesota Department of Transportation (Mn/DOT) has approximately 5,400 employees. Mn/DOT is a decentralized 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 numerous remote salt sheds and gravel pits. Mn/DOT has more than 160 EPA ID numbers. The department maintains approximately 12,800 miles of highway (28,837 lane miles) and 4621 bridges. Mn/DOT maintains 11,000 pieces of equipment, half of which have engines. Of these, 4,200 are on-road vehicles and 1,100 are off-road vehicles. This report represents Mn/DOT as a whole with respect to Mn/DOT's efforts in pollution prevention.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities (MnSCU) — MnSCU is a network of 34 two-year and four-year state colleges and universities, serving about 140,000 students each semester.

Minnesota West Community and Technical College — Minnesota West Community and Technical College is a merged comprehensive community and technical college. The college includes five campuses located in the southwestern Minnesota communities of Canby, Granite Falls, Jackson, Pipestone, and Worthington. The college employs approximately 300 faculty, staff, and administrators dispersed among the five campuses. This summary reports on the college as a whole with no distinction to any particular campus.

North Hennepin Community College — Approximately 350 staff members work at two locations: North Hennepin Community College campus, with off-campus classes occurring at Buffalo High School in Buffalo, Minnesota. This report covers only the North Hennepin Community College campus. P2 training is required of Plant Services staff and certain other staff, and is voluntary on part of other staff.


Southeast Technical College — Minnesota State College-Southeast Technical has 111 employees. Departments include instructional, support staff, clerical, maintenance, administration, student services, financial aid, placement, custom services, marketing, and outreach. Minnesota State College-Southeast Technical consists of three facilities: the Red Wing, Winona, and Winona Airport campuses. This report covers the college 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 are provided annual training on hazardous waste management as a component of a comprehensive safety program.

University of Minnesota — The University of Minnesota has 30,304 employees and 58,196 students on 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) and operates the University Center Rochester in cooperation with MnSCU. The university has approximately 22 experiment or research stations, extension agents in approximately 80 of the 87 counties in Minnesota, and has approximately 50 EPA ID numbers for hazardous waste generator sites around the state of Minnesota. This report covers the university as a whole. Approximately 2,500 staff and faculty received pollution prevention training during the past year.

Part II

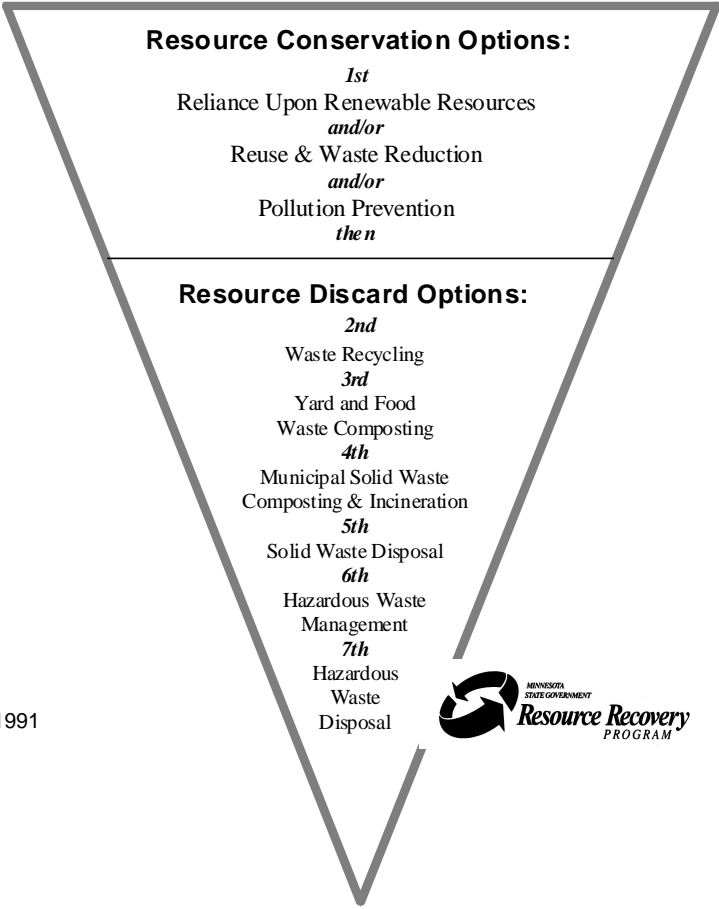
Policy and Regulatory Activities

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 and the Minnesota Department of Administration Priorities for Environmental Materials Management (see below).



**Minnesota Department of Administration
Priorities For Environmental Materials Management**

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




Resource Conservation Options:

- 1st*
Reliance Upon Renewable Resources
and/or
Reuse & Waste Reduction
and/or
Pollution Prevention
the n

Resource Discard Options:

- 2nd*
Waste Recycling
- 3rd*
Yard and Food
Waste Composting
- 4th*
Municipal Solid Waste
Composting & Incineration
- 5th*
Solid Waste Disposal
- 6th*
Hazardous Waste
Management
- 7th*
Hazardous
Waste
Disposal

Adopted 1991



The Plant Management Division's Mission Statement encompasses pollution prevention and other environmental concepts (see below). The Resource Recovery Office in the Plant Management Division encourages pollution prevention and promotes the preferred waste management practices contained in Minnesota Statutes Section 155A.02 during the acquisition, use, maintenance, and discard of materials.

Plant Management Division Mission Statement	
Our mission is	to deliver consistent quality services to ensure clean, safe and environmentally-sound buildings, grounds and operations.
Our customers	are all people who use our services throughout the state of Minnesota.
The services we provide	are a continuum of building, grounds and professional services specific to the customers' needs. They include building maintenance, cafeterias, energy management services, grounds, janitorial, materials transfer, parking, administration of the state resource recovery program and special use of state facilities permits.
Our core values are	High quality professional staff with: <ul style="list-style-type: none">- accountability- honesty and ethics- loyalty- integrity- commitment to teamwork- respect of others and ourselves- knowledge Responsiveness to our customer needs through: <ul style="list-style-type: none">- communication- efficiency- timeliness Provide quality work through: <ul style="list-style-type: none">- modern technology- employee training Responsible business practices that encourage: <ul style="list-style-type: none">- professionalism- cost effectiveness- open communication Plan for the future, considering: <ul style="list-style-type: none">- technology- employee development- establishment of long-term goals- involvement of clients Environmental stewardship with: <ul style="list-style-type: none">- conservation of resources- prevention of pollution- promotion and education- integration into all work places and services
Created 1/92	

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 his/her job responsibilities. Employees are to follow state and federal requirements and shall identify opportunities to implement environmental values

Department of Agriculture — The Laboratory Services Division continues to research ways to reduce the amount of hazardous waste it generates by purchasing new technology that reduces the use of hazardous

chemicals. In addition to new technology, they look for alternative methods that will help in the reduction of hazardous waste streams. The department has an ongoing waste reduction program and actively looks for ways that it can reduce the amount of non-recyclable/reusable products used on a daily basis. The department continues to educate the public on the responsible use of pesticides and fertilizers within their environment.

Department of Corrections —

Minnesota Correctional Facility-Lino Lakes (MCF-LL) — As part of an ongoing effort to reduce pollution, the MCF-LL is committed to keeping pollution producing activities to an absolute minimum. The categories indicated in Part III represent areas where there are no other options available to reduce or eliminate the pollution potential; however, they are dealt with through recycling efforts either through an outside contractor or in-house staff.

MCF-Oak Park Heights (MCF-OPH) — Over the past few years, the institution has installed energy saving equipment in various areas in an attempt to lower its utility bills, including water-saving, electronically timed showers and electronic flush controls on the individual room toilets. Gas-fired kitchen appliances were installed several years ago as part of a joint NSP and Department of Administration energy program to lower electric costs. MCF-OPH continues to pursue the goal of energy efficient equipment, while still providing adequate services to offenders.

In an attempt to lessen the amount of materials being landfilled, MCF-OPH has instituted a food-recycling program with Stratton Farms through which food scraps and remains are saved and used to feed pigs. In this manner, approximately 95 tons of food waste were recycled and six trash pickups were eliminated over the course of the year due to the food-recycling program.

Since inception, the MCF-OPH has had the policy of using the safest possible product, with the lowest capability of generating hazardous waste and polluting the environment. The purchasing office has followed this policy to the best of its ability. The policy is due not only to recognition of the need to protect our environment, but also to the type of offenders housed at this facility, and for the protection and safety of both staff and offenders. Potentially unsafe products, i.e. rating more than 0 or 1 on HMIS or NFPA scales, are replaced with a suitable product which will accomplish the same end. MCF-OPH staff places a high priority on utilizing techniques, methods, and products that are nonhazardous or less hazardous to implement the concept of source reduction.

MCF-Red Wing — MCF-RW programs have remained essentially the same as fiscal year 1999. This facility handles waste as in the past. Every effort is made to eliminate hazardous waste.

MCF-Rush City — Hazardous waste prevention is addressed at MCF-RC's academy orientation.

MCF-Shakopee — MCF-S encourages staff to use e-mail for communication instead of paper. The facility purchases recycled products when available and has a recycling program for paper, plastic, aluminum, glass, lamps, cardboard, oil, antifreeze, scrap metal, batteries, and used rechargeable batteries when possible. Old computers are donated to the MCF-STW's program to recycle computers for schools. To conserve energy, policy requires windows to remain closed. The entire facility is climate controlled. Lighting, heating, cooling, and ventilation equipment operate only when needed.

MCF-Stillwater — MCF-STW has worked with the Washington County Hazardous Waste Inspector, the state authorized hazardous waste contractor, vendors, and staff to reduce the hazardous waste generated at the facility. MCF-STW reduced waste generation to the point that the facility has been downgraded from a large quantity generator to a small quantity generator. To accomplish this downgrade, annual training covered the purchase, use, and disposal of hazardous materials. On an ongoing basis, all staff are expected to review the hazardous materials that they use and recommend changes to use safer products and processes as they become available. For example, the paint shop has added a powder coating line, which has helped to reduce the generation of waste solvents and VOCs into the air. The upholstery shops and furniture shops changed to a non-flammable adhesive in their operations and developed procedures to minimize waste.

Office of Environmental Assistance — The OEA concentrates on pollution prevention policy and outreach. MnTAP focuses the vast majority of its efforts on technical assistance to other organizations and companies with a goal of preventing pollution. Each year, MnTAP works to achieve its goal of reducing one million pounds of waste (as solid/hazardous waste, air emissions, or wastewater discharge), and saving companies one million dollars. MnTAP activities resulted in a total reduction of 1.8 million pounds of waste and 30 million gallons of water conserved, with cost savings of \$2.8 million.

ENVIRONMENTAL AND ECONOMIC BENEFITS

Technical assistance activity	Waste reduced (in pounds)	Water saved (in gallons)	Cost savings
Telephone calls	8,800		\$30,000
Site visits	911,600	26,600,000	\$2,463,700
Student interns	186,000	3,600,000	\$218,800
Materials exchange	685,300		\$151,100
Total	1,791,700	30,200,000	\$2,763,600

*Waste reduced includes air and water emissions, as well as solid and hazardous waste.

Department of Human Services — The Department of Human Services (DHS) produces a very small amount of hazardous waste from campus maintenance and client work programs. Most activities involve recycling programs at the regional treatment centers that provide work therapy for our clients and a source of funds for their work therapy programs. The central office buildings continue to recycle at a 79 percent rate.

The Moose Lake SOCS facility has mandated the use of water-based finishes in its woodworking program and has eliminated solvent-based finishes. DHS is also moving toward the elimination of mercury containing medical devices on all campuses.

DHS has piloted an electronic benefits transfer program (EBT). The EBT program replaces paper transactions with an electronic debit card at the point of sale. The program started in the metro area and is now moving statewide.

Metropolitan Airports Commission — The Metropolitan Airports Commission (MAC) recognizes pollution prevention as an integral part of its services. MAC’s strategic plan reflects its commitment to environmental protection with the stated goal of establishing sound environmental strategies that lessen adverse environmental impacts on the natural environment and the surrounding communities. The commission encourages tenants to do the same. MAC also promotes taking a proactive approach to environmental protection and supports cooperation with other regulatory agencies.

Purchasing/procurement. MAC has been able to prevent pollution by implementing several purchasing policies. For instance, reuse is promoted internally, and a procedure has been established outlining the steps to take when MAC-owned property is no longer needed by a particular employee or department. (See also sections 21, 22, and 30 in Part III.)

Technology and accepted practices. With the advent of internal and external electronic mail capabilities, MAC has embraced its use for many purposes. E-mail is a quick and efficient means by which people within and outside organizations communicate. Yet, it is also an effective way, when used properly, to reduce the amount of paper produced for organization-wide notices. It has become MAC’s accepted practice to use e-mail in this manner for notices such as job postings, organizational updates, press releases, human resource announcements, etc. Before MAC had e-mail available (only 3 1/2 short years ago), every organization-wide notice was sent through interoffice mail on paper to each employee. Not only was this

cumbersome, but a waste of paper as well. Now with the ability to instantly send messages via e-mail, paper notices have become essentially obsolete.

Similar to the use of e-mail is MAC's Intranet site. Here employees can electronically access many internal documents previously only available on paper. Multiple copies become unnecessary and employees can access them only if they are in need of the document. Not only is this more efficient and time saving, it also saves paper.

Regulatory activities. With the many and varied activities at MSP, as well as at the reliever airports, it is essential that MAC staff work closely with a variety of regulatory agencies in order to ensure pollution prevention. For instance, MAC works on an ongoing basis with the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Health to help the reliever airport tenants maintain or obtain compliance with existing regulations associated with their lease space activities. MAC also uses the services of the Metropolitan Council-Environmental Services (MCES) for treating glycol impacted storm water.

Metropolitan Council - Environmental Services — The new tag line of the council is “building communities that work” and is a reflection of its overall Smart Growth policy. Smart Growth promotes activities and outcomes that are sustainable in development, transportation, affordable housing, and the environment. This is accomplished largely through policies, partnerships, and grants and by providing information and technical assistance to local communities, not by enforcement.

The council has a general Environmental Sustainability Policy (Section 1-2) which addresses issues relevant to the entire region. The companion Environmental Sustainability Procedure (Section 1-2a) addresses pollution prevention in day-to-day operations by the staff. The Industrial Waste and Pollution Prevention (IWPP) Section controls the use of the public sewer system in order to ensure compliance with local, state, and federal water quality regulations. See sections 11, 16, and 32 in Part III of this report for a complete description of IWPP's many activities that are relevant to pollution prevention.

Metropolitan Council - Transit Operations — Metro Transit is committed to excellence and leadership in protecting the environment. In keeping with its policy, the objectives are to reduce the amounts of hazardous waste that are generated at any of the facilities and to keep air emissions at 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 its employees and customers.

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. The department strives to minimize adverse impacts on the air, water, and land through excellence in waste stream management. By preventing wastes, Mn/DOT 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 its 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.
- Mn/DOT promotes cooperation and coordination among industry, government, and the public toward the shared goal of preventing pollution at its source.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Through the technical education programs offered by the college, Minnesota West has identified potential pollution concerns in Auto Body, Auto Mechanics Fluid Power, Machine Tool, Agriculture Processing, and Diesel Mechanics. The college monitors absorbents, antifreeze, fuels, oil, solvents, batteries, paints, and tires. Minimal amounts of these products are disposed of each year. The college contracts with authorized hazardous waste transporters for proper removal and disposal. Minnesota West will continue to follow this practice in the future and is exploring options for in-house recycling of some of these products. The campus building services departments are responsible for the storage and use practices of all cleaning supplies. Energy efficient lighting and other utility conservation measures including the upgrading of HVAC systems is currently being evaluated. The college planned to participate in the Chemical Safety Day program in September 2000, sponsored by the University of Minnesota.

Indoor air quality has become a concern. The college requested and received funds from the legislature in 2000 to evaluate and correct concerns at two campuses. That process is currently underway. Through the college AWAIR program, faculty and staff receive training starting with new employee orientation, and annual in-service programs in the employee right-to-know and other hazardous materials management. Beginning in the 2000-2001 school year, efforts were made to identify additional training needs for students. The college administrative board and faculty associations review all new policies before they become final. A current goal of the college is to continue to monitor the effectiveness of our training efforts and the processes for handling, storing, and disposing of hazardous products.

A second goal of the college is to provide improved coordination of the effort. The duties of pollution control and OSHA coordinator have been assigned to the college's Director of Facilities. With the assistance of campus building services supervisors, campus safety and health committees, college safety and health committee and college administration, the college hopes to achieve a more uniform outcome. The campus-based safety and health committees are comprised of members of faculty and staff and will meet monthly to discuss and act on concerns of each campus. The college safety and health committee will be made up of representatives of each campus committee and will meet semi-annually or as needed to help plan long-range improvements in the overall college program. Although record keeping has been a problem in the past, this structural reorganization should improve the process. Minnesota West will seek out membership to organizations that will help the college establish and maintain safe work and learning environments on its campuses.

University of Minnesota — A Sustainable Campus Initiative Committee comprised of staff, faculty, and students will be formed to host and facilitate discussions leading to innovative partnerships between the operational and academic elements of the university. The result will be a more environmentally sustainable campus, which uses the campus and its physical facilities as a tool for environmental learning.

The committee planned to begin three projects during the 2000-2001 academic year: restore a degraded stream and wetland on the St. Paul campus, incorporate sustainable building concepts into the university's construction standards and processes, and develop an environmental performance baseline or "ecological footprint" for the Twin Cities campus (www.bio.psu.edu/Greendestiny/indicators.shtml and www.nwf.org/nwf/campus/newsletter/progress.html).

Part III

Pollution Prevention Activities during the Fiscal Year

Part III contains information about the pollution prevention activities practiced by the participating agencies. The information is organized into sections 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. The Materials Management Division's Surplus Services Section uses absorbents to clean oil/antifreeze spills. The Plant Management Division uses absorbents to clean oil/antifreeze spills and recycles the absorbent.

Department of Corrections —

Minnesota Correctional Facilities-Faribault (MCF-FRB) — This facility has a contract with Safety Kleen, which cost \$500 in fiscal year 2000.

MCF-Oak Park Heights (MCF-OPH) — 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 amounts to less than one gallon per year. Absorbents are used to clean up any spills in the garage.

MCF-Red Wing (MCF-RW) — Absorbents are used on a limited basis in the automotive shop. This waste material is burned at the city of Red Wing incinerator.

MCF-St. Cloud (MCF-SCL) — Absorbents are on hand and ready for use at an annual cost of \$300. This keeps hazardous waste out of the landfill and in compliance with the MPCA. The rag recycling program costs \$1,533 annually and eliminates oil and grease rags from trash dumpsters going to Metro-Furnace, in accordance with MPCA regulations.

MCF-Rush City (MCF-RC) — This facility is in the process of setting up a contract with a disposal service.

MCF-Shakopee (MCF-SHK) — SHK staff use absorbents in maintenance shops for oil-based products. The program is set up with Safety Kleen, which handles oil products in a safe way, benefiting the environment. The annual cost is approximately \$250.

MCF-Stillwater (MCF-STW) — Absorbents are used in various industry shops. Shop supervisors regulate the use of this product in an ongoing effort to reduce its use. The waste is disposed of in accordance with the EPA/MPCA regulations.

Thistledew Camp (TC) — OSI picks up used absorbents.

Willow River/Moose Lake (MCF-WR/ML) — Absorbents are used in many areas of the facility to absorb hazardous materials. The facility is currently using a cellulose material instead of clay. The cellulose can be completely incinerated and clay cannot.

Iron Range Resources and Rehabilitation Board — IRRRB does not currently use clay absorbents at its facility. Shop staff use rags when doing oil changes, vehicle lubrication, etc.

Metropolitan Airports Commission — MAC continually evaluates a variety of absorbents. Currently, corncob fractions, clay floor-dry, and disposable rags are used to absorb oil and grease in the maintenance shop. Also, although MAC is not responsible for any aircraft fueling operations or related spills, it does provide corncob fractions to its tenants, which are used exclusively to absorb spilled jet fuel. Booms are also used as a stopgap to prevent miscellaneous debris and other contaminants from reaching the river. The sorbents are saturated as much as possible before disposal. The spent absorbent materials are managed as nonhazardous industrial waste and are burned for 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 many other applications, polypropylene pads are used as absorbents. Products that are absorbed are primarily 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 that 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. For 1999, 1,008 gallons of used absorbents were sent for energy recovery.

Metropolitan Council - Transit Operations — In 1996, Metro Transit switched from the use of clay-based absorbents to a cellulose type of absorbent. The change was made after reviewing the comprehensive studies and report done by the Minnesota Department of Transportation (MnDOT). An in-house comparison of absorbents validates the effectiveness of the selected absorbents. The change has eliminated over 8,000 pounds of clay from the waste stream and has diverted used absorbents from being sent for use as a fuel. Metro Transit is still evaluating other absorbents that are denser and therefore would not be as easily blown around.

Metropolitan Mosquito Control District — The district currently uses a sawdust floor-dry absorbent in addition to reusable absorbent pads and booms. Absorbents that are contaminated with hazardous materials are handled as hazardous waste. Nonhazardous absorbents are managed as part of the solid waste stream. In most cases, this solid waste stream is incinerated for heat recovery at an approved waste facility. The district used 100 pounds of sawdust absorbent and a small quantity of absorbent pads last year.

Department of Transportation — In 1995, Mn/DOT stopped landfilling clay-based used oil sorbent material. The sorbents currently used are used either as a waste derived fuel for the generation of steam and electricity, or cleaned and reused. Mn/DOT continues, on a small scale, to use launderable rags. Mn/DOT has found that the single largest factor in reducing an absorbent waste stream is reuse. It is important to use absorbents to their full potential prior to discarding.

Due to changes in sorbent technology, Mn/DOT has updated the original sorbent research report. This report identifies various alternatives to the traditional clay sorbent alone as well as the efficiency and effectiveness of alternatives that can be beneficially reused (burned for energy recovery) or recycled after saturated. The report compares corncob, paper, wood, cork, pumice, diatomaceous earth, polypropylene (reusable and launderable), peat, cellulose, polymer, and clay sorbent. A full report of Mn/DOT's updated sorbent research findings is available upon request.

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's used oil sorbents are either burned in a waste-to-energy facility (burned for energy recovery) or are cleaned and reused. Present and future environmental liability is significantly reduced as a result of this waste management change. Laundering is an easy, cost-effective way to manage used oil rags. There is at minimum 27 percent cost savings to

Mn/DOT by managing used oil rags by laundering. In addition, there is no storage, transportation, or record keeping required of Mn/DOT.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Through the technical education programs offered by the college, Minnesota West has identified potential pollution concerns in Auto Body, Auto Mechanics Fluid Power, Machine Tool, Agriculture Processing, and Diesel Mechanics. The college is monitoring absorbents, antifreeze, fuels, oil, solvents, batteries, paints, and tires. Minimal amounts of these products are disposed of each year. The college contracts with authorized hazardous waste transporters for proper removal and disposal. Minnesota West will continue to follow this practice in the future and is exploring options for in-house recycling of some of these products.

North Hennepin Community College — The college uses floor-dry for its vehicle shop. Used absorbents are swept up and stored in a barrel, and an absorbent is used for oil. Absorbents are disposed of through a contractor.

University of Minnesota — Vehicle fleet operations use absorbent pads to clean up small routine spills, in place of and/or in combination with floor-dry. The pads are laundered and reused. Use of floor-dry has been reduced by 5 to 10 drums per year. Printing and Graphic Arts and Studio Arts use rags for printing operations cleaning. The rags are centrifuged to remove solvents as needed and then laundered for reuse.

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 —

MCF-OPH — The industry programs use environmentally safe glues including a natural animal products glue. The physical plant department uses the least polluting adhesives possible to accomplish the task at hand.

MCF-RW — Staff use contact cement in the wood shop. Waste products are collected and recycled.

MCF-SHK — Staff use up all the adhesives they purchase.

MCF-STW — Adhesives are used in the VT carpentry, upholstery, and furniture shops. These shops now use improved products and effective handling procedures that nearly eliminate waste. If waste is generated, it is disposed of in accordance with EPA/MPCA regulations.

TC — OSI picks up used adhesive.

3. Air Quality, CFCs

Department of Administration — The Division of State Building Construction monitors statewide asbestos control programs based on federal and state standards; and also administers, specifies, and carries out air quality standards. The Plant Management Division plans to retrofit existing chillers with non-ozone depleting 134a refrigerant. Currently the division recovers and recycles all refrigerants.

The InterTechnologies Group requires vendors to comply with federal and state refrigerant recovery statutes for air conditioner refill or replacement. InterTechnologies uses freon for all the stand-alone air conditioners located at three computer operations centers. The Travel Management Division collects all automotive refrigerants and they are recycled on-site at the repair facility.

Department of Commerce — Minnesota Energy Code. See section 11 *Education, Communication and Training* in Part III.

Department of Corrections —

MCF-LL — A new program has been implemented this past year concerning CFC compliance with the EPA. A refrigerant mechanic was hired to perform preventive maintenance on all facility equipment containing refrigerants, as well as equipment inventories, refrigerant management, EPA compliance, and equipment upgrades. The goal is to reduce the amount of CFCs emitted into the atmosphere through mechanical upgrades, better preventive maintenance practices, and the elimination of CFC-containing equipment.

MCF-OPH — Refrigerant oil is recycled with the rest of OPH's waste oil and picked up on an as needed basis. A refrigerant reclaimer is used to reclaim freon. Two staff were trained and EPA certified to reclaim refrigerant and charge refrigerant. Non-CFC refrigerants are used where possible, and future plans call for the phasing out of all CFC refrigerants.

MCF-RC — A refrigerant reclaimer is used to reclaim freon. A staff person certified on applicable refrigeration and air conditioning units uses the reclaimer.

MCF-SCL — Staff are eliminating excess freon at an annual cost of \$300. This limits CFCs to the atmosphere, preventing the greenhouse effect and limiting ozone-depleting chemicals. Facility staff plan to continue preventative maintenance to eliminate discharges.

MCF-SHK — All refrigeration and air conditioning equipment owned or purchased by SHK has been converted to newer refrigerants that are safer for the environment. SHK does preventive maintenance and leak detection on all refrigeration equipment.

Metropolitan Airports Commission — Maintenance performed on any system containing CFCs includes complete recovery and recycling of refrigerants by certified technicians. Appliances containing refrigerants are recycled through an approved vendor.

Metropolitan Council - Environmental Services — With the implementation of the federal Clean Air Act Amendments of 1990, all CFCs from vehicles and stationary units have been recovered for recycling since the 1992 effective date. MCES has six recovery/filter units and approximately twelve 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 Minnesota Pollution Control Agency (MPCA) required that Metro Transit apply for air discharge permits as mandated by the Clean Air Act Amendments. Subsequently, a complete stack inventory was conducted at all six garage facilities. In 1997, Metro Transit was issued permits for three of those locations. A review of the air emissions has shown that the permits were required at two of those garages because of the size of the dual fuel boilers that were installed. Because of this fact, no additional reductions can be made at those garages. The third permitted facility, the Overhaul Base, is regulated due to the air emissions from the boilers and the exhaust from the paint shop and paint spray booth. It is anticipated that when the calculations for air emissions have been completed that the permit limits 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 four cooling seasons to be highly efficient for cooling and requires less maintenance than the DX air conditioning units currently on the market. Major repairs were made on two of the three units because the manufacturer did not have the checking of a seal included in the preventative maintenance schedule. This has been modified in the maintenance program and, therefore, future problems will be minimized. Metro Transit has included in its long-term capital planning projects the removal of all existing CFC cooling systems beginning in 2005.

Metropolitan Mosquito Control District — The district contracts with licensed vendors to perform all work on cooling systems and air handling units. All maintenance and repair of vehicle air conditioning units is performed by certified specialists at the vehicle dealerships where the vehicles were purchased.

Department of Transportation — In 1993, Mn/DOT put in place a 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 CFCs. This insured avoidable releases of CFCs during vehicle maintenance. Also in 1993, Mn/DOT changed all vehicle purchasing specifications to include “environmental friendly” 134-refrigerant in all vehicle air conditioners. CFCs in all Mn/DOT vehicle and building air conditioners are being phased out as warranted by repairs.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Indoor air quality has become a concern. The college requested and received funds from the legislature in 2000 to evaluate and correct concerns at two campuses. That process is currently underway.

North Hennepin Community College — NHHC uses refrigerants (freon) but does not store refrigerants. R-22 is used in chilling towers.

University of Minnesota — The university’s Twin Cities campus has remodeled two of its coal-fired steam plants to use multiple fuel types and has shut down a third. The result is a reduction of sulfur dioxide (SO₂) emissions from approximately 600 tons per year (tpy) to approximately 110 to 250 tpy, nitrogen oxide (NO) 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, or oil—in the modified plants. A minimum of 70 percent gas will be used for the first five to six years.)

Facilities Management Energy Systems has created an Energy Efficiency Group whose mission is to reduce the Twin Cities campus energy consumption while maintaining or improving occupant comfort. Building energy use and occupant complaints are monitored and analyzed to find energy saving opportunities and to ensure successful modifications continue to pay off. Energy saving projects are typically funded through internal loans paid back with the savings from the energy budget. The Energy Efficiency Group has developed “University Building Efficiency Recommended Guidelines” to assist building managers and Building Systems Automated Control operators to maintain building energy use at the lowest level consistent with occupancy scheduling and comfort. Their efforts have reduced steam use on the Minneapolis campus central steam system by 20 percent. With the heating plant modifications, there is a reduction of approximately 1,560 to 1,680 tons per year of SO₂, NO, and CO emissions. Reduced energy usage requires less steam and electricity generation which means less pollution emitted to the air.

The university’s Center for Diesel Research focuses on reduction of diesel exhaust emissions from mobile and stationary engines (<http://www.me.umn.edu/centers/cdr/index.html>). The center’s mission is to:

- develop new technology to reduce occupational and environmental exposure to internal combustion engine emissions
- evaluate the application of emission control strategies in confined spaces such as mines and densely populated areas
- offer unique educational and research opportunities to students
- provide high quality research and development services to customers such as engine and exhaust after-treatment manufacturers, the petroleum and alternative fuels industries, and users of internal combustion engines
- offer educational opportunities through outreach programs and short courses

There is ongoing CFC and HCFC capture and reclamation for cooling units. As units are serviced, their CFCs/HCFCs 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. This has resulted in reduced emissions of global warming chemicals to the environment.

4. Antifreeze

Department of Administration — The Travel Management Division replaces antifreeze on an as needed basis, rather than as scheduled maintenance. Used antifreeze is collected and recycled. The InterTechnologies Group uses glycol for the cooling loops for the stand-alone air conditioners for the three computer operations centers. The Plant Management Division collects and recycles antifreeze on a voluntary program and will maximize recovery by January 1, 2000.

Department of Corrections —

MCF-FRB — Staff contract with Safety Kleen. It takes years to fill a barrel. There was no cost this year.

MCF-LL — Staff engage in antifreeze recycling activities.

MCF-OPH — All vehicles are taken to a local automotive shop for antifreeze testing and replacement when necessary.

MCF-RW — Antifreeze is used in the automotive shop. Material is stored until waste drum is filled, then recycled.

MCF-RC — All vehicles are taken to local automotive shop for antifreeze testing and replacement when necessary.

MCF-SCL — All antifreeze from facility vehicles is collected by local service stations and recycled at a cost of \$1,500. Antifreeze is no longer disposed of with the local municipality water department. SCL plans to continue compliance efforts.

MCF-SHK — Staff recycle antifreeze with Safety Kleen at a cost of approximately \$200 per year.

MCF-STW — Antifreeze is used in most STW vehicles. It is recycled for reuse when possible. If waste is generated, it is disposed of in accordance with EPA/MPCA regulations.

TC — OSI picks up used antifreeze.

Iron Range Resources and Rehabilitation Board — IRRRB's antifreeze is stored in 55-gallon drums and picked up by Como Oil of Duluth for recycling.

Metropolitan Airports Commission — MAC maintenance shop is equipped with an antifreeze recycler. At regular maintenance intervals, coolants are removed, processed, and returned to vehicles. The recycled antifreeze is supplemented with anti-corrosion additives and the pH is adjusted. This meets all manufacturer specifications for engine coolant. Very little new antifreeze is purchased and virtually no antifreeze is disposed of.

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 that is disposed of in the sewer. 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 in 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/coolant. This calls for storing the used material in 55-gallon drums and then having it recycled.

Metropolitan Mosquito Control District — MMCD uses private contractors for most major vehicle repairs including servicing of vehicle cooling systems. On rare occasions when staff collects antifreeze from a vehicle, it is recycled through the district's used oil recycling vendor. As the district replaces older fleet vehicles with new vehicles, the purchase bids specify vehicles be equipped with long-life antifreeze.

Department of Transportation — Mn/DOT has researched, identified, and implemented various recycling options for antifreeze. However, due to cost, most of Mn/DOT's antifreeze is disposed of in the sanitary sewer. Some antifreeze generated by Mn/DOT is recycled through a filtration technology located in Crookston. The recycled antifreeze is used in Mn/DOT vehicles.

The approximate cost per 55-gallon drum of recycled 50/50 antifreeze from Mn/DOT's antifreeze recycling program in Crookston is about \$70 (this does not include transportation costs to Crookston). In comparison, the cost for the same service performed by an outside vendor is around \$104. New antifreeze diluted to 50/50 is about \$81. It costs more than \$11 per 55-gallon drum to transport used antifreeze to Crookston. At this time, transportation costs make disposal in the sanitary sewer more cost effective than recycling for most of Mn/DOT.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Through the technical education programs offered, the college has identified potential pollution concerns in Auto Body, Auto Mechanics Fluid Power, Machine Tool, Agriculture Processing, and Diesel Mechanics. Minnesota West is monitoring absorbents, antifreeze, fuels, oil, solvents, batteries, paints, and tires. Minimal amounts of these products are disposed of each year. The college contracts with authorized hazardous waste transporters for proper removal and disposal. The college will continue to follow this practice in the future and is exploring options for in-house recycling of some of these products. Upgrading of HVAC systems is currently being evaluated.

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

University of Minnesota — The university's Twin Cities Campus Facilities Management Department continues to evaluate opportunities and feasibility of using recycled antifreeze in building chiller units. An antifreeze recycling pilot project was initiated with four drums of antifreeze from a campus emergency generator. Metro Recovery Systems cleaned the old antifreeze and restored the composition to 60 percent glycol, 40 percent water. The recycled antifreeze will be used in the next emergency generator that is changed out. (Generators are on a two-year antifreeze replacement schedule; the Twin Cities campus has over 100 generators.)

The university's Fleet Services Department on the Twin Cities campus rarely removes automotive antifreeze, rather they top off radiators with fresh antifreeze, then sell vehicles after three to five years. It is estimated that the Twin Cities Campus Facilities Management Department could save enough money per year in avoided purchase costs to at least cover the cost of the recycling process if they could successfully recycle antifreeze from building chiller units and emergency generators. If the chiller unit antifreeze can be recycled, it will result in the reduction of approximately 825 to 1,650 gallons of 30-percent ethylene glycol

being disposed of in the sewer and avoid the purchase of the same amount of virgin antifreeze per year on the Twin Cities campus.

5. Audits

Department of Corrections —

MCF-OPH — The facility 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. The Washington County HELM representative conducts an annual hazardous waste inspection, including a review of MCF-OPH's disposal procedures, to ensure they meet all guidelines. He has consistently commended the facility for its attention to materials handling and disposal procedures. The Department of Health and State Fire Marshal conduct annual inspections of the facility.

MCF-RC — Our safety committee inspects monthly for a variety of fire, safety, and sanitation items, which include an inspection of hazardous materials, inventory lists, and disposal procedures.

MCF-SCL — Environmental audits are ongoing in accordance with MPCA, ACA, and OSHA requirements at a cost of \$4,000 annually. This helps identify and/or eliminate waste streams. MCF-SCL plans to use outside contractors to conduct audits in the future.

MCF-SHK — Scott County audits the Shakopee facility annually.

Metropolitan Airports Commission — MAC is continuing to conduct environmental compliance inspections at the six reliever airports. These inspections help identify possible environmental issues and assist reliever airport tenants in achieving and/or maintaining compliance with existing regulations. They have also allowed MAC to educate its tenants of the environmental impacts their actions may have and to help them improve their waste generation/disposal practices. This program is ongoing by design. MAC staff continues to provide education/training and technical support to the reliever tenants. An example of this is the cooperative efforts between the MPCA and MAC to hold informational meetings with reliever tenants to assist tenants with the Storm Water Permitting process. Opportunities for pollution prevention are noted and incorporated in the Capital Improvement Process as indicated by MAC's strategic plan.

Metropolitan Council – Environmental Services — Within the environmental audit program conducted by MCES staff, opportunities for P2 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 that may not be characteristically hazardous. Recommendations also have been made for materials management in order to avoid spills. The internal audit program was developed and one full round of audits was conducted for all environmental media and at all MCES facilities ending a six-year cycle in 1999.

Metropolitan Mosquito Control District — The district team responsible for management of hazardous materials and pollution prevention, conducts annual internal audits regarding the management of hazardous waste and toxic materials at each of its seven facilities. The audits include review of storage and handling procedures for hazardous materials, record keeping, transfer, and labeling of waste materials and recycling/disposal procedures. In addition, the team reviews and makes recommendations regarding efforts by the facilities to reduce or eliminate the use of toxic materials.

Department of Transportation — Mn/DOT conducts approximately 50 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
- make recommendations to maintain an effective waste management program

Mn/DOT annually conducts 15 to 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. These audits help 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 of 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.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

University of Minnesota — The University Department of Audits checks departments to see if they have hazardous waste compliance protocols (which includes pollution prevention) and OSHA laboratory standard protocols in place.

The University of Minnesota's Department of Environmental Health and Safety (DEHS) does targeted audits of large and/or noncompliant departments. All departments are directed to minimize waste and prevent pollution via self-audit. The training and audit form is currently available on the Web through the DEHS homepage (www.dehs.umn.edu/hwd/guidebook/guidebook8.html) and in the hazardous chemical waste guidebook.

6. Automotive Fuels

Department of Administration — The state purchased 210 Ford Taurus 2000 model year cars and 85 Dodge Caravan 1999 model year bi-fuel passenger vans which use E85 (85 percent ethanol fuel). This is a total of 315 alternative fuel vehicles. Of these, 185 Tauruses and 61 Caravans were purchased for the Travel Management Division. The CPV members purchased 65 Ford Tauruses and 10 Dodge Caravans. The Travel Management Division uses ethanol 85 fuel as an alternative energy source with reduced emissions. This facility is available to all state agencies and political subdivisions.

Department of Commerce — The department has been an active member of the Twin Cities Clean Cities Coalition (TC4), which is part of a formal Department of Energy alternative transportation fuels program. TC4 members applied for and recently received approval for designation. The department has been actively involved in promoting alternative fuels, such as natural gas propane, biodiesel, and high concentration ethanol (E85 or 85 percent ethanol mixed with 15 percent gasoline) since the early 1990s. Alternative fuels emit lower levels of pollution and, in the case of biodiesel and ethanol, are renewable fuels, made primarily from domestic sources rather than imported petroleum.

The department, in conjunction with other E85 project members, has increased the number of E85 fueling sites to over 50 (as of 1/1/01), which far exceeds any other state in the United States. Other E85 project members include Department of Agriculture, Minnesota Corn Growers Association, American Lung

Association of Minnesota, National Ethanol Vehicle Coalition, U.S. Department of Energy, and Ford Motor Company.

The department operates two light-duty E85 vehicles in downtown St. Paul and three in the Weights and Measures division (W&M). W&M is looking into purchasing additional flex-fuel vehicles as their fleet turns over, but there are equipment compatibility issues that need to be resolved.

The department recently completed a demonstration project with the University of Minnesota's Center for Diesel Research using 100 percent biodiesel, and is about to begin demonstrating a 20 percent biodiesel concentration blended with 80 percent diesel in school buses.

Department of Corrections —

MCF-OPH — Gasoline for the vehicles and diesel fuel for the Industry truck are purchased at a local station. The diesel fuel used by the groundskeepers is stored on-site in an aboveground tank on a pad.

MCF-RW — Fueling of state vehicles is done at the facility, which has a 1,000-gallon aboveground concrete tank with spill containment and leak detection.

MCF-RC — All automotive fuel is purchased at a local station.

MCF-SCL — Ninety-five percent of fueling is done at a public station. Only fuel plant operation vehicles are fueled on-site. It costs five cents more per gallon of fuel but limits chances of fuel spills, explosions, and tank maintenance. The facility plans to continue monitoring.

MCF-SHK — The facility uses fuel with 10 percent ethanol. The finance director attended a training session that provided information on alternative fuels.

MCF-STW — Automotive fuels are used in most facility vehicles. If waste is generated, it is disposed of in accordance with EPA/MPCA regulations.

TC — OSI picks up.

Iron Range Resources and Rehabilitation Board — Diesel fuel and gasoline are stored in underground storage tanks (new in 1999) at the Administration Building. IRRRB uses a blend of ethanol and gasoline in all of the motor pool and in its vehicles. The new tanks are equipped with computerized leak detection and spill containment.

Metropolitan Airports Commission — MAC continually reviews the use of alternative fuels in the fleet. At this time, there are no alternative fuels/vehicles that meet operational requirements.

Metropolitan Mosquito Control District — The majority of automotive fuels used by the district are purchased through normal retail outlets. MMCD does own and operate underground fuel tanks at the Bunker Hills and Jordan facilities. The tanks have leak containment and are electronically monitored 24 hours a day. The district specifies gasoline containing ethanol for use in district vehicles. As a future pollution prevention activity, MMCD will explore the possibility of replacing some of the older fleet vehicles with new flex-fuel vehicles capable of using E85 ethanol blended fuels.

Department of Transportation — Mn/DOT is purchasing heavy equipment pieces that contain computer-controlled electronic ignitions that maximize vehicles' fuel efficiency. Mn/DOT is purchasing lightweight aluminum wheels for its trucks for fuel economy.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Through the technical education programs, the college has identified potential pollution concerns in Auto Body, Auto Mechanics Fluid Power,

Machine Tool, Agriculture Processing, and Diesel Mechanics. The college is monitoring absorbents, antifreeze, fuels, oil, solvents, batteries, paints, and tires. Minimal amounts of these products are disposed of each year. The college contracts with authorized hazardous waste transporters for proper removal and disposal. The college will continue to follow this practice in the future and is exploring options for in-house recycling of some of these products.

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

University of Minnesota — The Power and Propulsion Division, Department of Mechanical Engineering, on the 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 (www.me.umn.edu/divisions/#PnP). 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 gate controllers annually reduce gasoline use by about 2,000 pounds and prevent approximately 7,000 pounds of carbon dioxide emissions.

The Department of Parking and Transportation Services, Twin Cities campus, specified in its contract with Medicine Lake Bus Lines, that all buses used on the campus meet EPA 1997 emission limits for metropolitan buses and any stricter, future EPA limits. Normally Medicine Lake Lines would not need to comply with these strict limits, because they fall into a less regulated category of school buses. The contract also specifies financial penalties, such as \$50 a day for every incident of a bus having visible exhaust emissions. The environmental benefit of these measures is reduced air emissions from automobile and bus exhausts and reduced fuel consumption.

7. Automotive Maintenance

Department of Administration — The Materials Management Division and the State Patrol's contract to refurbish and reuse the State Patrol's 1995 Chevrolet Caprice police automobiles is completed. The Patrol refurbished 137 police vehicles at an approximate value of \$1,800,000; political subdivisions refurbished 27 vehicles at an approximate value of \$365,000. The estimated savings, in lieu of purchasing a new police vehicle at \$20,334, averaged \$7,700 each, for a State Patrol total of \$1,055,000 and \$208,000 for political subdivisions. The Refurbishing State Patrol Vehicles Project was awarded a 1999 Partnership Minnesota Cooperative Certificate of Commendation for Government and Environment. The Materials Management Division also nominated this project to the National Association of State Procurement Officials for the Cronin Club Innovation Award in September 1999.

The Travel Management Division recovers and recycles automotive refrigerants for air conditioning units. The Travel Management and Plant Management divisions' preventative maintenance programs are designed to minimize excessive and/or premature replacement of parts. They also use remanufactured parts whenever they are available.

Department of Commerce — All vehicles are serviced regularly either through Travel Management or through other maintenance arrangements.

Department of Corrections —

MCF-OPH — Vehicles are taken to Rapid Oil Change or the Central Motor Pool, depending on ownership.

MCF-RC — All maintenance is done by an outside vendor that handles all the appropriate recycling.

MCF-SCL — Maintenance is done at an automotive dealership, at a cost of \$6,000. It limits chances of oil or fuel spills and reduces security risks.

MCF-SHK — Most maintenance is done through Central Motor Pool.

MCF-STW — Automotive maintenance is done on most of the facility vehicles by outside vendors. If waste is generated, the vendor is required to dispose of it in accordance with EPA/MPCA regulations.

Iron Range Resources and Rehabilitation Board — Except for air conditioning systems, all maintenance is done in shops at the administration building. Vehicle fluids are kept for recycling, and parts are exchanged for remanufactured parts. All metal that cannot be exchanged is picked up and recycled by a scrap-metals facility.

Metropolitan Airports Commission — For specific information on automotive maintenance, see sections 1, 3, 4, 6, 8, 23, 25, 31, and 33 in Part III.

Metropolitan Council – Environmental Services — For specific information on P2 at MCES in automotive maintenance activities, see the sections on absorbents, antifreeze, batteries, oil/oil filters, parts cleaning, and tires.

Metropolitan Mosquito Control District — All major automotive maintenance and repair is done through vehicle dealerships by way of special maintenance agreements. Only minor vehicle maintenance and repair is performed at district facilities. This would include oil and oil filter changes, spark plug changes, and replacing some engine belts.

Department of Transportation — Mn/DOT is making purchasing decisions of brake cleaners with the help of a past Mn/DOT study of various brake cleaners. The purpose of this study was to:

- identify brake cleaners containing chemicals that are *harmful* to the environment and human health
- identify brake cleaners containing chemicals that are *low risk* to the environment and human health
- measure the performance of brake cleaners containing chemicals that are low risk to the environment and human health

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

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

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.

In fiscal year 2000, Fleet Services has installed for evaluation a parts washer system using a proprietary solvent 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. This system potentially will eliminate 240 gallons of solvent waste per year. This measure promotes resource conservation and the protection of groundwater.

8. Batteries

Department of Administration — The contract for automotive batteries has provisions for all state agencies to recycle batteries. The Travel Management Division recycles automotive batteries. The Materials Management Division procures only reduced or no-mercury batteries in accordance with Minnesota Statutes Section 115A.965, Subdivision 2 (see below). The mercury content in flashlight batteries has been either eliminated or reduced to negligible levels due to the Environmental Protection Agency's mandates in the late 1980s and early 1990s.

Subd. 2. Total toxics concentration levels. The total concentration level of lead, cadmium, mercury and hexavalent chromium added together in any packaging must not exceed the following amounts:

- (1) 600 parts per million by weight by August 1, 1993;
- (2) 250 parts per million by weight by August 1, 1994; and
- (3) 100 parts per million by weight by August 1, 1995.

The Plant Management Division returns batteries from vehicles and janitorial equipment to vendors for recycling. The InterTechnologies Group uses recycled batteries for three uninterruptable UPS units that are located in the two computer operations centers in the Centennial Office Building and one uninterruptable UPS unit located in the Administration Building. The Plant Management Division participates in a voluntary "other" internal battery collection and disposal program.

Department of Commerce — The Weights and Measures Division continues to work with the Pollution Control Agency, mailing information to oil recycling stations about oil and lead-acid battery recycling.

Department of Corrections —

MCF-LL — Staff recycle batteries.

MCF-OPH — The type of alkaline batteries purchased by the facility can be disposed of in the trash. The lead-acid and nickel-cadmium batteries are saved and recycled as quantities dictate. Lead-acid batteries are taken to a recycling center by facility staff. The facility has moved to purchasing rechargeable batteries and recycles rechargeable batteries to the supplier in accordance with the state's contract.

MCF-RW — This facility recycles all batteries with the Goodhue County Recycling Center.

MCF-RC — Used batteries are returned to the vendor for recycling when new batteries are purchased.

MCF-SCL — We collect and recycle all batteries at an annual cost of \$100. Proper disposal means that batteries do not go to the landfill, but are recycled instead.

MCF-SHK — The facility follows the state contract for battery management.

MCF-STW — Batteries are used in all MCF-STW vehicles, as well as other various applications throughout the facility. Waste batteries are disposed of in accordance with the EPA/MPCA regulations.

TC — Staff turn in old batteries when purchasing new ones.

Office of Environmental Assistance — The OEA purchases alkaline rechargeable batteries and has been 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.

Iron Range Resources and Rehabilitation Board — Batteries are transported to the Virginia area regional landfill where they are picked up by Arrowhead Battery for recycling.

Metropolitan Airports Commission — All MAC batteries are recycled. Spent lead-acid batteries are returned to the supplier for recycling. Nickel-cadmium, NiMH, lithium and alkaline batteries are collected by MAC electricians from the various points of generation and recycled by an approved vendor.

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, electric carts, and standby emergency electric power diesel-fueled generators. Over 17,114 pounds of SLABs were recycled from MCES facilities in 1999 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 that are no longer capable of being recharged are accumulated for recycling through Superior Special Services in Bloomington. Dry-cell batteries that 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 spent lead acid batteries (SLABs) and dry cell batteries. This procedure has been in place since the 1960s.

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 for recycling. Dry cell batteries are collected at each district facility and recycled through local recycling programs. The district uses rechargeable batteries for all of the sampling and collection equipment.

Pollution Control Agency — The Waste Reduction and Recycling Committee (WRRC) continues to coordinate its battery collection program in fiscal year 2000. On March 20, 2000, Onyx Environmental Services picked up a second shipment from the agency. The shipment contained 146 pounds of batteries including alkaline, nickel-cadmium, lead-acid, and lithium.

Department of Transportation — Mn/DOT recycles all dry and wet cell batteries at approved battery recyclers/smelters.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Through the technical education programs, the college has identified potential pollution concerns in Auto Body, Auto Mechanics Fluid Power, Machine Tool, Agriculture Processing, and Diesel Mechanics. The college is monitoring absorbents, antifreeze, fuels, oil, solvents, batteries, paints, and tires. Minimal amounts of these products are disposed of each year. The college contracts with authorized hazardous waste transporters for proper removal and disposal. The college will continue to follow this practice in the future and are exploring options for in-house recycling of some of these products.

North Hennepin Community College — All batteries are recycled.

University of Minnesota — Facilities Management and the Department of Environmental Health and Safety (DEHS) collect mixed dry cell batteries from all campuses. Batteries are sorted and managed for recycling and reclamation where possible. Lead-acid batteries from various university operations are recycled. Rechargeable battery systems are used for various functions by departments.

In fiscal year 2000, Facilities Management and the DEHS reviewed and updated the battery collection program, purchased new collection containers and distributed them to all office recycling sites on the Twin Cities campus. The goal is to increase participation in the proper management of dry cell batteries.

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 a cleaning supplies contract. This contract helps safeguard 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 cleaning supply contract was awarded a 1998 Partnership Minnesota Cooperative Certificate Commendation for Government and Environment.

The Plant Management Division uses janitorial products that are appropriate to discard in sewers; uses chemicals packaged as concentrates to reduce packaging waste by 85 percent; and uses automatic dispensing systems to ensure correct dilutions from concentrates and minimize waste. The InterTechnologies Group refills small spray bottles with glass/desk cleaner from gallon containers to avoid the use of aerosol cans.

Department of Corrections —

MCF-OPH — OPH purchases 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 product mixes with cold water. Portion Pac containers reduce solid waste.

MCF-RC — RC uses environmentally safe products whenever possible.

MCF-SCL — SCL uses environmentally friendly products. The cost is minimal, and they help achieve low sanitary sewer system costs. The facility plans to continue using them.

MCF-SHK — SHK uses all cleaning supplies purchased and follows the state contract.

Iron Range Resources and Rehabilitation Board — The shop and custodial staff as well as the office staff will be made aware during fiscal year 2000 that purchasing cleaners through the *Environmentally Preferable Purchasing Guide* will prove to be cost-effective, environmentally safe, and less hazardous to the user. Most of these supplies are available through Central Stores.

Department of Transportation — Cleaning supplies are being purchased with automatic systems 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.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Through the technical education programs, the college has identified potential pollution concerns in Auto Body, Auto Mechanics Fluid Power, Machine Tool, Agriculture Processing, and Diesel Mechanics. The college is monitoring absorbents, antifreeze, fuels, oil, solvents, batteries, paints, and tires. Minimal amounts of these products are disposed of each year. The college contracts with authorized hazardous waste transporters for proper removal and disposal. The college will continue to follow this practice in the future and is exploring options for in-house recycling of some of these products. The campus building services departments are responsible for the storage and use practices of all cleaning supplies.

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

University of Minnesota — Facilities Management (FM), Twin Cities campus, initiated a program to centralize purchasing of custodial supplies in an attempt to reduce the number of different custodial

products used by its employees. The goal was to optimize supply management and to enhance worker safety and environmental friendliness through a product selection process. FM custodial services cleaned out and disposed of old, unused custodial products from 900 custodial closets in the 250 buildings on campus.

FM formed a committee of custodial workers and supervisors to classify and evaluate the 600 products that were being used. They found that many products were being used that served the same function. For example, they found that 16 different types of floor stripper were being used on campus. With the help of peer input, the committee selected 150 custodial products that clean properly, minimize employee exposure to hazardous chemicals, and protect the environment by minimizing harmful discharges to sewer and air.

If a new custodial product is suggested for use at FM, it must go through a safety check, an MSDS check, a vendor demonstration, and trial use by a test group before it is approved. If a new product is added to the list of accepted products, then at least one product serving the same function must be removed from the list. Centralized purchasing of a more select list of custodial products leads to the cost efficiency of larger purchases. The custodial product selection process is designed to minimize air and water pollution and improve worker health and safety.

10. Commuting and Transportation

Department of Administration — The Materials Management Division, in conjunction with the InterTechnologies Group Telecommunications Division, has established a contract for Lucent equipment that offers both new and refurbished telecommunications equipment. Agencies can choose to purchase reused equipment.

Department of Commerce — The department began participation in the MetroPass program to encourage employees to commute on Metro Transit buses. Forty-seven employees are currently participating, approximately 15 percent of downtown employees. The department also maintains a carpool matching program on the internal web page, but ridership statistics are not collected.

Department of Corrections —

MCF-OPH — Videoconferencing has replaced travel in many instances as representatives of the various facilities meet via videoconference to redraft policy, hold committee meetings, etc. thereby saving mileage and time. The facility safety officers, for example, hold every other meeting via videoconference. Hearing officers have used the system to conduct offender discipline hearings every other Thursday or approximately seven hearings a month; thereby saving them travel time and expense, and speeding up the discipline process. Videoconference hearings between an offender and an out-of-county court have occurred.

MCF-RC — RC uses video conferencing whenever possible to cut back on gas usage and time spent on the road. The facility encourages carpooling for training classes, seminars, or travel out of the area.

MCF-SHK — The facility has a bicycle rack and participated in BBOP day.

TC — TC encourages staff to ride together when on trips.

Office of Environmental Assistance — The OEA is continuing to test telecommuting for a few staff. These staff members work out of their homes one or two days per week. By not driving to work, they conserve fuel and reduce emissions from their vehicles. Regional OEA staff have frequent phone conferences with central office staff, thereby cutting down on travel.

The OEA and PCA were the first public agencies in the MetroPass program in April 1999, and the program has expanded in 2000. Under the terms of this program, employees are eligible to purchase an annual

transit pass for an agency-subsidized rate of \$60 for the entire year. Employees may use the passes for commuting to and from the workplace, for business travel during the workday and for personal travel at all other times when buses are running.

Department of Human Services — DHS continues to promote telecommuting for those staff who are able to work at alternate sites. One telecommuting day per week is the usual arrangement, but some staff are able to telecommute several days a week. Flexible scheduling also allows many staff to eliminate one workday per week.

Metropolitan Council – Environmental Services — In 1998, 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 an 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. Among respondents to the same survey, 35 percent 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. Each year, MCES participates in the B-BOP (bus, bicycle, or pool) challenge in the spring for its employees.

Pollution Control Agency — MPCA continues to promote alternative transportation, including the annual BBOP Day promotion and the bike-car commuter race in which one bike won, and another two came within two minutes of the challenging car! The agency also provided *Bikeways* and *Bus Fare* newsletters, Metro Transit’s MetroPass Program (about 12 percent of staff are regular bus riders), Guaranteed Ride Home Program, Special Off-Day parking, reserved carpool/vanpool parking/free on-street parking for registered carpools, and discounted bike lockers. Surveys and planning programs are also conducted. MPCA staff developed computer spreadsheets for individuals to estimate the cost of operating their personal vehicles. These are available to staff.

Department of Transportation — Mn/DOT has installed various traffic lanes set aside for vehicles with multiple passengers and has set various park-and-ride sites that promote carpooling or busing. Mn/DOT has an active telecommuting promotion program focused on employees in the Twin Cities metropolitan area. The telecommuter compatible population of MnDOT employees in the metropolitan area is approximately 2,000. Over 26 percent of those employees indicated that they telecommute part-time.

Mn/DOT continues to promote various commuting options such as light rail, bicycling, and pedestrian facilities and continues to partner with other state agencies, citizens, and local officials in setting up pilot projects to encourage alternative transportation. Mn/DOT has initiated a bicycle transportation network strategy group that is made up of a number of metro area governmental agencies and advocacy groups. The goal is to identify a comprehensive bicycle network of existing bicycle facilities and roadways for the seven-county metropolitan area.

The Taste of Minnesota 2000 featured a bicycle corral for the first time. Over 340 bicycles were parked at the corral at this first year’s trial. Taste officials are enthusiastic about this year’s success and want to continue to support the corral’s promotion and use next year.

The highways traffic management system was extensively evaluated in the 1970s and 1980s. Several things were implemented as a result of these studies; the most noticeable to the traveling public are metered ramps. Mn/DOT conducts a traffic management and development program, which 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 1,000 accidents per year.

- Fuel consumption and air pollutants. It is estimated that the reduction in peak hour accidents alone results in 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 saving to road users of \$21.6 million per year on metro area freeways.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

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 reduce automobile traffic to the Twin Cities campus and to 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. Carpooling 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 promotes 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.

The university's Center for Transportation Studies (www1.umn.edu/cts/) provides education, research, and outreach services in the area of transportation. The primary goal of the center is to initiate programs to address critical transportation issues. This process is guided by the participation of Minnesota leaders, transportation professionals, and university faculty and staff and reflects the diversity of the various stakeholder groups affected by transportation. As a research and land grant university, the University of Minnesota participates actively in the creation of new knowledge and insight, and in the dissemination of that knowledge and insight through teaching and service. The Center for Transportation Studies' mission is to be a focal point for strengthening knowledge in transportation. The center identifies critical issues in transportation and uses multidisciplinary approaches to address them.

The center's research, education, and outreach programs create an environment for faculty, students, and practitioners from multiple disciplines to collaborate in transportation research and education efforts. The center provides leadership and outreach to government officials, private sector representatives, and the public in the application of new knowledge and the implementation of policies, programs, and technology that improve transportation.

In fiscal year 2000, the University of Minnesota-Twin Cities, and the Metropolitan Council have launched two new programs designed to reduce traffic congestion, ease parking shortages, and improve the environment through increased bus ridership. The new programs offer university students, staff, and faculty deeply discounted bus passes. Both the student program (U-Pass) and the staff and faculty program (MetroPass) will begin fall 2000. The passes allow unlimited rides anywhere, any time, on any Twin Cities bus system.

The university has received a \$5.5 million federal Congestion Mitigation Air Quality grant administered through the Metropolitan Council to fund a two-year demonstration of the U-Pass and MetroPass programs. The university currently has more than 7,000 bus riders. With the implementation of these programs, ridership is expected to rise by at least 40 percent over the next two years, adding more than 2,800 new riders. By investing a portion of the federal grant in new service, Metro Transit and the university will be able to provide new routes and added capacity on existing routes to accommodate the growth in ridership. The university is the state's third largest traffic generator; any increase in bus ridership by university students, staff, and faculty will ease traffic congestion throughout the metropolitan region.

The cost for university students will be \$55 per semester, a saving of \$161 and a 76 percent discount from the average pass price. The cost for university faculty and staff will be \$35 per month, a saving of 65

percent. MetroPass also provides pretax benefits identical to parking contract benefits, a saving of \$10.50 per month.

The university's partnership with Metro Transit will benefit the entire metropolitan community and, eventually, the entire state. These unique transportation programs will ease traffic congestion, reduce pollutants, and provide alternative transportation options for those traveling to and from the University of Minnesota. Eventually, the university will initiate similar programs on its coordinate campuses; and other colleges and universities statewide are considering comparable programs.

The U-Pass and MetroPass programs are similar to those at nine of 11 Big Ten schools, including the University of Iowa, the University of Wisconsin (www.fpm.wisc.edu/TDM/pre-tax_bus_pass.htm) and Purdue University. The environmental benefits are avoided air pollution and reduced fuel consumption.

11. Education, Communications and Training

Department of Administration — The Resource Recovery Office represents the Department of Administration at Minnesota's Interagency Pollution Prevention Advisory Team meetings. Representatives from the Divisions of Materials Management and Plant Management also regularly attend this meeting. The Resource Recovery Office provides Department of Administration support and representation on the Pollution, Reduction, Recycling Advisory Council of the Office of Environmental Assistance. The office also participates in the Department of Natural Resources' Youth in Natural Resources Program by providing mentoring and work experience to high school students.

The Resource Recovery Office provides information to state employees about waste reduction (by toxicity and amount) and recycling opportunities at annual events such as the October Central Stores Product Show, the Accounting and Procurement "Spring Fling," and the Communications Media Open House. The office prepares environmental purchasing information, tabletop displays, "Info-to-Know" wall postings, and on-site presentations in response to agency requests. The Resource Recovery Office also provides conference displays and handouts at various public events, including the those sponsored by the Recycling Association of Minnesota, Solid Waste Association of North America, the Minnesota Pollution Control Agency, and the Minnesota Office of Environmental Assistance.

The Plant Management Division coordinates departmental pollution prevention information through the Resource Recovery Office. Communications Media informed customers of environmentally preferred alternatives to reduce pollution through its *Fast Facts* newsletter, the Annual Paper Fair and Design event, training classes, and its Internet web site: <http://www.comm.media.state.mn.us>. Communications Media, the Materials Management Division, and the Resource Recovery Office support Minnesota Statutes Section 16B.122 by providing state agencies with guidelines for the use of recycled papers and environmentally preferred inks.

During fiscal year 2000, the Materials Management Division, as a part of its Authority for Local Purchasing Training and ALP Management Overview programs, has trained approximately 540 state agency staff in pollution prevention and procurement of environmentally responsible products and services. The Materials Management Division worked with the Office of Environmental Assistance to provide additional environmentally responsible information through the purchasing training provided to state employees. The Materials Management Division has updated the environmentally responsible purchasing section of the Authority of Local Purchasing training manual that is provided to state employees.

MMD's Acquisition Management Specialists build environmental considerations into bids and contracts whenever possible. They have a variety of ways to accomplish this, such as solicitation requirements, environmental preferences, or Best Value bids. The Materials Management Division maintains a list of state contracts that contain environmentally preferable products. The list is available on the MMD web site: www.mmd.admin.state.mn.us/evir.htm#h.

The Materials Management Division has established an advisory committee called the Environmentally Responsible Work Group that meets monthly. This group works to promote environmental purchasing in state government and includes representatives from the state government as well as interested nonprofit organizations. The current members are Resource Recovery Office, Office of Environmental Assistance, the Recycling Association of Minnesota, the Pollution Control Agency, the Department of Transportation, the Department of Natural Resources, the Housing Finance Agency, the Department of Labor and Industry, the Department of Economic Security, and the Veterans Home Board.

In 2000, the group collaborated to revise the Department of Administration's environmental web page and assisted in improving environmental printing specifications and guidelines. In 2001, the group is providing hands-on assistance to agencies to increase the purchase of recycled copy paper. The Materials Management Division and Resource Recovery Office contributed to the development of the *Environmental Preferable Purchasing Guide*. The guides were distributed to all certified purchasers and to cities and counties. The Resource Recovery Office promoted this guide on displays and during presentations.

Department of Commerce — 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, which are printed with soy-based inks on recycled paper. The Energy Information Center responded to 60,000 telephone, mail, and trade show inquiries; and distributed over 40,000 electronic documents and over 239,000 printed publications during fiscal year 2000. Many of the department's 75 brochures have been updated and placed online in electronic format since last year. A new feature is the distribution of CD-ROMs, which contain the entire series of publications on any one topic, reducing printing and mailing costs.

The department recently amended the Minnesota Energy Code, which became effective in July 1999 for commercial buildings and in a modified form in July 2000 for residential buildings. In the past year, more than 6,000 residential contractors, as well as architects and building officials, received training on the energy code using materials prepared by the department. The revised code not only assures buildings will be more efficient, but also will improve indoor air quality and structural durability.

Department of Corrections —

MCF-OPH — Videoconferencing is becoming a preferred means for convening statewide meetings, such as safety, policy, and procedure drafting, etc. Each videoconference saves time and expense on the part of safety officers and/or upper management and security personnel.

The IT unit has begun to put in-house forms, phone directories, etc. in an F-drive subdirectory available to all staff, thereby saving paper, storage, and printing costs. The forms can be easily updated as necessary. Frequently used forms and directories have icons on the initial screen for ease in accessibility.

Staff training programs and in-service classes have been combined to offer one class for two or more facilities which saves travel time, scheduling, and overtime costs for participants and more efficiently utilizes instructor time.

E-mails whether individual or "everyone" are often utilized for messages of general note, saving paper, mail room time, telephone tag time, and providing the ability for almost immediate response.

MCF-RC — Maintenance staff are trained on chemical use. The facility is in the process of setting up a recycling program for all staff.

MCF-SCL — All the vocational teachers, safety officers, and plant operations management receive pollution prevention education through annual continuing education at a cost of \$1,000 annually. The facility remains current with new and existing legislation by doing this and plans to continue education efforts.

MCF-SHK — The facility uses e-mail. All offenders are trained during reception and orientation on the rule about keeping windows closed.

Office of Environmental Assistance — Many programs within OEA fall under this category. Ongoing programs to encourage waste and pollution prevention are described below.

The OEA continues to use voluntary partnerships as a means to prevent waste. A coordinated effort with the Minnesota Association of Metal Finishers and EPA to implement cost-effective pollution prevention in plating facilities is one recent example. Ongoing efforts with the Minnesota Chamber of Commerce Waste Wise program to help businesses recycle and reduce waste is another example.

OEA staff continues to work with representatives from the Minnesota healthcare community to promote pollution prevention within the healthcare sector. The Healthcare Industry Environmental Management Advisory Group meets quarterly. OEA and MnTAP staffs are planning training programs for hospital staff to address the goals of the Hospitals for a Healthy Environment project. That project has the goal of eliminating mercury in healthcare facilities by 2005 and reducing overall waste by 33 percent by 2005 and 50 percent by 2010. The training staff hope to reach hospitals and clinics throughout Minnesota.

OEA staff coordinates the Interagency Pollution Prevention Advisory Team, developing agendas and facilitating quarterly meetings, recording minutes, and maintaining the mailing list. In fiscal year 2000, IPPAT continued to implement Governor Jesse Ventura's governor's executive order for pollution prevention, which includes pollution prevention, waste reduction, and energy and resource conservation. Agencies that regulate activities which generate significant quantities of hazardous waste or use significant quantities of resources and/or toxic chemicals, or whose policies have important effects upon such activities, are required to develop policy statements indicating that pollution prevention is a priority. These agencies are further required to integrate pollution prevention into their regulatory and policy activities as a primary means of meeting standards.

IPPAT meetings during fiscal year 2000 included the following presentation topics:

- Minnesota's promotion of sustainability
- growing smart in Minnesota
- the Metropolitan Council Environmental Services mercury reduction strategy
- the University of Minnesota thermometer exchange and other mercury reduction efforts
- environmental purchasing
- rechargeable battery recycling
- environmental purchasing – recycled latex paint
- updates and discussion about America Recycles Day, the MnGREAT! awards, and Pollution Prevention Week
- member agency presentations of their pollution prevention summary reports.

The pollution prevention summary reports are consolidated and organized under 34 categories of pollution prevention programs and activities. Summaries of the meetings are available from the OEA.

The MN GREAT! award program, first organized in 1995, continued in 2000 as part of the Governor's Awards program. The awards committee chose the following candidates:

- Paul Moss for ten years of leadership and consistent support of pollution prevention and sustainability.
- The Metropolitan Council-Environmental Services Division's Metro Wastewater Treatment Plant for innovations in energy recovery and wastewater handling technology.
- The Minnesota Department of Transportation and the Department of Administration for designing a program that allows state agencies to calculate cost savings after implementing a pollution prevention project.

- The Minnesota State Patrol and the Department of Administration Materials Management Division for establishing and using a contract to refurbish and reuse the State Patrol's 1995 Chevrolet Caprice police automobiles.
- Tom Wilts and his colleagues at Ridgewater College in Willmar, Minnesota for 26 years of dedication to safety, pollution control, hazardous waste management, and recycling at the college.
- The Minnesota Pollution Control Agency Waste Reduction and Recycling Committee for maintaining an extensive composting project for cafeteria waste.
- The Department of Commerce, Energy Division, for its promotion of alternative fuels, such as E85 and biodiesel from homegrown renewable crops, compressed natural gas, and liquefied natural gas.
- The University of Minnesota for its Gateway Project, a "green" initiative to demonstrate that recycled paint is a quality alternative to virgin paint.
- The Federal Prison Camp in Duluth, Minnesota for maintaining an extensive recycling and vermi-composting program.
- The Minnesota Department of Administration's State Recycling Center employees for designing and building innovative, ergonomically sound recycling equipment using 100 percent post-consumer plastic lumber.
- The Minnesota Department of Administration's Materials Management Division, Central Stores, and Resource Recovery Office for their work on environmentally preferable purchasing.
- The Department of Administration Resource Recovery Office and Print Communications Division for their promotion of environmental printing.
- The Becker County Environmental Services Department, the city of Detroit Lakes, and the Pelican River Watershed District for their work with consultants and contractors to deconstruct a turkey processing plant in Detroit Lakes and use some of the recycled materials to construct a new store on the same site.

OEA's Minnesota Sustainable Communities Network (MnSCN), which was started in January 1997, continues to grow and currently has 1,925 members as of February 2001. OEA staff facilitates networking, information exchange, and better access to assistance among MnSCN members—individuals and organizations with an interest in sustainability issues. One important component of sustainability is pollution prevention.

1,835 MnSCN members currently receive a biweekly e-mail update on sustainability and are increasingly listing themselves in a member directory on the MnSCN web site at www.nextstep.state.mn.us. This NextStep web site has a searchable database of over 400 resources. Each year a printed *Digest of Resources for Building Sustainable Communities* is published, drawing on the case studies, manuals, and other resources in NextStep. In October 2000, MnSCN sponsored a conference called *Tools for Building Sustainable Communities*, which was held at the Minneapolis Convention Center, attracting 350 participants.

The OEA distributes the following materials through its Education Clearinghouse:

- *Source Reduction Now*, a detailed guide to implementing source reduction programs in companies and agencies
- *Retail Hardware-Best Practices for Waste Management* guidebook and video
- *Transport Packing: Cost Effective Strategies to Reduce, Reuse and Recycle in the Grocery Industry*
- *Waste Prevention Pays: Businesses Cut Costs by Cutting Waste* video from EPA's teleconference of the same name, produced in participation with OEA

The OEA's outreach efforts also included:

- The OEA and MMD trained over 700 state purchasers on environmental purchasing via the Department of Administration's ALP recertification class.

- The OEA helped develop and distributed the *Environmentally Preferable Purchasing (EPP) Guide* to nearly 1,000 state certified purchasers.
- The OEA attended nearly a dozen other procurement workshops/conferences throughout the year to promote “green” purchasing at the state and local level.
- The OEA has participated in Green Seal’s Stakeholder Work Group to develop an environmental standard for industrial and institutional cleaners.
- The OEA served as a technical advisory member for San Francisco’s Environmentally Preferable Purchasing Program.
- The OEA has facilitated the Midwestern Working Group on Carpet Recycling in developing a national purchasing specification for recycled carpet.
- The OEA and the Department of Administration were invited to a summit meeting co-sponsored by the White House Task Force on Recycling and the Environmental Protection Agency to explore strategies for accelerating “green” purchasing across the country.

The OEA provides training for the *Design for the Environment (DfE) Toolkit*, developed to help Minnesota manufacturers integrate environmental attributes into products before they are produced. DfE considers the environmental impact for the entire lifecycle 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* allows manufacturers to address environmental impacts at the most fundamental level—product design.

Metropolitan Airports Commission — MAC employees are trained annually on spill prevention, control and countermeasures (SPCC) and storm water pollution prevention (SWPP) techniques. DOT training is completed every three years. Also, a pollution prevention team 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. Recently a comprehensive recycling program was unveiled detailing how and where MAC employees can recycle a wide variety of items. A recycling guide was distributed to all employees and is included with new employee orientation materials. A Recycling and Waste Reduction Team meets regularly to examine and implement waste reduction opportunities.

Metropolitan Council – Environmental Services — Within the MCES is the Industrial Waste and Pollution Prevention (IWPP) Section. This unit, along with the former office of Customer Relations and Environmental Education, has provided technical and financial assistance toward the production and distribution of the *Roots of Hazard*, a brand new interactive CD-ROM designed for use by fifth and sixth grade school age children. *Roots* teaches students how to reduce hazardous household products at the source and how to properly dispose of any that remains as hazardous waste. This CD was produced by the Minnesota Office of Environmental Assistance (OEA).

“No Dumping” flyers, which describe hazardous household products that should not be disposed of in the sanitary sewer system, have been distributed for a few years at public events and are used as “stuffers” in utility billing notices by cities. In 1999, a new conservation brochure, “Reducing Water Usage in Your Home,” was prepared by the MCES and also included in Minneapolis water utility bills.

The MCES has been a key member in the WaterShed Partners, a working association of 44 organizations from various levels of government, schools, and nonprofit groups. This past year, the “Think Clean Water” campaign placed advertisements in newspapers and public service announcements on the radio to enlist the public’s participation in practices that would prevent non-point water pollution. The comprehensive “Resource Education Guide” was distributed to all metro area cities and counties in the state. Two traveling interactive, museum-quality exhibits were produced and appeared throughout the state. WaterShed Partners and the campaign were recognized in 1999 with a MN GREAT! award, a Governor’s Award for Excellence in Pollution Prevention, and with the prestigious Environmental Initiative Award for “the collaboration to reach truly unique and forward-thinking environmental solutions.”

Since 1995, MCES continues to distribute the “Non-Point Source Pollution Prevention Environmental Resource Guides” at teacher workshops. These sessions are funded through the Twin Cities Water Quality Initiative (TCQI [sic]) program and are always filled.

The IWPP works in an advisory role as well as a regulatory role with its permitted industrial dischargers. Two issues of the *Open Channel News* have been mailed to permittees. Specific P2 web sites have been prepared for the internet and (internal) intranet. An outreach is made to non-permittees such as dental and medical clinics, furniture strippers, and radiator shops. IWPP staff attended both the Great Lakes Regional P2 Roundtable and National P2 Roundtable conferences this past year.

Specific to the concerns over mercury in the wastewater collection and treatment system, the IWPP prepared a “Mercury Fact Sheet” and co-authored a monograph on dental waste management for the Water Environment Federation. It also conducted a workshop for hospital and county hazardous waste officials on the topic of “Minimizing Mercury in Healthcare Facilities.”

Metropolitan Mosquito Control District — Annually the district conducts training sessions for all district employees in conjunction with the Minnesota Department of Agriculture. A portion of these training sessions is used to review waste management and recycling procedures employed 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.

Pollution Control Agency — MPCA has pollution prevention information available to all staff and external customers on their web sites. This information is easy to access and includes many suggestions and training tools for the staff to utilize for waste minimization at work and at home on a daily basis.

Department of Transportation — Mn/DOT conducts quarterly meetings with district/division waste management coordinator and publishes several environmentally focused newsletters. *Waste Matters* is a nationally distributed newsletter that focuses on waste management, pollution prevention, and waste minimization issues. *Environmentally Speaking* focuses on storage tank compliance issues and maintenance site investigations and *Minnesota Roadsides* is 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. Mn/DOT provides training to cities and counties on traffic management systems. Mn/DOT offers telecommuting training to employees who work in the Twin Cities metropolitan area to encourage alternative transportation.

Mn/DOT will release in September 2000, *A Guide to Bicycle Transportation in the Twin Cities: The Processes, the Players, the Potential*. Mn/DOT will issue Minnesota’s first GIS data based bicycle map in the spring of 2001 and the *Safe Bicycling in Minnesota Guide* in the fall of 2000.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

University of Minnesota — The University of Minnesota offers over 500 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 jointly through the departments of Civil Engineering, Honors Seminar, Management, Public Affairs, and Public Health. The second course is called “Environmental Engineering for Chemical Engineers,” offered through Chemical Engineering and Materials Science, which educates senior and graduate IT students in incorporating pollution prevention principles early in the engineering design process.

The Department of Environmental Health and Safety conducts annual training in hazardous waste management. The training covers the basics of pollution prevention. Approximately 2,500 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 (www.dehs.umn.edu/training/hwd/generator).

The Waste Abatement Committee, made up of members from many key departments, coordinates pollution prevention projects at the University of Minnesota. The committee communicates information to new employees through orientation programs and to existing employees through in-house vendor trade shows sponsored by the Purchasing Department. The committee is working toward a P2/resource conservation web page that will promote and provide instruction and information about self-audits and other P2/resource conservation techniques.

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 (www.mntap.umn.edu). MnTAP provides technical assistance to Minnesota businesses through the following services: telephone assistance, site visits, intern programs, presentations and workshops, technical publications, library, and materials exchange. MnTAP averages 150 calls per month and 140 site visits a year.

The university’s new Institute for Sustainable Natural Resources (www.cnr.umn.edu/ISNR/) was created to be a world-class continuing education program, a resource network that will bring current research, new technologies, and state-of-the-art practices to resource professionals—educating professionals to face tomorrow’s resource challenges. The institute grew out of the Sustainable Forest Resources Act of 1995, which developed principles for the sustainable management, use, and protection of Minnesota’s forest resources. The Act recognizes continuing education as one important component of this mission. The University of Minnesota’s College of Natural Resources provided matching funds and the institute was born. The institute’s continuing education opportunities include skill building and special topic information for foresters and other resource professionals, as well as forest-related education opportunities pertaining to fisheries biology, wildlife biology, park resource management, and other fields. The institute emphasizes an integrated, systems approach—designing educational programs based on the understanding that natural resource management is part of an interdependent system. Social, economic, and ecological values must work together to sustain healthy, productive ecosystems. By focusing on emerging issues, the Institute for Sustainable Natural Resources will bring current research, new technologies, and state-of-the-art practices to natural resource professionals.

The University of Minnesota Extension Service (www.extension.umn.edu/) is the major educational outreach arm of the University of Minnesota, with offices in every county of the state. Campus-based extension specialists work with county-based extension educators to deliver educational programs through meetings, demonstrations, workshops, publications, and electronic delivery methods such as interactive TV, satellite teleconferences, and computer networks. Programs range from water quality to sustainable agriculture, from urban horticulture to youth development, from natural resource management to tourism

development. Environment and Natural Resources educators and specialists develop and implement a broad range of programs with information on shoreland issues, agricultural systems, residential systems, forestry/wood products, and on all aspects of environment and natural resource management, from water quality, forestry and wood products, solid waste and wastewater management, to indoor environmental issues such as air quality, radon, housing materials, and systems.

The Institute for Social, Economic and Ecological Sustainability (ISEES; www.fw.umn.edu/ISEES/) was initiated in July 1996 to strengthen the University of Minnesota's capacity to analyze sustainability issues and recommend options for moving toward sustainability. ISEES's vision is based on the fundamental idea that sustainable relationships among the social, economic, and ecological spheres of the world are possible and desirable. ISEES brings together people from the natural and social sciences and practitioners to analyze sustainability issues and recommend options for moving toward sustainability. The institute believes that the development of options for sustainability requires integrating social, economic, and ecological factors. ISEES supports transdisciplinary research and education on sustainable environments ranging from the urban community and watershed to the regional and global scale. In the seminars, workshops, and annual publication competition, the institute bridges divisions between the natural and social sciences and between scholars and practitioners. Contemporary research questions and societal debates about sustainability revolve around a number of rich and interconnected themes. To address these themes, the research, education, and outreach goals of ISEES strive to:

- generate a new transdisciplinary synthesis of concepts and methods for research on sustainability issues
- understand forces influencing sustainability at local, regional, and global scales
- develop and evaluate techniques for assessing conditions for sustainability
- generate policy options for moving communities toward sustainable conditions
- facilitate information exchange between scholars, practitioners, and citizens

ISEES is offering a new interdisciplinary course, "Population, Environment and Sustainability," for all seniors and graduate students who are interested in human population and its relationship to environmental change and sustainability. The beginning of the new millennium is a critical moment for understanding the complex relationship among human population processes, environmental change, and ecological and human sustainability, and for developing appropriate policy measures. Because knowledge about the relationship between population and sustainability is fragmented among many specialized disciplines, each with its own piece of the puzzle and its particular conceptualization of the issues, public debates and policies often work at cross purposes or are counter-productive.

ISEES addresses this problem by bringing together students and faculty from the social sciences and natural sciences to exchange information, critically evaluate the varied perspectives, and to communicate a more unified understanding of population growth, environmental change, and sustainability (www.fw.umn.edu/ISEES/CoursePopulations). Education of the current and future generations on the importance of pollution prevention, resource conservation, and sustainability 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. In the new Information Technology hardware contracts, the department requires all energy efficient equipment be identified. 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 in collaboration with the departments of Corrections, and Children, Families and Learning. The program accepts personal computers no longer needed by state agencies and private businesses and through the use of prison inmate labor, refurbishes and distributes them throughout K-12 schools. Surplus computers are also distributed to township government offices, a

program which earned a 1997 Partnership Minnesota Cooperative Public Award for outstanding achievement.

The Materials Management Division in conjunction with other agencies and Cooperative Purchasing Venture members is working on establishing a statewide computer/electronics recycling disposal contract. The Materials Management Division awarded the Information Technology contracts for leases, rentals, and management of computer equipment. This will reduce the amount of surplus and used equipment that requires hazardous waste management.

Department of Commerce — Computer equipment is either surplus or disposed of according to state guidelines.

Department of Corrections —

MCF-OPH — Electronic toilets and showers are used where applicable for the dual purpose of saving energy through regulation of water and reduction in offender vandalism.

MCF-RC — Electronic toilets, showers, and sinks are used where applicable for the dual purpose of saving energy through regulation of water and reducing inmate vandalism.

MCF-SCL — The facility recycles TVs, fluorescent bulbs/lights, computers, and monitors at a cost of \$1,000 to \$2,000 annually. SCL complies with legislation and reduces landfill cost with this activity.

MCF-SHK — Outdated computers are sent to the MCF-Stillwater.

Office of Environmental Assistance — The OEA continues 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 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 U.S. EPA)
- market development efforts for material found in waste electronics
- broader education for governments, businesses, and residents on options for managing waste electronics. The Department of Administration's contract for purchase or lease of new computer equipment and for disposal of old equipment is expected to be finalized by summer 2001.

The OEA developed a demonstration project for removing used household electronic and electrical products from municipal waste. Minnesota's Electronics Recycling Project draws on the experience of local and state government, nonprofits, and several large corporate partners: Sony Electronics, Inc., Panasonic/Matsushita Electric, the Waste Management-Asset Recovery Group (WM-ARG), and the American Plastics Council. Sites in more than 30 counties throughout the state collected used products over a three-month period. Everything collected during the project was processed for recycling by WM-ARG. Plastics were evaluated for resin types, ability to segregate residential streams, existing markets, and ability to incorporate with virgin resins to mold new high-end product.

This public-private partnership is a cooperative venture designed to test collection strategies and evaluate collected scrap for processing costs and value. All participants at collection events completed a survey; results provide demographic and attitudinal information, as well as an inventory of products brought to the sites. At the end of the project, that inventory was compared to market data provided by WM-ARG about the scrap value of material taken from the used products. In addition, each collection site host reported cost data to the OEA, making it possible to compare costs of a wide variety of collection methods in different demographic and geographic settings. Residents could bring anything with a cord or battery to the collections. Exceptions to this rule included photocopy machines, air conditioners, and white goods (including microwaves). In a 1995 report to the Minnesota Legislature, the OEA identified electronic products as well as the components of those products as targets to keep out of municipal waste. Priority

components include televisions and computer monitors (which contain cathode ray tubes, or CRTs), electronic circuitry, batteries, mercury-bearing components, and PCB-bearing components.

Collections were conducted in association with household hazardous waste permanent facilities and one-day collection events, and through a variety of permanent and one-time drop-off recycling and clean-up events. Other collection strategies tested during the program included retail, curbside, and small business and institution drop-offs at specific sites. Two conference papers were published in 2000. The final report on the project is available on OEA's web site at www.moea.state.mn.us/plugin/report.cfm.

Metropolitan Airports Commission — MAC donates used computer equipment to the Computers for Schools program. Other electronic equipment, when no longer useable, is recycled by an approved vendor.

Metropolitan Mosquito Control District — The district specifies Energy Star compliant computers and monitors in purchase agreements for computer equipment. Obsolete but still usable computer equipment is offered to the general public at public auctions in the metropolitan area. Scrap computer equipment is recycled. Obsolete or unrepairable units of the district's two-way radio system are stored at MMCD's Anoka facility and used for parts to repair other two-way units.

Pollution Control Agency — All working 486 computers and low end pentiums, monitors, keyboards, and mice are being delivered to the Computers for Schools program where the local correctional facilities refurbish them and then they are delivered to area schools for student use. MPCA makes extra efforts to provide information electronically for internal and external customers to save paper, including putting some annual reports on the MPCA web page.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

North Hennepin Community College — Discarded electronics are disposed of appropriately.

University of Minnesota — The University of Minnesota statewide system collects all electronic equipment, redistributes what it can within the university, and then pays to have the rest sent to a licensed demanufacturer. The demanufacturer markets a portion of the equipment (sells the equipment as is or as components), recycles a portion (particularly scrap and precious metals), and properly disposes of the remainder.

The university has worked extensively with the Minnesota Department of Administration and other agencies to develop a statewide computer/electronics recycling contract. The University's Computer Repair Service (CRS) and Como Recycling Facility (CRF) both provide collection of unwanted computer systems. Both programs market the usable computers back to the university community, employing web pages and showrooms (CRS for a charge and CRF for free). CRF also manages a web-based exchange program (<http://www1.umn.edu/recycle/reuse.html>), referred to as the Virtual Warehouse, that allows interested parties to market or buy computers and other electronic equipment online without the middlemen. The university recycles approximately 200,000 pounds of electronic material annually.

In fiscal year 2000, the university started to offer electronics recycling service to educational institutions throughout the state via its Chemical Safety Day Program (<http://www.dehs.umn.edu/csdp>). The Chemical Safety Day Program, which has operated since 1981, was already providing fluorescent lamp recycling in addition to chemical waste management services to Minnesota schools.

The university's annual Beautiful U Day (<http://www.facm.umn.edu/bud/BUDay.htm>) featured an electronic waste collection that served to both facilitate the proper management of electronic waste and to educate the university community about end-of-life electronics management and regulations. DEHS used a newsletter article (<ftp://www.dehs.umn.edu/newsletter/fall00.pdf>), web site information (<http://www.dehs.umn.edu/whatshot/beautifulu.html>), a brochure

(<ftp://www.dehs.umn.edu/whatshot/BUDay.pdf>), and listserve e-mails to promote and educate for this event. Seven drop-off sites on the Twin Cities campus accepted end-of-life electronics and distributed information to the university community. Twenty-six tons of electronics were collected and sent for recycling.

It costs approximately \$0.10/lb to recycle electronic equipment. A typical personal computer and monitor contains 6 pounds of lead and various other environmentally hazardous constituents. Proper management of the electronics protects the university from future environmental liability and provides resource conservation and avoids heavy metal contamination of soil, surface waters, and groundwater.

13. Energy - Lighting

Department of Administration — The Division of State Building Construction participates with utility companies to retrofit existing building lighting systems to achieve energy consumption reduction. The division also specifies automatic turn-off switches for all overhead lighting in its remodeled offices.

The Plant Management Division recycles incandescent bulbs to prevent solid waste disposal; and 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 procures only reduced or no-mercury fluorescent lamps. Mercury content in fluorescent lamps has been either eliminated or reduced to negligible levels due to EPA mandates in the late 1980s and early 1990s, per Minnesota Statutes Section 115A.965, Subdivision 2. The Materials Management Division in conjunction with the Pollution Control Agency, Department of Transportation, and the University of Minnesota has a statewide contract for recycling fluorescent lamps and HID (high intensity discharge) lamps and light ballasts that contain PCBs (poly-chlorinated biphenols). The Materials Management Division purchased solar-powered highway warning signs for the Department of Transportation. The Travel Management Division minimizes lighting through the use of energy efficient lights.

Department of Commerce — Energy Information Center brochure — see section 11 *Education, Communications and Training*.

Department of Corrections —

MCF-OPH — New clear lenses have been installed in inmate rooms to increase foot-candles to meet ACA requirements without the need to increase bulb wattage. The lower wattage bulbs were already in use. Fluorescent bulbs are recycled through Recyclites.

MCF-RW — Used lamps (fluorescent/high intensity discharge) are continuously collected. Goodhue County Recycling Center accepts bulbs for a fee.

MCF-RC — RC uses electronic ballasts and has also programmed lighting on a timer for shut off times.

MCF-SCL — The facility light system was replaced in 1993 via NSP conservation lighting retrofit program at a cost of \$242,000. This energy conservation measure has a long-term cost saving of about \$2,000/month. The payback is seven years. SCL plans to replace T-8 lights; and the switch to electronic fixtures and ballasts is ongoing.

MCF-SHK — SHK recycles fluorescent lamps through the state contract and is converting to electronic ballasts on fluorescent fixtures.

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

Iron Range Resources and Rehabilitation Board — Energy conserving bulbs are used where appropriate and all fluorescent tubes are picked up at the facility and recycled at Mercury Waste Solutions. The ballasts are shipped to the Clean Shop Program in Duluth.

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 1999, over 3,132 lamps were recycled through Superior Special Services 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 that turn off room lights if no motion is detected within 15 minutes.

Pollution Control Agency — A few years ago, the MPCA central building had four fluorescent lamps removed from each fixture and replaced two into each fixture. The lamps are more energy efficient and contain less mercury. Also, each fixture was converted to using one ballast rather than needing two ballasts.

The new Brainerd office lease specifies that full-spectrum lighting be installed and maintained. It also calls for the installation of additional exterior windows, including some that can be opened, in order to promote daylighting. MPCA has specifically designed the floor plan to allow the maximum amount of light to enter the workspaces. The agency is going to install a revolutionary new daylighting feature known as “tubular skylights” in the main conference room. The tubular skylights will be installed as a test to measure performance and energy savings. If successful, tubular skylights will then be added to several other building locations to enhance daylighting and reduce electrical energy consumption.

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

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Energy efficient lighting and other utility conservation measures including the upgrading of HVAC systems is currently being evaluated.

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.

University of Minnesota — The university has an ongoing green lights program to change out older, less efficient lighting as remodeling of buildings is undertaken at all campuses and facilities. Switching from 40-watt lamps to 32-watt lamps coupled with more efficient electronic ballasts saves energy. Other energy saving lighting strategies are evaluated for use on a site-by-site basis.

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.

The Plant Management Division installed a new 1,000-ton chiller with high ratio turn down and high efficiency ratings. The new chiller was required for the additional cooling load of the Harold E. Stassen Building and provides improved operation and control of Capitol Complex cooling needs.

Department of Commerce —

Solar Resource Assessment Program (SRAP). The department has expanded the SRAP from four sites in 1999 to eight sites in 2000. The equipment monitors solar resources at specific sites around the state. The information from these sites will be correlated with satellite-based information, with the goal of maintaining a public statewide database of solar insolation information.

Wind Resource Assessment Program (WRAP). The department continues to operate the WRAP, expanding the program to include new sites in northeastern and southeastern Minnesota. In addition, the department is developing a wind monitoring loan program, which will help wind developers analyze specific locations for the potential development of wind power. This ongoing program uses GIS technology to map wind power densities, making this wind-monitoring program among the most advanced in the U.S.

Conservation Improvement Programs — Electric. The department oversees utility investment in conservation and demand-side management through implementation of Conservation Improvement Programs (CIP). All investor-owned electric utilities (except Xcel Energy) are required to invest 1.5 percent of their gross operating revenue into energy conservation projects, while Xcel Energy is required to invest 2.0 percent of its gross operating revenues. The Commissioner uses the CIP process to promote sound, cost-effective conservation practices, which reduce or stabilize electricity consumption.

ELECTRIC ENERGY SAVINGS AND AVOIDED EMISSIONS DUE TO ELECTRIC CIP

	1996	1997	1998	1999	2000 (proj.)
Electricity (kWh)	377,209,040	487,148,984	299,418,391	214,160,804	245,272,019
CO ₂ (tons)	222,559	287,426	176,662	126,359	144,715
SO ₂ (tons)	405	523	321	229	263
Mercury (lbs)	132	170	105	75	86
NOx (tons)	201	260	160	114	131

CO₂ — carbon dioxide, SO₂ — sulfur dioxide, NOx — nitrogen dioxides

Conservation Improvement Program — Gas. In addition to the electric CIP, the department oversees gas CIP projects. Six investor-owned gas utilities offer CIP projects, reviewed and evaluated by staff and subject to Commissioner approval. The utilities are required to spend 0.5 percent of their gross operating revenues on CIP. The Commissioner uses the CIP process to promote sound, cost-effective conservation practices, which reduce or stabilize gas consumption.

NATURAL GAS ENERGY SAVINGS AND AVOIDED EMISSIONS DUE TO GAS CIPS

	1996	1997	1998	1999	2000 (proj.)
Nat Gas (Mcf)	1,060,411	1,002,721	946,034	1,310,255	1,226,801
CO ₂ (tons)	63,625	60,163	56,762	78,615	73,608
SO ₂ (tons)	0.318	0.301	0.284	0.393	0.368
NOx (tons)	49.839	47.128	44.464	61.583	57.660
VOC (tons)	2.916	2.757	2.602	3.604	3.374
PM (tons)	4.030	3.810	3.595	4.979	4.662
CO (tons)	21.208	20.054	18.921	26.206	24.536

CO₂ — carbon dioxide, SO₂ — sulfur dioxide, NOx — nitrogen dioxides, VOC — volatile organic compounds, PM — particulate matter, CO — carbon monoxide

Biogas Digester. The department gave a grant, and in cooperation with two other state departments, participated in the installation of an anaerobic digestion system, which began operation on a dairy farm in the fall of 1999. The dairy manure is “digested” in an enclosed concrete structure, producing methane gas, which is used to run an electrical generator, and soil fertilizer. Initial production numbers from the 425 head of dairy cattle are 58,900 cubic feet/gas/day and 860,000 kWh/year (106 percent of predicted), in

addition to propane offsets from waste generator heat. The technology reduces manure odors, utilizes waste methane gas, and produces energy from biomass, a renewable energy source. A similar swine digester is currently being investigated in southeastern Minnesota.

2000 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 2000. In this report the department emphasizes the development of a reliable and efficient energy policy. This policy is reflected in many of the department's recommended energy strategies and action steps—particularly in the recommendation regarding energy conservation, renewable resources, and other alternative energy resources.

Electric Integrated Resource Planning. The department 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 needs for electricity. State statute outlines a preference for renewable energy if it is deemed to be in the public's best interest by the Public Utilities Commission.

Department of Corrections —

MCF-OPH — The facility 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.

MCF-RC — The facility uses three 550-ton high-efficiency chillers that can be cycled on or off in stages with the building's automation system. With these chillers, cooling capacities are based on actual demands, and thereby conserve electrical energy. Generation of 3000 kW of electricity is utilized when necessary for peak power sharing by the utility company. This prevents the utility company from having to build additional power generation plants, which reduces pollution. The facility also makes use of alternative fuel for heating as it switches to fuel oil during times of natural gas shortages. A computerized energy management system allows the facility to monitor and control all electrical usage, enabling staff to identify and correct areas of high-energy consumption and low power factor.

MCF-SCL — Staff is evaluating possible installation of facility generator. The generator would cost \$250,000, with a payback of approximately ten years. With the generator, MCF-SCL would be able to use co-generation and power load shedding. The plan is undetermined until 2000-2002.

MCF-WR/ML — The facility has installed new equipment on the powerhouse boilers to operate more efficiently. Oxygen monitors and burner upgrades were funded and will provide a more efficient combustion process and improved air quality.

Office of Environmental Assistance — The OEA life-cycle analysis documenting resource conservation benefits associated with municipal solid waste source reduction, recycling, processing, and landfilling is available from the OEA Clearinghouse. The report includes a life-cycle inventory of resource conservation benefits from waste management in 1996 and a life-cycle assessment of greenhouse gas benefits from 1991 to 1996.

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—beginning 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. Power demand in 1999 was 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. This reduction can be converted each year into 8,130 tons of coal not being burned to generate electricity, thereby preventing 173 tons of nitrous oxides, 512 tons of sulfur oxides, and 58,500 tons of carbon dioxide in air emissions.

Pollution Control Agency — The MPCA central building energy management system uses timers for regulating the temperature during the evenings and weekends. Also, the system includes thermostats located throughout the building for individual staff to monitor for energy savings.

Department of Transportation — Mn/DOT has installed 67 waste oil burners in 67 maintenance shops. The waste oil burners allow Mn/DOT to burn waste oil as a supplemental heat in maintenance shops. This has resulted in lower utility bills.

Many Mn/DOT districts have changed from using non-burnable 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. The waste oil burners allow Mn/DOT to burn waste oil as a supplemental heat in maintenance shops, which results in lower utility bills. Used oil sorbents were being landfilled; now they are being burned to generate steam and electricity in an environmentally sound waste-to-energy technology.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

University of Minnesota — A 15 MW co-generation steam turbine has been installed at the university's S.E. Steam Plant. The steam production is gas fired at least 70 percent of the time. This environmentally friendly electricity will displace the need for 15 MW otherwise generated by coal and nuclear plants.

15. Groundwater Wells

Department of Administration — The divisions of Plant Management and State Building Construction will be upgrading the de-watering system in the Transportation Building to comply with new codes.

Department of Corrections —

MCF-RW — RW has two deep well pumps for domestic water supply. The Wellhead Protection Rule governs the facility.

MCF-RC — Groundskeepers will use one well for an underground sprinkler system. Domestic water is obtained through Rush City.

TC — Groundwater wells are checked quarterly.

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 saving 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 P2 in 1995.

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.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

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

16. Heavy Metals

Department of Corrections —

MCF-FRB — Staff reclaim silver pockets in fluorescent tubes with Recyclights under the state contract. The cost was about \$1,000 in fiscal year 2000.

MCF-LL — Recycling activities.

MCF-OPH — Lead and mercury generated by health service’s x-rays and dental activities are recycled. The facility sent three tons of (range) lead dust from the armory to scrap metal processors for recycling rather than let it collect or store it on-site.

MCF-SCL — The facility collects all mercury switches and lead-base paint chips for proper disposal at an annual cost of \$500 for mercury removal and paint chip management. By doing this, SCL reduces environmental pollution to waterways, landfills, etc., and stays in compliance with MPCA rules.

MCF-WR/ML — The facility has installed a silver recovery cell in the dental office for the recovery of silver from fixer solution. This cell will also be used by the industry program, which will cut the cost of purchasing another silver recovery cell. The silver recovery cell has ample capacity to handle both programs for a 12- to 18-month period. The remaining fixer is then disposed of down the sanitary sewer.

The facility removed 16 pounds of mercury from the facility. This mercury has been stored for many years and has no intended use. The mercury was acquired when the DOC took control of the DHS powerhouse.

Office of Environmental Assistance — OEA staff continues to work at the state and national level to develop policies and systems for managing mercury-containing wastes.

Metropolitan Council – Environmental Services — The MCES’ IWPP section 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	1980	1999	Reduction	Reduction (percent)
Cadmium	4,585	301	4,284	91.7%
Chromium	64,755	6,987	57,768	89.2%
Copper	66,714	11,308	55,406	83.0%
Lead	10,600	3,341	7,259	68.5%
Nickel	43,128	5,290	37,838	87.7%
Zinc	90,931	8,766	82,165	90.4%
TOTAL	280,713	35,993	244,720	87.2%

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 IWPP has worked specifically with dental clinics regarding mercury, surveying over 1600 clinics in 1995. 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. In 1998, a partnership project was established with the Minnesota Dental Association to evaluate the effectiveness of chairside traps for waste dental amalgam. Samples from various styles of commercial equipment were collected and analyzed at the MCES laboratory. In addition to volunteer dentists, the communities of Hastings and Cottage Grove were selected for 100% monitoring of dental clinics. At the same time that the amalgam collection equipment is installed in the dental clinics, daily samples will be collected at the treatment plants and the mercury concentrations measured. In this way, it can be determined if the amount of mercury in the plant effluent is decreasing with the traps in place. This study was carried out over a three-month period in Hastings and will be installed in Cottage Grove in 2001.

The P2 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. Influent monitoring closely measures mercury coming into the treatment plants.

Department of Transportation — Mn/DOT is researching various methods for removing lead 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 section 29 *Printing* in Part III.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

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

University of Minnesota — UM-Duluth is participating 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. Mercury-containing devices are being systematically replaced with non-mercury devices. The university is systematically cleaning drain systems on campus, emptying traps and removing biomass buildup, to eliminate accumulated mercury from the wastewater system.

The University of Minnesota is cooperating with MCES in a pilot study to reduce mercury in dental clinic wastewater. The Boynton Health Center Dental Clinic has installed a micro-screen system in its chair-side

wastewater system to capture fine particles of mercury amalgam filling material before they enter the sanitary sewer. University Facilities Management plans to install a cloth filter system at the out flow of the Dental School Clinic's (350 chairs) central chair-side wastewater collection tank to capture fine particles of mercury amalgam filling material before they enter the sanitary sewer. MCES will assist in evaluating the success of these systems in reducing the soluble mercury discharged to the sanitary sewer system. If successful, these systems would be recommended to other dental clinics. The university's updated steam plant can burn a fuel mix which is 70 percent or more natural gas rather than the traditional mostly coal fuel mix. The displacement of coal as the primary fuel can eliminate several pounds of mercury from the steam plant's annual air emissions into the environment.

The university collects spent fluorescent lamps from all of its campuses and has them recycled for mercury recovery. In 2000, some 95,000 fluorescent lamps (8 pounds of mercury) were recycled. The university offers fluorescent lamp recycling service to educational institutions throughout the state via its Chemical Safety Day Program (<http://www.dehs.umn.edu/csdp>). The Chemical Safety Day Program, which has operated since 1981, provides chemical waste management services to Minnesota schools.

University of Minnesota Stores and Environmental Health and Safety (DEHS) celebrated P2 Week 1999 by initiating a laboratory mercury thermometer exchange program. Participants received a free non-mercury thermometer for each mercury thermometer surrendered with a limit of two per customer. The purpose was to capture mercury thermometers and to create a customer base for non-mercury thermometers by placing them into labs. The goal was to exchange 500 thermometers and to collect an additional 500 mercury thermometers. The project used e-mail listserv and handbill advertising. Five drop-off collection sites on the Twin Cities campus were available for two hours each to exchange thermometers and distribute information about mercury use and management in the laboratory. The project got participation from 235 laboratories, took in 796 mercury thermometers, and distributed 518 non-mercury thermometers. Proactive programs of minimizing mercury on campus and capturing mercury waste at its source 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 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, and prefabricated construction. 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 also enforces flame spread rating for materials on interior finishes. The Plant Management Division is coordinating with Department of Employee Relations' Industrial Hygienists to develop janitorial procedures for indoor air quality procedures and standards for statewide recommendations. The Materials Management Division has developed a contract for laboratory analysis of air-monitored and bulk samples.

Department of Commerce — Minnesota Energy Code. See section 11 *Education, Communication and Training* in Part III.

Department of Corrections —

MCF-OPH — Fans and duct liners are cleaned and coated as part of an ongoing plan to encapsulate fiberglass duct liners on which microbial material has grown. Dryer exhaust vents are annually cleaned in the living units. Air quality has been specifically tested in various areas to ensure problems are resolved or do not arise. Corrective measures of cleaning and coating the fans and duct liners are scheduled for the next several years. High efficiency air cleaners have been installed in Industry areas.

MCF-RC — RC switched to high efficiency filters, which are replaced every six months. The facility uses antibacterial pads in condensate drip pans to prevent any bacterial growth. Outside air intake is monitored via the computerized building automation system to ensure that fresh air intake meets the Indoor Air Quality standards. Air circulation is tested annually by an independent source as required for ACA accreditation.

MCF-SHK — The facility has preventive maintenance programs to clean HVAC equipment. Filters are changed quarterly.

Iron Range Resources and Rehabilitation Board — The system installation and maintenance is performed by contract with Johnson Controls of Duluth.

Metropolitan Council - Transit Operations — Metro Transit has worked in this area since 1991 when it conducted its first study of the air handling systems at the Ruter Garage. That study focused on the new standards required by the MPCA and when changes would have to be made to meet those standards. Based on that study, a completely 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 (1995) and the South and Heywood Garages (1997). Metro Transit is currently installing a prototype exhaust system in the body shop area of the Overhaul Base. If this prototype system is accepted by the working group, the full system will be installed in 2000.

Metro Transit is looking at using waste heat in its Heywood Garage and office building. This system would preheat all air coming into the air handling system and reduce emissions from natural gas and fuel oil by 40 percent. If funds become available, these modifications will be installed in 2001.

The agency has requested additional funds to renovate the air handling systems in its South and Heywood facilities. If these funds become available to Metro Transit, the modifications will be made in 2001.

Pollution Control Agency — At the MPCA central office, an additional fan has been installed to improve the indoor air quality on each floor. The new Brainerd office lease requires the use of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) approved minimums for fresh air intake, filter efficiency, and filter replacement to be incorporated into the Heating, Ventilating, and Air Conditioning (HVAC) system. Other requirements are specified to ensure that the building maintains good indoor air quality.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Energy efficient lighting and other utility conservation measures including the upgrading of HVAC systems is currently being evaluated.

North Hennepin Community College — IAQ tests were conducted in 1997-1998 by Legend and Maxim. Modifications were made to two buildings (August 1998) to improve fresh air supply at cost of \$350,000.

University of Minnesota — The university hosts an IAQ web page (<http://www.dehs.umn.edu/iaq>) and web links (<http://www.dehs.umn.edu/outsidelinks>) to disseminate information about various aspects of indoor air quality (design, health effects, contaminants, etc.). The information includes both chemical and microbiological agents and covers home, school, and business situations. Check these sites for terrific fungal pictures and information. Expected benefits from this education are a reduction in indoor air quality complaints and improved worker health.

18. Ice Control, Sanding

Department of Administration — The Materials Management Division and the Department of Transportation have developed a contract for alternative blend deicer being used in a mixture of 100 percent Ice Ban M50, mixed with 5,200 tons of salt, and 1,150 tons of sand. This blend is then mixed into road salt at the rate of eight gallons per ton of salt. This blend reduces the salt use and can be used successfully at lower temperatures. The Plant Management Division is currently testing various programs to reduce chemical usage during the winter season

Department of Corrections —

MCF-OPH — Sand is the principal product used in the units and on roadways when needed for ice control. 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 River.

MCF-RW — All roads and sidewalks are sanded to prevent slippery conditions.

MCF-RC — The groundskeepers use magnesium chloride ice preventer for use on walks. Sand is the principal product used in the units and on roadways when needed.

MCF-SCL — The facility uses no salt-based products on sidewalks into the facility. Our cost is \$5,000 annually. The practice reduces groundwater contamination, causes less grass kill, and less tracking of salt into the facility. SCL plans to continue using salt-free ice control.

MCF-SHK — The facility uses supplies from the Department of Transportation for parking lots. For sidewalks, SHK purchases supplies through the state contract.

Department of Human Services — METO continues to use potash for ice control. The potash provides traction, eliminates ice, and reduces the amount of material tracked into buildings.

Iron Range Resources and Rehabilitation Board — Salt pellets and sand are applied to the driveways, parking lots, and sidewalks by the custodial staff at all three facilities.

Metropolitan Airports Commission — MAC Field Maintenance continually evaluates ice control methods for runways, taxiways, and roads. The use of urea has been discontinued after more environmentally friendly substitutes were thoroughly tested and proven effective. Three products are currently in use. Sodium formate and sodium acetate are applied as solids, and potassium acetate is applied as a liquid. Conditions, including type and amount of precipitation, as well as temperature, are evaluated to determine which deicing chemical will work best in each situation.

It has been found that mechanically removing ice and compacted snow may be more effective in some cases than the use of chemicals. Over the past five years, MAC has added runway brooms to its fleet of snow removal equipment. Starting initially with two, the fleet now boasts ten. Built almost exclusively for airports, these 32,000-pound units are powered by two 350-horsepower diesel engines. The broom width is 18 feet, and a single pass essentially strips the pavement bare of any ice or snow. They can be operated at 25 to 30 mph and are staggered with plows and blowers in a “conga line” that can clear the width of a runway in two passes. The use of these “brooms” greatly reduces the need for chemical deicing, and in many cases eliminates it entirely. Also, when deicing chemicals are not needed and the applicator trucks are not used, the runways are closed for shorter periods of time. It is estimated that chemical deicing has been cut in half through the use of runway brooms.

Aircraft deicing performed by tenant airlines using glycol-based deicing fluid could also be considered another form of ice control. 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 Metropolitan Council-Environmental Services (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 to contain glycol-impacted run-off. Two deicing pads have already been constructed with an additional two in the planning stages. Four glycol recovery vehicles (GRV) are also used by the airlines to vacuum-sweep the surface of deicing areas. Glycol collected in this manner is more concentrated than what is pumped from the plugged storm sewer. Use of GRVs increases the recovery rate as well as the amount of glycol recycled.

Metropolitan Council - Transit Operations — Metro Transit is looking at installing a snow melt system around its Heywood Garage and office thereby reducing the amount of salt that is used at the facility. The system will be installed in 2001 if the funds become available. During the 1997-98 winter season, Metro Transit investigated the recycling of floor sweepings from the service garages. This would remove the sand from the streets that is tracked into the garages on buses and remove it from the waste disposal stream. This idea is still under consideration, particularly in conjunction with the removal of sand and grit from traps and sumps in the bus washes.

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 the 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.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

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 a sand and salt mixture as needed; residue is swept up in spring and disposed of as hazardous waste. Yearly cost is \$1,250 for sanding, \$1,300 for sweeping, and approximately \$10,000 for plowing.

University of Minnesota — The university's Facilities Management Grounds service group has started closing off unnecessary walkways and stairs in the winter months 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 are 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 intravenous bags are now also available.

The Materials Management Division's laboratory supplies contract, where scientifically possible, provides alternatives to laboratory media containing formaldehyde and heavy metals. MMD, in conjunction with the

Pollution Control Agency, has three regional contracts for environmental sampling and analysis. The Plant Management Division and Division of State Building Construction are designing high-efficiency, energy-saving hoods for the laboratory floor of the proposed Bureau of Criminal Apprehension building.

Department of Agriculture — The Agronomy work unit has now purchased an Inductively Coupled Plasma Mass Spectrometer (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. During the past year, the amount of mercury waste has been approximately 25 gallons. This has shown a saving of \$2000/year on hazardous waste removal. Alternative method development and additional equipment is being investigated to further reduce this waste stream. A mercury digestion system has been purchased and further reduction of mercury should be realized by the end of this year. The Laboratory Services Division had an intern from MnTAP investigating ways to help the laboratory reduce the amount of methylene chloride used within its Environmental Analysis work unit. In August 2000, she will be reporting her findings to the department.

Department of Commerce — The Weights and Measures Division receives petroleum samples from various Minnesota Petroleum distributors and retailers for testing. The waste remaining after testing is either returned to the petroleum company for further refining or added to the division vehicle tanks.

Department of Corrections —

MCF-RC — All biohazard lab products are collected monthly by Medical Safety Systems.

MCF-SCL — All biohazard products are collected and disposed of properly (incinerated) at an annual cost of \$2,000. This reduces chances of health contamination, controls sharps, and helps SCL comply with OSHA's blood-borne pathogen standard. The facility plans to continue to dispose of laboratory products per federal and state regulations.

MCF-SHK — Fixer from dental lab and lead foil from x-rays are 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. P2 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 florisil 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. Beginning in 1998, the lab switched to a micro-technique for cyanide analysis, further reducing the use of toxic chemicals.

In early 2000, the lab moved into a new facility. P2 efforts in the new building construction have involved the use of waste heat generated elsewhere at the plant during the sludge incineration process. In addition, variable volume air handlers have been incorporated to reduce demand on the heating, ventilating, and air conditioning system for times when air usage will be lower. Lastly, recycled materials have been used in the construction of the building wherever possible within the scope of the project.

Metropolitan Mosquito Control District — The district operates entomology labs at the St. Paul facility which use ethyl alcohol to preserve insect specimens collected in the field. Improvements in the lab procedures to recapture and filter the alcohol allow the district to reuse ethyl alcohol as many as four times before it is disposed of.

Pollution Control Agency — The MPCA Air Quality Lab has a temperature and humidity controlled room for the handling of PM2.5 filters and additional refrigerator space for the storage of PM2.5 filters to meet EPA guidelines. Tank Tie Downs in the Tank/Hazard Storage Room to comply with State Fire Marshall Code.

Department of Transportation — Mn/DOT materials laboratories continue researching analytical procedures that eliminate various chemicals used during quality assurance testing of bituminous. Several successes have been experienced. For example, 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. Research to find a substitute chemical for 1,1,1-trichloroethane has been conducted. 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 nine nuclear density machines for the materials laboratories statewide. These machines were 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 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 requiring the use of 1,1,1-trichloroethane run by Mn/DOT's Material Laboratories has decreased due to a change in quality assurance testing specifications. This has decreased the amount of 1,1,1-trichloroethane used.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

North Hennepin Community College — The college contracts with MacNeil Environmental on a yearly retainer of \$2,600.

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/hwd/guidebook>).

The University of Minnesota Department of Environmental Health and Safety has initiated a pilot project to identify and recycle via distillation laboratory waste solvents that are amenable to distillation and are marketable to university laboratories. Initial successes have produced marketable hexane, acetone, and acetonitrile. The solvent recycling means both less virgin solvent produced and less waste solvent to be disposed of. The projected cost savings to the university, if the distillation and marketing focused solely on acetonitrile, would be \$800 disposal costs avoided and \$30,000 solvent purchase avoided for the annual system capacity of 1200 liters of recycled acetonitrile. Total projected annual costs are \$10,800 that yields a net annual saving of \$20,000. Benefit is totally dependant on the price of virgin material that is being replaced and the quality of product from the distillation process.

20. Landscaping

Department of Corrections —

MCF-RC — In the past year, the facility has planted well over 100 trees. RC also preserved the run off ponds for wildlife.

MCF-SCL — SCL planted a five-acre area of native grasses and wild flowers at a cost of \$2,000. It was a beautification project but will provide cost savings of \$525/year, with a payback period of approximately 3 to 4 years. The facility plans to continue maintenance of the area, with a burn-off every three years and pulling weeds in between.

MCF-SHK — SHK does landscaping in-house and uses chemicals only as needed.

MCF-WR/ML — A silt screen was applied to a hillside to prevent soil erosion. The area was clear cut for security purposes and had the possibility of erosion, which could be a source of pollution to the watershed at the bottom of the hillside and jeopardize the perimeter road and fence.

Pollution Control Agency — The central office landscaping committee has established a natural garden area in the front of the building in place of mowed grass. This garden meets several goals: less watering, fewer pesticides, colorful/attractive seasonal entrance, and an extra benefit for wildlife (butterflies, birds, insects). The new Brainerd office will be reviewing and approving all exterior landscaping plans. They have requested that native, drought-tolerant landscape plants be used around the building.

Department of Transportation — Mn/DOT practices and promotes the use of native plants such as grasses, trees, and shrubs. Using native plantings reduces the maintenance demands of mowing, watering, and fertilizing and provides more weed control over time. Mn/DOT uses 15,000 to 20,000 cubic yards of wood mulch in and around various plantings annually to conserve water and control weeds, which reduces, if not eliminates, the need for a pesticide. Mn/DOT's specification for wood mulch promotes the use of locally generated non-treated wood waste. Mn/DOT uses 15,000 to 20,000 cubic yards of yard waste compost material in landscaping projects annually. Mn/DOT's specification for compost promotes the use of locally generated yard waste. Research has been conducted with various other kinds of compost, such as manure and municipal solid waste compost. However, due to a variety of reasons, Mn/DOT has had the most success with yard waste compost. Mn/DOT uses white oak stakes made from leftover cabinet stock for landscaping.

Mn/DOT offers a CD-ROM titled "Woody and Herbaceous Plants for Minnesota Landscapes and Roadsides." Mn/DOT developed this program to aid in selecting of plants for challenging roadside landscaping in Minnesota. Many cities, counties, and consultants use the landscaping specifications and details (such as plant selection, compost material, and mulch) developed by Mn/DOT. Mn/DOT is researching using landscaping to control human interaction with contaminated property's "hot spots." Through various landscaping projects Mn/DOT is creating a stronger Minnesota economy for recyclable materials such as non-treated wood waste, yard waste, and white oak cabinet scraps. In the past, these materials were typically landfilled.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

University of Minnesota — The University of Minnesota Extension maintains a web site entitled Sustainable Urban Landscape Information Series (SULIS; <http://www.sustland.umn.edu/>). This outstanding site offers a detailed guide to designing, creating, and maintaining sustainable urban landscapes. Aimed at both the public and the horticulture/landscape industry, the site is composed of four main sections. The first section, Design, takes users on a detailed trip through the process of envisioning, planning, and designing landscapes that are cost-effective, visually pleasing, and easy on the environment. The next section, Plant Selection, overviews the basics of selecting plants for landscapes and includes an excellent plant selection database. With detailed information and photos of over 1,200 plants, the database is worthy of an

annotation in itself. The Implementation section covers preparation, planting, installation, and construction of urban landscapes, with several illustrated how-to projects. The final section, Maintenance, offers a comprehensive guide to lawn care, with additional features on tree, shrub, and plant care planned for the future. A collection of links to related land grant university and extension sites rounds out the site.

The University of Minnesota's College of Architecture and Landscape Architecture provides landscape training and research (http://gumby.arch.umn.edu/landscape_architecture/default.html). Landscape architecture is the design, planning, and management of the landscape to create environments that embody ecological function and realize human aspirations for community, health and safety, and beauty. Landscape architects are concerned with a wide range of projects: large-scale regional landscape planning; design of exterior environments for working, living, and recreation; commercial, institutional, and industrial development; transportation systems; and multiple-use areas. Professional services include studies of land use feasibility, suitability, and capability; site selection studies; proposals for site layout and regional land use allocation and management; detail grading; construction drawings; and planting plans. Landscape architects often interact with other professionals such as architects, planners, engineers, geographers, physical scientists, social scientists, and others in developing projects. The cornerstone of the university's Landscape Architecture program is design informed by ecological understanding. National leadership in research and active testing of design ideas locally and nationally give the department a powerful springboard for innovation in design. Collaborative opportunities within the college and university offer a further means of realizing the potentials of landscape architecture as well as a means of asserting the necessity for ecological responsibility in design and planning.

21. Materials Exchange

Department of Administration — The Materials Management Division through its Surplus Services administers Minn. Stat. Chapter 16C.23, subd. 6, which directs the commissioner of Administration to dispose of state surplus, obsolete, and recyclable property to obtain optimum property utilization within all state agencies and governmental units or nonprofit organizations in Minnesota. Any remaining property is subsequently sold by public auction, sealed bid, pre-priced sale, or by negotiation as deemed most advantageous to the state and in accordance with state law and guidelines. Property that has outlasted its effective usefulness and is considered beyond economical repair with no further utility value to the state, governmental unit, or nonprofit organization in Minnesota is recycled in accordance with OEA's Product Stewardship policy proposal. The Travel Management Division's material exchange is accomplished through Surplus Property when property has useful life remaining.

The Materials Management Division has a contract for refurbished Herman Miller system furniture that allows state agencies and Cooperative Purchasing Venture members to purchase refurbished products rather than new product. This contract requires reupholstery to meet BPIA standards for office furniture recycling (Feb. 1994) and allows trade-in of Herman Miller system products. The Materials Management Division has created contracts with MINNCOR for furniture refinishing, reupholstery, and refurbishing.

Department of Corrections —

MCF-OPH — Rechargeable batteries are returned to the vendor per state contract. Useable items, such as furniture, have been sent to other facilities or sent to state and federal surplus. In 2000, pallets are scheduled to be picked up and shredded for mulch under a program available through the MCF-STW. Computers are sent to the Computers for Schools program at the MCF-STW where they are upgraded and forwarded or disassembled for parts. Otherwise, they are recycled through a computer-recycling company that charges a disposal fee.

MCF-RC — Cardboard is recycled, and RC contracts with a vendor to pick up and reuse the pallets. Cooking oil and lard is picked up and recycled by an outside vendor. Food waste is picked up by a pig farmer twice weekly.

MCF-SCL — The facility recycles cardboard (credit \$1,048); pallets (480 pallets recycled); metal (scrap iron, credit \$1,098). The facility has no landfill disposal costs for these materials.

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.

Materials exchange programs in Minnesota:

Minnesota Technical Assistance Program	612-624-1300 or toll free 800-247-0015
Chisago County Materials Exchange	651-213-0879
Northcentral Materials Exchange	218-547-7428
Northeast Minnesota Materials Exchange	218-722-3336, ext. 440
Otter Tail County Materials Exchange	218-739-2271, ext. 409
Southeast Minnesota Recyclers Exchange (SEMREX)	507-457-6464
Southwest Minnesota Materials Exchange	507-372-8227
West-Central Materials Exchange	218-299-7335

Metropolitan Airports Commission — MAC has an ongoing reuse program for discarded pallets that would otherwise be destined for disposal. They are generated by the various tenants, as well as by MAC operations. Numbering up to a thousand per month, MAC maintenance personnel pick up pallets at loading docks, along roadways and ramp areas and bring them to a designated pallet staging area. Previously, pallets were ground into landscape mulch or animal bedding either on-site or off. Now, thanks to the Minnesota Materials Exchange, a partnership has been formed with a vendor who reuses them. Every week, and more often if needed, a flatbed truck arrives and takes away 160 pallets. The cost to MAC is zero and the vendor has a steady supply of reusable pallets. Any damaged pallets are repaired or dismantled. Annually, 10,000 plus pallets are reused, and the avoided disposal cost easily exceeds \$15,000.

MAC also promotes reuse internally through a policy of the purchasing department. A procedure has been established outlining the steps to take when MAC-owned property is no longer needed by a particular employee or department. An e-mail posting is used to notify the staff when an item becomes available. If no one responds by the deadline, the purchasing department will take responsibility and either find a buyer outside of MAC, donate the item(s) to a worthy cause, or give them away. Countless items have been kept out of the waste stream and reused in this manner.

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.

Pollution Control Agency — At least twice a year (during Earth Week and the Holiday Season), staff organizes a “free garage sale.” Usable, but unwanted, items from staff are brought in and placed on a table for others to take and reuse.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

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 (CRF) operates a reuse program for redistribution of unwanted computers, office furniture and equipment, and laboratory furniture and equipment (<http://www1.umn.edu/recycle/reuse.html>). The target audience is the university community and nonprofits. Available items are listed and often shown on their web page. A new CRF web-based program called the Virtual Warehouse lists and shows items available for sale/redistribution at their current locations. Items are marketed and exchanged without the extra handling and transportation required to take them to the central warehouse.

22. 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 2,265 recycled products in fiscal year 2000, up from 2,244 products in fiscal year 1999. Total sales of recycled products through May 2000 were \$1,991,038, of which \$1,743,755 were sales through Central Stores and \$247,283 were sales through S&T Office Products. In fiscal year 2000, Central Stores added nine House of DooLittle recycled products to their dated products contract. These products are made from 100 percent recycled paper containing 30 percent post-consumer waste, printed with soy-based inks, and the covers on the books and planners are made from 50 percent recycled fiber. In the spring of 2000, Central Stores again offered these products for the year 2001 and added four At-a-Glance products that also contain 30 percent recycled content. These products were advertised in a six-page rollout flyer that was mailed to all their customers. The products are also advertised on the Central Stores' web site along with an easy-to-use order form.

In fiscal year 2000, a new 100 percent post-consumer paper was added to Central Stores' inventory. This paper is 100 percent recycled content, is acid-free for a long bright life, and has outstanding opacity for two-sided copying. It is manufactured in a totally chlorine-free process. This product exceeds all state and federal requirements for recycled content.

In May 2000, Central Stores rolled out their new e-catalog. This electronic online catalog reduces paper consumption by eliminating the need for a printed catalog and by allowing customers to order online for faster order placement without the need to fax or mail an actual order form. Because the catalog, with graphics, is available online, this will allow Central Stores to reduce the number of printed catalogs they need to order and distribute to their customers on a yearly basis.

The Materials Management Division has a contract for industrial paper with sales of approximately \$2,200,000 for fiscal year 2000. Within that total, 89 percent of the sales were for recycled paper towels and tissue that contain 90 to 95 percent post-consumer waste. This exceeds the federal standard of 40 percent. MMD also has a contract for printing and business papers with sales of approximately \$1,700,000 for fiscal year 2000. Within this total, 75 percent of the purchases were for recycled paper. MMD's contract for recycled continuous printer paper had sales for fiscal year 2000 of approximately \$27,354 for 30 percent post-consumer printer paper. This amount will increase by approximately \$67,000 for next year, as the four largest volume corresponding products on the continuous printer paper contract will be deleted, shifting the business to the recycled paper contract. Agencies will be able to buy the same sizes in a recycled product at reduced prices.

In coordination with the Office of Environmental Assistance, the Materials Management Division has concluded a pilot program to test the performance of a new recycled copy paper that is 100 percent post-consumer paper and is processed chlorine-free. The Resource Recovery Office purchased and provided free paper throughout the department to expand the pilot test and promote purchases. The performance of the paper is currently under review and may be added to the state contract for recycled copier paper this fall. The Risk Management Division continues to request soy-based ink for printing orders, and 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 and uses recycled laser printer cartridges.

Department of Commerce — Printer and copy paper used by the department contains 30 percent post-consumer content by fiber weight.

Department of Corrections —

MCF-FRB — FRB contracts with Safety Kleen at a cost of about \$500 in fiscal year 2000.

MCF-LL — Recycling activities.

MCF-OPH — Laser cartridges are recycled. Telephone books have been sent to a sheltered workshop for use in their activities or are otherwise recycled.

Office supplies, particularly paper products or recycled or post-consumer recycled product, are purchased as a matter of practice. The state's Resource Recovery Program is used to recycle mixed paper, plastic, cans, and corrugated. White office paper is forwarded under the Resource Recovery Program to Rock Ten where it is recycled into other paper products.

MCF-RC — RC uses Shred-It Recycling for most of our paper products. The used toner cartridges are sent back to the manufacturer for recycling.

MCF-SCL — SCL uses Shred-It Recycling for a large portion of office products. It costs \$12,700, but it provides cost savings for landfilling and saves 480 trees annually.

MCF-SHK — SHK uses recycled copier paper and recycles office paper, shredded paper, aluminum, plastic, glass, etc. per policy. Staff is encouraged to use e-mail instead of sending paper copies through the mail.

TC — OSI picks up waste.

MCF-WR/ML — The facility has nearly eliminated the use of shredders. By contracting with a company to collect and shred all paper documents, the facility saves money on staff time, purchasing, and maintenance of shredders and all paper is recycled.

Office of Environmental Assistance — The OEA uses Savin IKON copier machines, which have non-removable toner cartridges that are made of high-density polyethylene plastic.

The OEA switched from 30 percent post-consumer recycled copy paper processed with chlorine to 100 percent post-consumer copy paper processed without chlorine. Just over half of the supplies purchased are reusable or contain recycled content. Examples include post-it-notes, refillable pens and pencils, file folders, 3-ring binders, note pads, etc.

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. The OEA and PCA cafeteria supplies compostable dishware. The OEA uses washable linens in its kitchen and in restrooms.

Iron Range Resources and Rehabilitation Board — IRRRB typically uses Great White multi-purpose paper, which is 30 percent total recovered fiber for copiers, printers, and fax machines at all facilities. Waste office paper and newsprint is transported to Northern Minnesota Recycling for processing.

Metropolitan Airports Commission — Whenever possible, products made from recycled materials are purchased and used. Printer toner cartridges are returned to the manufacturer for remanufacturing. Recycled content paper is used in the copy machines and printers. MAC employees separate all types of recyclable items. The private cleaning companies are required to keep recyclable items separate from the trash. Large containers are located outside each MAC building for separate storage of trash; cardboard and paper items; and cans and bottles.

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 where they are prepared for reuse at MCES. New in 1999 is a program where used ink jet cartridges are sent to the EnviroSmart Company in Franklin, Tennessee for recycling. These are mailed individually and directly in plastic, postage-paid envelopes.

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

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 and recycled inkjet cartridges are purchased and used whenever possible. However, the district has found that the performance and quality of recycled printer cartridges does not approach that of new printer cartridges. Used laser printer cartridges are collected and returned to office supply vendors for reconditioning whenever possible.

Pollution Control Agency — The central office uses reusable visitor badges. The many advantages to reusable badges are that they waste less paper, provide improved security, are easily distinguishable, and do not damage clothing. In August 1999, the state's Central Stores added a 100 percent post-consumer paper product, distributed by Badger, to the State of Minnesota contract. Purchasing staff was directed to order this paper for a majority of the agency's printing needs. The paper has been working well in fax machines and photocopiers; however, there have been problems with paper jams in many laser printers. Therefore, staff has been instructed to order 50 percent post-consumer paper, distributed by Great White, for laser printers that cannot accommodate the 100 percent post-consumer paper.

Efforts to reuse existing supplies whenever possible continue. Each floor has a designated storage area for reusable items such as file folders, 3-ring binders, and a variety of miscellaneous office accessories. MAPS users are encouraged to purchase writing tablets that contain the highest percentage of post-consumer content material from the Central Store state contract. The MPCA/MOEA recycling rate of office materials/wastes was 84 percent. The MPCA Waste Reduction and Recycling Committee (WRRC) continued to sponsor pad-making parties with staff who volunteer to make one-sided paper pads with experienced paper over their lunch hours. This event is typically scheduled once a month. Each MPCA staff member received a one-sided paper tablet courtesy of WRRC in May 1999.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

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

23. Oil, Oil Filters

Department of Administration — The Materials Management Division has established statewide contracts for the purchase of re-refined motor oil and oil change services that include re-refined oil as a choice. Re-refined motor oil and changing services purchased through state contracts contain a minimum of 25 percent re-refined base oil, and also contain the required additives to provide optimal engine performance. The oil change services contract had over \$75,000 worth of re-refined oil changes. The Materials Management Division has a contract for bulk re-refined motor oil.

The Travel Management and Plant Management divisions' oil filters are drained for 24 hours in order to qualify as solid waste, as opposed to hazardous waste. Re-refined oil is also used for oil-changes. The division also uses a 100-percent re-refined brand of engine oil when servicing vehicles. A vendor licensed under state contract collects the used oil for recycling.

The Plant Management Division participates in a used oil recycling program. The Materials Management Division, in conjunction with the Department of Transportation has a contract for the management of used oil sorbents and filters for processing for energy recovery.

Department of Corrections — See also section 8 *Batteries* in Part III.

MCF-LL — LL recycles oil and oil filters.

MCF-OPH — Approximately 50 gallons/year of used oil and 25 gallons of recyclable refrigerant oil is picked up and recycled by a local vendor, who also recycles grounds equipment oil filters. Automotive oil filters are recycled by Rapid Oil when the oil is changed in the Transportation Unit vehicles.

MCF-RW — All waste oil and oil filters are collected and recycled.

MCF-RC — All automotive oil and filters are recycled through the local vendor that services RC's fleet. The oil use in the chillers is recycled through a vendor who contracts with the facility.

MCF-SCL — All facility vehicles are serviced at local service stations and they recycle the oil and filters. The cost is \$3,600. The facility's oil is not disposed of in a landfill, and there is no ground contamination. SCL plans to continue using a service station.

MCF-SHK — Oil and filters are recycled through Safety Kleen.

MCF-STW — Oil and oil filters are used in most of the MCF-STW vehicles and machines. They are recycled for reuse when possible, and any waste is disposed of in accordance with EPA/MPCA regulations.

TC — OSI picks up waste.

Iron Range Resources and Rehabilitation Board — Vehicle maintenance staff stores oil/oil filters in 55-gallon drums, which are picked up by Como Oil of Duluth to be recycled.

Metropolitan Airports Commission — MAC fleet/vehicle maintenance shop is equipped with an oil/fluid change pit that employs a mobile collection tray to catch spent lubricants. It is pumped directly to a large storage tank with little or no chance of spilling. Oil filters are crushed on-site and recycled by the same permitted vendor that removes the used oil for re-refining. Overhead service reels provide oils and grease through hoses connected to bulk storage tanks eliminating the need to pump liquids from drums into containers and then carrying them to the service bay only to be dispensed again. Spills are rare and absorbent use is minimal.

MAC also recognizes that there is a need to collect used oil from non-commercial tenants at the reliever airports. Collecting used oil from these tenants reduces the chances of possible ground water and soil contamination from the oil being improperly managed (dumped on the ground or in a dumpster). Used oil

generated at the reliever airports by non-commercial tenants and MAC operations is stored in tanks provided by MAC. It is collected periodically by a permitted vendor who then re-refines it.

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 1999, over 6,770 gallons of used oil were transported and approximately 2,100 pounds of used oil filters were recycled.

Metropolitan Mosquito Control District — Used oil and used oil filters are recovered and recycled through a recovery vendor. Re-refined oil is being used in the district’s light duty vehicles to help create a market for re-refined products. 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 light duty vehicles which is most of the fleet, and 3,000 miles for heavy use vehicles. This fleet maintenance procedure has been in effect for a number of years. During this time, MMCD has not experienced any fleet problems related to the extended mileage program.

Department of Transportation — Mn/DOT has installed approximately 67 waste oil burners in 67 maintenance shops. The waste oil burners allow Mn/DOT to burn waste oil as a supplemental heat in maintenance shops, resulting in lower utility bills. Mn/DOT recycles all oil filters.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Through the technical education programs, the college has identified potential pollution concerns in Auto Body, Auto Mechanics Fluid Power, Machine Tool, Agriculture Processing, Diesel Mechanics. Minnesota West is monitoring absorbents, antifreeze, fuels, oil, solvents, batteries, paints, and tires. Minimal amounts of these products are disposed of each year. The college contracts with authorized hazardous waste transporters for proper removal and disposal. The college will continue to follow this practice in the future and is exploring options for in-house recycling of some of these products.

North Hennepin Community College — The college stores used oil and filters in approved containers, and recycles them through a local recycling vendor. The annual cost is \$300.

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

24. Paints, Coatings, Stripping

Department of Administration — The Materials Management Division specifies no-lead paint for traffic marking and equipment paint. The MMD and the Office of Environmental Assistance have developed a contract for recycled paint. Volunteers are currently being sought to participate in the recycled paint pilot project, which will test the efficacy of using and procuring recycled paint. The contract becomes effective July 2000.

The Plant Management Division makes solvent-free paint available to state agencies and political subdivisions through its state contract. The division also tests the use of latex-based duct sealant compounds and uses nut chips with shot-peening equipment to remove paint and gasket materials.

Department of Corrections —

MCF-LL — The facility recycles paint.

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

MCF-RW — Used oil-base paints are collected and recycled.

MCF-SCL — Painting, coating, and stripping sludge are collected and reduced properly. The cost is \$2,000 annually, and it keeps hazardous products out of the landfill and ditches. SCL plans to continue recycling efforts.

MCF-SHK — The facility recycles through Aptus. SHK didn't need to do any this fiscal year, but will probably need to do some next year. The facility uses all the paint and coatings purchased, and recycles the mineral oil spirits used for cleaning brushes.

MCF-STW — Paints and coatings are used at the MCF-STW. Stripping is not done at this facility. The waste is disposed of in accordance with EPA/MPCA regulations.

TC — TC uses the Clean Shop Disposal for these items.

Department of Human Services — Moose Lake has eliminated solvent-based paints and finishes in its woodworking shop.

Metropolitan Airports Commission — MAC Paint Department retrofitted its paint application equipment to allow for latex, water-based paints to be used when striping runways, taxiways, and roadways. The 15,000+ gallons of pavement-marking paint used annually is purchased in reusable 250-gallon totes. Once emptied, the totes are returned to the supplier, eliminating the need to manage 275 single-use, 55-gallon steel drums.

Most interior painting and all exterior painting for buildings and pavement is done with water-base paint. Any use of solvent-based paint is restricted to the paint booth. The paint booth uses water filtration in addition to standard paint booth filters, which actually makes the exhaust cleaner than the air taken in. Paint booth filters are managed as nonhazardous industrial waste and are burned for energy recovery. Exclusive use of High Volume Low Pressure (HVLP) spray technology for solvent-based paints reduces overspray by 40 percent, uses less paint, and more evenly coats for a better finished product. The conversion to HVLP required only the purchase of new spray guns and training for the painters. The spray guns were completely compatible with the air compressors, filters, lines, etc.

Paint inadvertently left behind by contractors and surplus paint from MAC projects is used as a primer or base coat on other projects. The need to dispose of paint has nearly been eliminated and less paint is now purchased.

Metropolitan Council – Environmental Services — The Paint Shop at the metro WWTP continues in its relevant ongoing P2 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, thereby 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 based 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.

Pollution Control Agency — The new Brainerd office features low VOC paint and finishes, high recycled-content resilient carpeting and flooring, and recycled-content or recycled styrofoam ceiling tiles.

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 section 16 *Heavy Metals* in Part III.

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. In the first method, 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. In the second method, the used toluene that was generated by flushing/cleaning the paint lines and has not separated into two layers can be reused as a thinner when applicators need to thin solvent-based stripping paint.

Mn/DOT has purchased a new parking lot pavement stripping machine that is capable of using latex paint, thus eliminating the use of toluene as a cleaning solvent. MnDOT also purchased a new road stripping truck and is retrofitting older road stripping trucks to be capable of using latex paint, thus eliminating the use of toluene. All vehicles purchased by Mn/DOT are specified to have heavy-metal-free coatings/paints. See section 16 *Heavy Metals*. Mn/DOT has purchased a second epoxy road stripping truck. Epoxy road stripes last 3 to 5 years longer than latex road stripes. Therefore, fewer resources (labor, paint materials, diesel, etc.) are used to maintain safe road stripes. Epoxy road stripe paints have proven to be less environmentally toxic than other stripping paints.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Through the technical education programs, the college has identified potential pollution concerns in Auto Body, Auto Mechanics Fluid Power, Machine Tool, Agriculture Processing, Diesel Mechanics. Minnesota West is monitoring absorbents, antifreeze, fuels, oil, solvents, batteries, paints, and tires. Minimal amounts of these products are disposed of each year. The college contracts with authorized hazardous waste transporters for proper removal and disposal, and will continue to follow this practice in the future. The college is exploring options for in-house recycling of some of these products.

North Hennepin Community College — The college uses latex paint only, no oil-base paint. Opened paint is stored in approved containers and, as needed, disposed of through Hennepin County.

University of Minnesota — As a result of a collaborative decision by university officials and a host of other agencies, the interior walls of the new \$35 million University Gateway center were coated with used paint. The project was part of a “green” building initiative spawned by the Minnesota Office of Environmental Assistance, the university’s Waste Abatement Committee, Hirshfield’s Painting Mfg., and

the Minnesota Painting and Wallpapering Employers Association. Approximately 2000 gallons of recycled paint were used to coat a majority of the Gateway interior walls. The only areas exempt from the paint are ceilings and doorframes, which require a different product.

A one-day paint drive collected more than 1,000 gallons of different color, gloss, and quality paints from members of the Minnesota Painting and Wallpapering Employers Association. The paint was inspected, mixed, and tested by Hirshfield's Painting Mfg.

Though recycled paint is not new to Minnesota, the Gateway venture signifies the largest commercial use of recycled paint thus far in the state. The Gateway project illustrates to the university and greater community that recycled paint isn't just a raw concept but a quality alternative to virgin paint. From an application standpoint, it demonstrates that it's an industry-grade paint that can be purchased by contractors and used effectively.

25. Parts Cleaning

Department of Administration — The Plant Management Division shares used cleaning solvent with the Travel Management Division to be reconditioned for future use. The Travel Management Division has an aqueous-based parts cleaner machine. No hazardous waste is generated from this system. TMD also has an OSHA approved brake cleaning system to handle any possible asbestos contact or contamination.

Department of Corrections —

MCF-FRB — Parts cleaners are recycled quarterly at a cost of about \$1,600 in fiscal year 2000. The cost of the recycler (\$3,500) — savings in disposal costs of approximately \$1,500 annually and decreases use of virgin (clean) thinner for spray gun cleaning.

MCF-LL — Recycling activities.

MCF-OPH — A recyclable parts cleaning process is used.

MCF-RW — This material is used in the automotive shop and collected in waste drums and recycled.

MCF-SCL — The parts cleaner has been eliminated from the facility.

MCF-SHK — SHK recycles through Safety-Kleen Corp.

MCF-STW — There are two types of parts cleaning operations performed at the MCF-STW. Paint equipment is cleaned with xylene. This is recycled in-house and the sludge bottoms are disposed of in accordance with the EPA/MPCA regulations. Maintenance parts cleaning is done in the various shops. The waste is fuel-blended in accordance with the EPA/MPCA regulations by the state contract vendor.

Iron Range Resources and Rehabilitation Board — Como Oil changes the parts cleaning fluid at the IRRRB shop on a bimonthly basis and takes the old fluid back to their facility for processing.

Metropolitan Airports Commission — This program continues to be managed by a solvent parts washing vendor. The size and number of solvent parts cleaners has been minimized and service intervals have been maximized to produce as little waste as possible while at the same time maintaining efficiency in the shop. MAC has purchased a second spray cabinet parts washer that uses a heated, water-based high pressure cleaning solution. An auxiliary filtration system extends solution life. Spent solution is nonhazardous and is recycled. MAC's goal is to reduce and eventually eliminate the use of solvents for parts cleaning.

Metropolitan Council – Environmental Services — There are over two dozen parts washers at MCES facilities and approximately 720 gallons of solvent was recycled in 1999. 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, nonhazardous solvents, have not met with widespread 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 widespread use due to the increase in vehicles that are now fuel injected.

Department of Transportation — Mn/DOT is actively researching substitute products/systems to reduce (by 90 percent 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 section 30 *Procurement*.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

University of Minnesota — The University of Minnesota has an ongoing program of using parts cleaning services, such as Safety Kleen, that 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-143) 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.

26. Personal Care

Department of Human Services — St. Peter continues to use washable diapers instead of disposable.

27. Pesticides, Fertilizers

Department of Administration — The Plant Management Division follows pollution prevention practices during the planting and care of landscaping by its Grounds Services staff. The division also participates in a Public Land Task Force addressing integrated pest management practices.

The Materials Management Division is changing its pest control services by moving to integrated pest management—a process to achieve 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 /Plant Protection Division has ongoing projects that are instrumental in educating rural, suburban, and urban Minnesota in the proper best management practices of pesticide use and disposal. The Agronomy/Plant Protection Division's participation in the WaterShed Partners, a coalition of 36 public, private, and nonprofit organizations, is instrumental in educational programs to reduce urban runoff in the metropolitan area.

The ongoing empty pesticide container and pesticide waste programs within the Agronomy/Plant Protection Division have educated many rural farmers on the best use and proper disposal of pesticides. The Sustainable Agriculture program, now in its 12th year, continues to help farmers learn alternative practices to pesticide application. A copy of this year's *Greenbook* can be obtained from the Minnesota Department of Agriculture. The Agronomy Plant Protection information can also be obtained from the Minnesota Department of Agriculture's web page: www.mda.state.mn.us.

Department of Corrections —

MCF-FRB — The facility only buys what it uses. FRB contracts and programs with Plunketts.

MCF-OPH — OPH purchases only the amount needed and that can be used within the season in order to eliminate the need to store between seasons and possible pollution through spillage.

MCF-RW — This facility uses fertilizers on the lawn once a year, approximately forty acres.

MCF-RC — The facility fertilizes once a year and only buys as much as they're going to be using at the time. RC does not store pesticides or fertilizers on the grounds.

MCF-SCL — Pesticides and fertilizers are applied only by trained personnel at an annual cost of \$100. Trained personnel use less product and this also minimizes soil and water contamination. The facility plans to continue to control the amount of pesticides and fertilizers used.

MCF-SHK — SHK does not use pesticides. Fertilizers are used as purchased.

Department of Human Services — St. Peter continues to use half of the manufacturer's recommended amount of pesticides and fertilizers on its campus.

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 materials as hazardous wastes.

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. 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 kestrel's diet is meadow voles. Meadow voles create numerous problems with roadside vegetation. Poisonous rodent baits have been used in the past with various success. These nesting boxes will hopefully reduce or eliminate the use of such poisons.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

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, and \$4,500 for fertilizer.

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. Special areas of expertise are integrated pest management (<http://www.ipmworld.umn.edu>) and sustainable agriculture (<http://www.misa.umn.edu>).

The university's College of Agriculture, Food and Environmental Sciences (<http://www.coafes.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.

28. Policy Statement

Department of Administration — Sustainable development is the balancing of economic, equity (community), and environmental considerations. It is the model the State Government Resource Recovery Program will use during its partnerships with other entities to deliver customer services for a high quality of life. Goals include continued resource conservation and recovery as the Department of Administration integrates sustainable development into public agency daily operations, increased state agency waste reduction (by toxicity and amount), and recycling through sustainable development partnerships with state agencies and other entities.

Sustainable development “meets the needs of the present without compromising the ability of future generations to meet their own needs” and “maintains or enhances economic opportunity and community well-being while protecting and restoring the natural environment upon which people and economies depend” (Minnesota Statutes Section 4A.07). “Sustainable development insures the quality of life, today and in future generations, by considering environmental, economic and community linkages and impacts from our actions.”

The Department of Administration’s recycling promotion will continue to include environmental procurement networking, coordination with customers, purchaser training, certification and recertification, progress tracking, and analysis for program improvement. The partnerships developed in the Material Management Division’s Environmentally Responsible Work Group, Procurement Coordinators Group, and contract user groups, provide valuable guidance to achieve new levels of environmental purchasing and recycling. Training state agency purchasers about recycled-content products will help consumers obtain products and sustain the recycling loop. State progress in both measuring and increasing the use of recycled-content products will provide further accountability in the environmental purchasing practices of public entities.

Department of Agriculture — In compliance with Executive Order 99-4, 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 Commerce — The department considers protection of the environment to be a high priority. The department provides leadership in developing, advocating, and implementing equitable, cost-effective policies regarding departmental agendas. 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. The Department of Commerce is 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.

Department of Corrections —

MCF-OPH — Policy and Procedures R-21/Recycling mailed, not e-mail copy.

MCF-RC — See attached DOC policy on the next page.

MCF-SCL — SCL is currently updating the Hazardous Waste Control and Pollution Prevention Plan Operating Guideline. It will make facility employees aware of environmental concerns and proper controls. SCL plans to continue environmental recycling and energy conservation efforts.

MCF-SHK — SHK follows the executive order and statutes.

DOC POLICY

Number: 105.150

Issue Date: 10/15/99

Effective Date: 1/1/00

Page: 11 of 11

Right to Know Program

1. Regardless of size or contents of the spill, staff will employ all precautionary means (appropriate personal protective gear will be used by anyone participating in this exercise). The facility safety officer(s), A-team Officer in Charge, and the Watch Commander will determine whether an evacuation is necessary or if a “defend in place” action is sufficient.
2. The hazardous waste generator licensee is responsible for maintaining the contingency plan for facilities required to have a contingency plan by the Minnesota Pollution Control Agency.
3. A copy of the program will be made available upon request to employees and their representatives.

Review:	Annually
References:	Minn. Statute 151 Minn. Rule 5206 OSHA Standard 1910.1200(g). ACA Standards 2-CO-3B-01, 3-4203 and 3-JTS-3B-05.
Supersession:	Department Policy 105.150, “Hazard Communication” 11/16//98. All facility policies, memos, or other communication whether verbal, written or transmitted by electronic means regarding this topic.
Attachments:	Non-Routine Tasks form Control Log for Issuing Chemicals

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 the economy, and preserve the 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. The OEA believes that pollution prevention in its 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 is 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, nonprofit 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.

Iron Range Resources and Rehabilitation Board — The IRRRB is committed to issuing a policy, which will help educate and encourage employees to continually strive for the prevention of pollution and conservation of energy and environmental resources. This policy statement will be available to all employees January of 2001.

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

Metropolitan Council – Environmental Services — The Metropolitan Council's Administrative Policies and Procedures, Section 1-2a, is titled Environmental Sustainability. This section contains a sub-section with policies that are consistent with the Governor's Executive Order 99-4.

Metropolitan Council - Transit Operations — The Metropolitan Council has a general Environmental Sustainability Policy (Section 1-2) which addresses issues relevant to the entire region. The companion Environmental Sustainability Procedure (Section 1-2a) covers pollution prevention for council staff. Transit does not have any regulatory activities.

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, the district can improve the quality of the environment and maintain a safe healthy workplace for its employees. Environmental protection is everyone's responsibility. The MMCD is committed to being a good neighbor and to operating 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.

Department of Transportation — Mn/DOT is committed to excellence and leadership in protecting the environment. In keeping with this policy, the department's objective is to reduce waste and emissions. Mn/DOT strives to minimize adverse impact on the air, water, and land through excellence in waste stream management. By preventing wastes, the department 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 its 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. The department promotes cooperation and coordination between industry, government, and the public toward the shared goal of preventing pollution at its source.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

North Hennepin Community College — MacNeil Environmental contract.

University of Minnesota —

<p>UNIVERSITY OF MINNESOTA BOARD OF REGENT’S POLICY</p>	<p>CONSERVATION Pollution Prevention and Waste Abatement Adopted: June 11, 1992 Supersedes: Waste Abatement Policy 12/15/85</p>
<p>CONSERVATION Pollution Prevention and Waste Abatement</p> <p>The University of Minnesota is committed to excellence and leadership in protecting the environment. Our objective is to reduce all types of waste and emissions. We strive to minimize adverse impact on the air, water, and land through excellence in pollution prevention and waste abatement. By preventing pollution at the source, we can save resources, increase operational efficiencies, and maintain a safe and healthy workplace for our students and employees. By abating those wastes that cannot be eliminated at the source, we can recover useful resources and reduce the environmental and economic burden of waste disposal.</p> <p>We believe that environmental protection is everyone’s responsibility. Its manifestation is valued and displays commitment to the University.</p> <p>The University of Minnesota will achieve pollution prevention and waste abatement under the following guidelines. We will:</p> <ul style="list-style-type: none"> • Include the reduction of both hazardous and nonhazardous wastes and emissions at the source as a prime consideration in teaching, research, service and operations. The University is committed to identifying and implementing pollution prevention opportunities through encouragement and involvement of all students and employees. • Give top priority to technologies and methods which substitute nonhazardous materials and utilize other source reduction approaches in addressing all environmental issues. • Vigorously pursue waste abatement programs such as recycling, reuse, and purchase of recycled materials to reduce the need for disposal of waste that cannot be reduced at the source. • Encourage pollution prevention and waste abatement through changes in purchasing policies and specifications. <p>The University of Minnesota seeks to demonstrate its leadership role in the State of Minnesota by aggressively adhering to all environmental regulations. We promote cooperation and coordination among higher education, industry, government, and the public toward the shared goals of preventing pollution and abating waste.</p> <p>Therefore, be it resolved, that the Board of Regents directs the President to establish effective pollution prevention programs and to develop policies, plans and resources to achieve that goal.</p>	

29. Printing

Department of Administration — The Materials Management Division continues to require post-consumer recycled paper content on all printed material paper to be at least 30 percent. In addition, the Materials Management Division includes the following statement in all solicitations for printing:

Environmental Health and Safety Requirements:

By responding to this bid, the company certifies that it is in compliance with applicable state and federal laws related to environmental health and safety. If you have any questions, you should contact the Minnesota Technical Assistance Program (651.627.1910 or 800.247.0015). They can also provide a compliance checklist, which outlines federal, state, and local environmental regulations affecting printers in Minnesota.

The Materials Management Division processes several Best-Value bid solicitations, using environmental requirements as part of the evaluation criteria, which is an advantage for the Great Printers Projects. Communications Media, which participates in the Great Printers Project, offers customers *Launch!* software that allows them to send electronic files (a 1997 Minnesota Great! award-winning project). In addition, Communications Media uses 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 has a goal to complete experimentation of “no VOC” replacements for litho wash and deglazer.

The Minnesota Office of Citizenship and Volunteer Services continues to use soy-based inks for all its stationery, brochures, and other publications.

Department of Commerce — Approximately half of the department’s printers have the ability to print double-sided. Double-sided photocopying is done by request.

Department of Corrections —

MCF-OPH — Industry’s printing program consists of lettering on vinyl. Ink use is rigidly monitored and a record is kept of the inks used.

MCF-SCL — SCL’s print shop personnel recycle and minimize the use of paper products. The facility uses less paper products and prints with soy ink, which is more environmentally friendly. SCL plans to continue using soy ink and less paper products.

MCF-WR/ML — MINNCOR’S print shop made a change in equipment to cut costs. A digital plate maker was purchased to replace a camera, plate burner, and plate processor. This eliminates the use of negatives and metal plates, which has a projected saving of about \$5,000 for fiscal year 2001.

Office of Environmental Assistance — As part of its internal practices, the OEA uses recycled uncoated paper containing at least 20 percent and usually 100 percent post-consumer fiber. Whenever possible, the OEA chooses paper stock manufactured using no chlorine or chlorine derivatives and specifies soy-based ink for all printing jobs.

Metropolitan Airports Commission — 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 P2. Vendors who are participants in the project are always considered when a bid request is going out.

Metropolitan Mosquito Control District — During the past fiscal year, MMCD specifically targeted Minnesota Great Printers for printing projects that were done by commercial printing vendors.

Pollution Control Agency — MPCA support staff print business cards on color printers or standard laser printers with black ink versus buying a box of 500 cards from the state contract vendor each time a staff person changes their position or job title. This option reduces the use of paper and saves the agency a significant amount of money. The agency's four OCE photocopiers continue to be serviceable. Since the OCE machines have been networked to the PCs of key users, savings have resulted from lower overage charges and from reducing the amount of paper used by forwarding print jobs directly to the copier. This new technology saves paper through two-sided printing and fewer jam occurrences.

Department of Transportation — Mn/DOT sign shop has changed from inks containing heavy metals to heavy-metal-free inks, thereby eliminating a hazardous waste stream. Mn/DOT sign shops have changed from a hazardous screen wash (MEK) to a nonhazardous screen wash, thereby eliminating a hazardous waste stream.

The elimination of two hazardous waste streams has saved thousands of dollars annually in disposal costs. Furthermore, potentially hundreds of thousands of dollars have been saved through the elimination of the environmental liability associated with the generation, handling, and disposal of hazardous waste.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

North Hennepin Community College — Photocopying is done on-site. Printing is usually contracted for off-site.

University of Minnesota — The University of Minnesota Printing Services, Twin Cities campus, has established several tactics to prevent pollution including installing a Devek system that allows recycling and reuse of developer in their film processing; using the developer four times instead of once as in the past; installing an X Rite silver recovery machine which recovers approximately 28 pounds of silver annually from photo fixer; and migrating some presswork to Xerox machines. Use of toner type process eliminates ink and press wash wastes.

30. Procurement

Department of Administration — The Materials Management Division has numerous contracts that represent efforts to encourage sustainability in state government's daily activities. These contracts include hazardous waste management, pesticide collection, hazardous spill emergency response, used oil sorbent and filter management, fluorescent and HID lamp recycling, dairy (mercury) manometer management, and waste paper sales.

The Materials Management Division requires an environmental report by all certified purchasers. Each quarter they are required to report to MMD all environmentally preferable products purchased. MMD has developed environmentally responsible products and services contracts estimated in excess of \$52 million per year. MMD is collaborating with the Environmental Protection Agency and its Environmentally Preferred Products (EPP) work group to find and establish a mechanism for selecting EPP products. The EPP work group is established as part the Environmental Protection Agency/American Hospital Association Memorandum of Understanding, the goal of which is to virtually eliminate mercury from healthcare by 2005 and to reduce medical waste from healthcare by 50 percent by the year 2010.

The Materials Management Division, in conjunction with the Office of Environmental Assistance has developed a contract for carpet and vinyl flooring with products containing post-consumer recycled content. The contractor is directed to not dispose of removed carpet and vinyl in landfills or by incineration. Contractors have been strongly encouraged to recycle all carpet and vinyl flooring removed from the agency locations.

The Resource Recovery Office facilitated review and input regarding a MnTAP report assessing chemicals and pollution prevention techniques used in facility maintenance and engineering.

Department of Agriculture — The Laboratory Services Division continues to use 20 liter nowpack containers for methylene chloride which has helped in the reduction of glass waste and the release of fumes into the laboratory.

Department of Corrections —

MCF-RC — Staff has been urged to use the safest, least polluting product available for the safety of staff and inmates.

MCF-SCL — The facility will follow Minnesota Statute 16B.121 and 16B.122, along with Minnesota Executive Order 99-4 requirements via its purchasing department. This practice will eliminate and reduce the facility's waste stream through identifying and reusing recycled products. SCL plans to continue to identify products.

MCF-SHK — Staff has 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, OEA staff has held "Buy Recycled" trade shows and conferences, developed fact sheets, trained state purchasers about recycled content products, and much more. The OEA strives to purchase environmental products whenever possible. The MPCA and OEA are working jointly to develop native landscaping that requires less water and pesticide application.

The OEA's expanded procurement focus continues to include other environmental characteristics, such as toxicity reduction, durability, recyclability, energy efficiency, etc. This is referred to as environmental preferable purchasing (EPP). The OEA is working with the Department of Administration to promote environmental purchases and building practices in state-leased buildings.

In July 2000, the OEA started tracking purchases of Blue Planet Fuel. In August 2000, the OEA also began tracking purchasers of E85 fuel when two flexible fuel vehicles were obtained by the OEA. OEA is working closely with the Department of Administration's acquisition specialists to incorporate environmental specifications into several state purchasing contracts. Together, the OEA and the Department of Administration have:

- established the first state contract for recycled latex paint in July 2000
- established a state contract for flooring in June 2000, which included several environmental specifications. The solicitation set air quality standards for carpet; required vendors to recycle old carpet; and encouraged vendors to bid carpet, tile, and rubber flooring made with recycled materials.
- added a less toxic cleaner to the Central Stores catalog for the first time

The OEA promotes environmentally preferable contracts to state agencies and local political subdivisions. The OEA has made procurement information available via its web site and links to the Department of Administration's site. When appropriate, the OEA documents and shares its results with other states as well as Minnesota businesses, schools, and general consumers.

This past year, the OEA and Department of Administration held monthly meetings with the Environmentally Responsible Work Group and focused on a promotional campaign to increase the purchase of recycled copy paper in state government. For the first quarter of fiscal year 2001 (July to Sept. 2000), Central Stores reported that nearly 80 percent of the copy paper sold to state agencies and local political subdivisions is made from recycled paper, up from just 50 percent at the beginning of the year.

The OEA is 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 also working with architects to encourage the use of resource efficient materials and practices in new state buildings under construction. Through a grant to the Institute for Local Self-Reliance, the OEA continues to help to promote environmentally preferable chemicals via the Internet. The web site address for the Carbohydrate Economy Clearinghouse is <http://www.carbohydrateconomy.org>.

OEA's web site has been expanded to include information to help local purchasers buy recycled products. The OEA also worked with the metropolitan counties to develop a resource for state, local, and school purchasers, the *Environmentally Preferable Purchasing Guide*, to help them identify a variety of environmental products.

Iron Range Resources and Rehabilitation Board — When the procurement division issues printed literature solicitations, they require bidders to use paper containing at least 10 percent post-consumer material by weight, and printing must use a soy-based or other Agra-based ink.

Metropolitan Airports Commission — Whenever possible, 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 use of environmentally detrimental products. Preventing pollution by either reducing or 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 P2 program. In previous sections of this report, various efforts have been described in the purchasing of recycled and recyclable materials and in product substitutions. The MCES has copies of *The Environmentally Preferable Purchasing Guide* distributed by the OEA, Department of Administration, and Solid Waste Management Coordinating Board which is subtitled “how to get the stuff you need and still be good to the environment.”

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 has been installed which has the potential capability for “screening” purchases for P2 considerations such as environmental and health rankings and recyclability and recycled content material.

Metropolitan Mosquito Control District — The district team responsible for management of hazardous materials and pollution prevention, reviews products used by MMCD for environmental hazards. The team locates and purchases environmentally friendly replacements for products determined to be unsuitable for use by MMCD staff.

Pollution Control Agency — During the past year, the MPCA has taken steps to reduce emissions and improve the environmental performance of its fleet of 140 vehicles. This includes:

- developing a procurement policy giving preference to flexible fuel vehicles (FFVs). The number of FFVs increased by nearly 50 percent to around 30 vehicles.
- instructing staff to use cleaner burning 85 percent ethanol fuel in FFVs when feasible. Adding two high-efficient, low-emitting hybrid gas/electric vehicles to the fleet. A 70-mpg Honda Insight was acquired in March, and a Toyota Prius, rated at about 50 mpg, was added in September.

- testing alternative-fuel vehicles for possible addition to the fleet including a natural gas-powered Honda Civic and a propane-powered Ford F150 truck
- working on policies and practices to purchase the most fuel-efficient, least polluting vehicle that meets needs and to keep vehicles well-maintained and using cleaner fuels

Department of Transportation — All counties and cities can 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 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 helps Mn/DOT buyers make 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.

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 help in calculating cost savings after implementing a pollution prevention/waste minimization project.

The following list establishes a base line of dollars spent on hazardous waste disposal and recycling for fiscal years 1996 to 2000:

Fiscal year	Dollars spent
FY1996	\$212,133.94
FY1997	\$198,841.84
FY1998	\$133,130.53
FY1999	\$145,981.93
FY2000	\$184,022.34

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.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

University of Minnesota — The University of Minnesota Waste Abatement Committee has made a concerted effort to bring green building concepts to the university. Facilities Management has agreed to a pilot project that will use a Sustainable Design Guide and Rating System to guide the specifications, bidding, and construction of the university’s planned Studio Arts Building. An interdisciplinary team created the Sustainable Design Guide and Rating System for the medical, institutional, and office buildings constructed by Hennepin County, Minnesota. The purpose of this system is to encourage environmentally responsible design practices by rating facility performance in areas like energy efficiency, indoor air quality, and waste management. Hennepin County Property Services and the county’s Environmental Management Division worked with a team of university researchers from the College of Architecture and Landscape Architecture and other advisors to develop the system.

The system provides approximately 45 strategies that are organized according to six environmental topics:

- **Site:** The site-related goals of the system are to maintain and restore the ecology of the site, respond to the microclimate to improve energy efficiency and comfort, to utilize water saving and low-maintenance native plant materials, protect water quality and use biological systems to treat wastewater.

- **Water:** The water-related goals, which focus on building water consumption, are to reduce potable water consumption in the building fixture and the cooling tower design and use graywater systems to reuse water for site irrigation.
- **Energy:** The primary goal is to reduce energy consumption for heating, cooling, lighting, and other equipment and systems. A related goal is to use energy sources that are renewable and that have low environmental impacts (i.e. lower impact on air pollution or global warming). Indoor Air Quality: Providing a healthy indoor environment with good air quality is one important goal.
- **Human Factors:** Indoor spaces must be appropriately designed to enhance the quality of the thermal, acoustical, and visual environments (including lighting and daylighting).
- **Materials:** Goals of the system are to reduce the consumption of virgin materials especially from nonrenewable sources, and to select materials that are durable, manufactured locally, have low environmental impacts in their manufacturing process, and contribute to a healthy indoor environment.
- **Waste:** Waste-related goals include the reduction and recycling of waste during construction as well as during the operating life of the building. Also, hazardous waste must be reduced and disposed of properly. A strategic design goal of the system is to reduce demolition waste by designing buildings to facilitate building disassembly and adaptability.

The strategies are phrased to achieve a specific design solution or practice, such as “use recycled content and building materials.” To integrate environmentally responsible design easily and effectively into the building process, it became important not just to indicate what to do, but what actions to take during each step of the process. Instead of a list of strategies, the system is organized into a matrix. Within each strategy are series of actions organized by design phases and a performance indicator for scoring (see <http://www.sustainabledesignguide.umn.edu>).

31. Remanufactured Parts

Department of Administration — The Materials Management Division specifies remanufactured automotive products and has developed contracts for remanufactured automotive products for state agencies, which included diesel engines, transmission, alternators, and starters. The Travel Management Division uses remanufactured parts for vehicle repair whenever available.

Department of Corrections —

MCF-RC — Copier toner cartridges are being returned to the vendor for reuse.

MCF-SHK — SHK purchases remanufactured parts when available for maintenance repairs. This has an economical advantage as well as an environmental advantage.

TC — TC uses remanufactured parts when possible.

Metropolitan Airports Commission — MAC fleet/vehicle maintenance uses remanufactured starters, alternators, water pumps, master cylinders, calipers, turbo chargers and injectors. Rebuildable cores are exchanged for the newly remanufactured parts. Other parts are sent out for rebuilding/overhaul whenever it is a suitable alternative to new parts.

Pollution Control Agency — WRRC promoted a collection program for ink jet cartridges with information provided by the Recycling Association of Minnesota. The cartridges are mailed in a postage-paid envelope to a recycling center in Franklin, Tennessee. A supply of envelopes is kept on each floor.

One agency allotment number was established for purchasing toner cartridges for fax and laser printers in fiscal year 2000. The office administrators identified three vendors that provide remanufactured cartridges and provided that information to the purchasing staff. A majority of the office machines use remanufactured cartridges; however, a few laser printers have experienced problems. Toner cartridges for

the leased photocopiers are provided by the vendor. A recycling container for spent cartridges is located in the Service Center.

32. Tanks

Department of Administration — The Plant Management Division removed all known underground fuel storage tanks. Aboveground storage tanks were installed in all but one location. The remaining tank will be installed by January 1, 2000.

Department of Commerce —

Petroleum Storage: 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 Petrofund Program: The Minnesota Petrofund Program, housed at the Department of Commerce, provides a reimbursement mechanism to help businesses and citizens clean up areas where petroleum leakage has occurred. In conjunction with the project manager at the Minnesota Pollution Control Agency, consultants determine the extent of the contamination and the degree of its threat to human health or the environment. Contractors perform any excavation, trucking, soil disposal, or other services necessary to address the threat and clean up the site. Costs for these services are reimbursable through the Petrofund if they are determined reasonable and eligible according to the laws governing the program (Minnesota Statutes 115C and Minnesota Rules 2890).

Over the past decade, cleanup costs for approximately 6,000 sites have been reimbursed through the department's Petrofund program at a cost of more than \$250 million. These reimbursements are funded by a \$.02 per gallon fee paid by bulk petroleum distributors. Payments to applicants have ranged from \$221 to over \$913,500. The highest reimbursement that may be paid for a cleanup is \$1,000,000.

Department of Corrections —

MCF-FRB — FRB has tanks with electronic leak detection.

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

MCF-RC — This facility has all aboveground tanks with spill containment.

MCF-SCL — SCL has removed a number of underground and aboveground tanks. All tanks are currently reported in accordance with MPCA requirements. The facility reduces the risk of oil and fuel spills and groundwater and soil contamination. SCL plans to continue to monitor tank levels to identify possible leaks.

MCF-SHK — SHK has electronic leak detection on two underground storage tanks. On the other tank, staff uses preventive maintenance and checks monthly for leaks.

Metropolitan Airports Commission — MAC has removed, replaced, or upgraded all MAC owned and operated regulated underground storage tanks. All existing tanks are fully compliant with 1998 federal regulations. MAC will eliminate other tanks as they become obsolete or redundant. Tank monitoring systems at the reliever airports, although in compliance, are in the process of being upgraded for improved inventory control. At MSP, a new fuel island was installed for all MAC vehicles and heavy equipment. This monitoring/inventory control system can track fuel usage per vehicle mile or hour. This information is incorporated into maintenance records and often assists in determining the need for making repairs.

Metropolitan Council – Environmental Services — December 1998 was 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 that were removed have been replaced mainly with smaller aboveground tanks (AST). These are more easily observed for releases and represent a reassessment of true stand-by energy needs which were overestimated during the petroleum embargoes and energy “shortages” of the 1970s.

The MCES has over 70 ASTs that are actively used to store petroleum or other regulated chemicals. These are monitored and/or inspected on a regular basis and meet all requirements for spill prevention and secondary containment.

Department of Transportation — Salt brine tanks are used to produce and store salt brine. Currently, salt brine production systems are of double-walled fiberglass construction. This greatly reduces the possibility of a release from the system. Fiberglass is resistant to degradation from salt.

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 overflow prevention equipment.

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. 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 percent of costs incurred in investigating petroleum release sites are reimbursable through the Minnesota Petrofund. As an environmental benefit, Mn/DOT has developed a technique (bio-mound: compost treatment) which not only cleans petroleum-contaminated soil, but also provides a reusable material.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

North Hennepin Community College — The college has a 10,000 gallon #2 diesel fuel in-ground tank (1992).

University of Minnesota — The university has started a thorough review and updating of its Spill Prevention Control and Countermeasures (SPCC) plan (for details, visit the web site at <http://www.epa.gov/superfund/contacts/sfhotline/opa.htm>). The university’s Twin Cities campus has hundreds of fuel storage tanks, emergency generator fuel tanks, oil-filled transformers and drums containing petroleum products that fall under this plan.

The EPA developed the Oil Spill Program as mandated by the Oil Pollution Act of 1990, which amends CWA Section 311(j). There are four main goals of the Oil Spill Program: preparedness and prevention; response; compensation and liability; and research and training. Preparedness and prevention is the best defense against mitigating the damage caused by oil spills. EPA requires high-risk facilities to prepare and implement SPCC plans to achieve the goal of preventing oil spills from reaching navigable waters.

The SPCC plan requirements have three goals. The first is to prevent oil spills. Operating procedures, such as inspections, record keeping, security, personnel training, and tank specifications, address this goal (40 CFR Section 112.7(e)). The second goal is to prevent spills from reaching navigable waters or adjoining shoreline. All SPCC facilities must install appropriate containment and/or diversionary structures to prevent

spills from reaching waters, unless installation is impracticable (40 CFR Section 112.7(c)). In addition to the minimum requirement for appropriate containment and/or diversionary structures, other secondary containment requirements are specified in 40 CFR Section 112.7(e). For example, bulk storage tanks must have sufficient secondary containment to hold the contents of the largest single tank, allowing for precipitation. The third goal of the SPCC plan is to prepare for responding to an oil spill. Facilities who cannot install appropriate containment and/or diversionary structures must be able to clearly demonstrate the impracticability of installation, and must have a strong oil spill contingency plan and a written commitment of response manpower, equipment, and materials (40 CFR Section 112.7(d)).

33. Technical Support

Department of Administration — The Resource Recovery Office provides technical support to agencies, which includes referrals to Minnesota Technical Assistance Program.

Department of Corrections —

MCF-OPH — MnTAP and Washington County HELM are consulted whenever a questionable waste is to be disposed of to ensure proper procedures are used. The safety officer works closely with the Washington County Hazardous Materials staff person in discussing and disposing of any unusual waste or products the staff is not sure about. Jim Weiler, MCF-OPH Safety Officer, is the DOC representative on IPPAT.

MCF-RC — MnTAP will be consulted, as needed, for consultation.

MCF-SCL — The facility has used MnTAP and outside vendors for testing, etc. The cost is \$2,000 annually, and the benefit is that SCL's liability is shifted. The facility plans to use outside vendors and technical support for the proposed generator installation project.

MCF-WR/ML — The facility will be working with Carlton County in the reduction of waste, targeting larger institutions. The facility will be taking an active role in this area. There will be training for staff in spill control and countermeasure planning. The facility has storm water runoff plans for surface drainage around existing underground tanks. A MPCA required remedial investigation and pollution impact study will be completed. The federal SPCC plan preparation and submittal will take place at the U.S. EPA in Chicago.

Office of Environmental Assistance — MnTAP helps businesses implement pollution prevention by helping them become more efficient and find alternatives to using hazardous materials. Technical assistance is tailored to individual businesses through a variety of services including site visits, student interns, materials exchange, workshops, and industry-specific resources. Special projects and outreach efforts during 1999 and 2000 have included:

- reducing styrene from the fiberglass reinforced plastics industry (under a MPCA subcontract that will last through 2001)
- working with Publicly Owned Treatment Works (POTWs) to reach industrial wastewater dischargers to reduce phosphorus and other wastewater contaminants (McKnight Foundation support)
- reducing byproduct loss and implementing water conservation practices in food processing operations
- establishing a Painter Training course at Dunwoody in conjunction with the Chemical Coaters Association, Twin Cities chapter
- bringing closure to MnTAP's five year involvement in the Great Printers Project
- serving as state pollution prevention representative on the EPA/American Hospital Association effort Hospitals for a Healthy Environment (H2E)

- working with MCES to implement water conservation measures for high users of SAC units (Sewer Availability Charge)

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. Counties can receive credit toward their recycling goals for implementing activities on the checklist. The checklist now lists over 40 different strategies and programs to reduce waste at the local level. It is intended to be used as a planning tool in county solid waste management planning. In addition, the OEA Source Reduction Team has begun to work closely with county planners to plan and implement source reduction programs.

Materials developed during the project entitled the “Source Reduction Challenge” are available from the OEA Clearinghouse and OEA’s web site. They include eight material-specific fact sheets and an office paper reduction kit. Technical assistance is available as requested.

The council “Counties and Cities Involved in Source Reduction and Recycling” (CISRR), including Materials Exchange Alliance and Minnesota Waste Wise (MWW) meets every other month (six times a year) at various locations throughout Minnesota. Each meeting focuses on new topics and provides opportunities for networking and assistance. All local government staff (cities, counties, and districts) are invited and encouraged to attend all six meetings. The meetings focus on identifying and discussing:

- source reduction, reuse, and recycling opportunities
- regional recycling markets
- opportunities that exist to exchange materials between businesses and other organizations in that region and efforts to document the exchange activity
- opportunities for counties to partner with MWW to identify businesses in their area that are interested in source reduction, reuse, and recycling
- opportunities and challenges that exist for county staff that are serving as technical team members in partnership with MWW
- site tours of MWW member companies, Governor’s Award winners, and MWW LEADER award winners (as allowed) to view source reduction, reuse, and recycling in action

The OEA continues to publish the *CISRR Newsletter*. The *Newsletter* appears four times a year and provides highlights from CISRR meetings and also includes materials exchange, Waste Wise, and county updates.

In 1996, the OEA and ERC were delegated responsibility for administering the P2 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 P2 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 not only on the volume of wastes being generated, but also to consider the hazard potential of the waste streams as well. Details are presented in the *2000 Pollution Prevention Evaluation Report*.

Metropolitan Airports Commission — The Environment Department provides technical support to all MAC offices/divisions, as well as airport tenants and surrounding communities whenever possible. Assistance for MAC’s tenants is accomplished through phone calls, acting as a regulatory liaison, informational meetings, and providing resources. This support assists 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 P2 support offered to public agencies. As a regulatory agency, MCES is active in P2 technical support through the Industrial Waste and Pollution Prevention (IWPP) Section. This section continues to promote P2 to its more than 800 permitted industrial users. During on-site inspections, IWPP staff regularly discuss P2 issues and point out process areas where P2 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 P2 activities by industries was created.

Specific examples of these efforts are that when permit renewal notices are sent out, there is a written recommendation that the permittee contact MnTAP for assistance in reducing wastewater volumes and to address any other P2 concerns. Work on mercury reduction continues with the Minnesota Dental Association in the distribution of recycling fact sheets and the evaluation of amalgam separation equipment. Along with the OEA, a summary report was distributed to industrial users on chemical impurities in chemicals. Possible contaminants are mercury, arsenic, cadmium, chromium, copper, lead, nickel, zinc, molybdenum, and phosphorous.

In 1992, IWPP received one of five nationwide grants for promoting P2 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 P2. Twenty-nine permittees volunteered for the Industrial Pollution Prevention Participation Program (I4P) and wrote and implemented “Model Plans” for P2. For more than two years, the Pollution Prevention Advisory Committee (PPAC) brought together representatives of industry, communities, and citizen groups on a bimonthly basis to be updated on the grant program and to advise in its direction.

The IWPP established a new P2 Team in 1997. The purpose of the team is to “initiate, support, integrate and promote P2 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 P2 team has designed and purchased a new P2 display, is developing a new educational P2 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 P2 efforts.

The IWPP has participated in national, regional, and local P2 conferences and has cooperated with Wakota CAER (Community Awareness and Emergency Response) and MnTAP (Minnesota Technical Assistance Program) in the sharing of information and public displays. An intranet site is in place for the Environmental Planning and Evaluation Department (EPE) within MCES which includes “P2 Pages” to promote P2 and encourage new ideas. The internet site for the public’s viewing can be found at <http://www.metrocouncil.org/environment/PollutionPrevention/>.

In 1999, a letter regarding the MCES mercury reduction strategy was sent to all permittees. An insert on the benefits of volume reduction and its effect on strength charges was included in a letter to all permittees. This included a reference to MnTAP’s programs.

Department of Transportation — 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 and 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 were 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 full-time position (with numerous areas of collateral support) to study, coordinate, and evaluate pollution prevention opportunities (as they relate to toxic reduction) 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 and produced a Bio-mound training video to aid in the construction of compost piles to treat petroleum-contaminated soil. Mn/DOT also conducts workshops to assist staff in complying with federal and state regulations associated with aboveground and underground storage tank systems.

Mn/DOT provides ongoing guidance for local communities interested in designing and/or improving bicycling, walking, and telecommuting programs or initiatives. Mn/DOT conducted a successful and well attended statewide Bicycle Conference in the spring of 2000. Various bicycle transportation implementation strategies were presented by state, national, and international bicycle program experts.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

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

34. Tires

Department of Administration — The Materials Management Division has developed contracts for tire recovery and for retread tires that use old tire casings. The Travel Management Division, Plant Management Division, Department of Transportation, and other state agencies may purchase from these contracts. The state and CPV members purchased in excess of \$250,000 in retread tires. The Travel Management Division's used tires are recycled through a vendor licensed under state contract.

Department of Corrections —

MCF-OPH — Tires are purchased from a vendor who recycles them.

MCF-RC — All of the facility's tires are serviced by a local vendor who recycles them.

MCF-SCL — Tires are recycled at an annual cost of \$200, and the benefits are reduced landfill costs and having recycled tires available. SCL plans to continue recycling tires at local service stations for vehicles.

MCF-SHK — SHK uses the state contract.

TC — TC brings tires to the Bray Lake Dump Sight for disposal.

Iron Range Resources and Rehabilitation Board — Tires are transported to the regional landfill in Virginia; from there, the tires are brought to R and J Tire to be shredded and recycled into various rubber products such as rubber mats for truck boxes.

Metropolitan Airports Commission — All vehicle and heavy equipment tires are transported to and recycled by a permitted vendor.

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 prices comparable or cheaper than retreads.

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 recaps 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 safely used. Mn/DOT has researched the possibility of using ground tires as a base material in highway construction. This material is approved for above water applications. For most Mn/DOT projects, there is not a large enough supply of this material. However for smaller projects, there is a large enough supply. Research articles are available. Mn/DOT is researching the use of ground tires as a lightweight fill in underwater applications.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

Minnesota West Community and Technical College — Through the technical education programs, the college has identified potential pollution concerns in Auto Body, Auto Mechanics Fluid Power, Machine Tool, Agriculture Processing, Diesel Mechanics. The college is monitoring absorbents, antifreeze, fuels, oil, solvents, batteries, paints, and tires. Minimal amounts of these products are disposed of each year. The college contracts with authorized hazardous waste transporters for proper removal and disposal. Minnesota West will continue to follow this practice in the future and is exploring options for in-house recycling of some of these products.

North Hennepin Community College — Tires are recycled as needed through various vendors at an annual cost of \$35.

35. Water Treatment and Conservation

Department of Administration — 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 —

MCF-FRB — The facility contracts with Freemont Industries. The cost was \$2,280 in fiscal year 2000.

MCF-OPH — Water-saving toilet fixtures with a timed flushing device have been or are being installed in inmate cells. The facility has used timed showers since opening.

MCF-RC — The facility is equipped with a computerized water-control system for all showers, sinks, and toilets. Ultra-low flush toilets are used with flood-control devices that prevent flooding of toilets. The outdoor sprinkler system is on a timer to conserve water.

MCF-SCL — The outdoor sprinklers are on timers, and the facility has installed low-flow toilets in the new E-house construction. This will reduce water bills and save resources. All new construction projects will include low-flow toilets.

MCF-SHK — SHK works with Freemont Industries (state contract). The facility has aerators on its faucets and uses low-flow showerheads. The toilets use 1.5 gallons/flush.

Metropolitan Airports Commission — The truck/equipment wash bay in the Field Maintenance building uses a complete water recycling system. This greatly reduces the amount of wastewater (gray water) generated.

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 eight treatment plants. Clean effluent is discharged to four area rivers—the Mississippi, Minnesota, St. Croix, and Vermillion. From the metro plant alone, over 74 *billion* gallons of treated wastewater was discharged to the Mississippi. P2 effecting the quality of effluent was described in the section on heavy metals. Groundwater conservation was described in the section on groundwater wells.

In 1999, IWPP identified permitted industrial users that contribute high phosphorous loadings and sent them an informational letter with ideas on reducing this discharge.

One area that clearly falls under P2 in MCES operations is the beneficial reuse of residual solids from the wastewater treatment process. Biosolids, or sewage sludge, at the two largest treatment plants are incinerated in multiple-hearth furnaces resulting in an 80 percent reduction in volume of residual solids. The ongoing ash utilization program incorporates the ash from incinerated biosolids into flowable fill, cement/concrete, structural fill, and asphalt projects. In 1999, a total of 14,851 dry tons from the metro WWTP and 2,402 dry tons from the Seneca WWTP (Eagan, Dakota County) was used for those purposes.

N-Viro Soil is a program that blends alkaline admixtures—previous “waste” products from lime manufacturing and coal-fired power plants—and biosolids also for use in agricultural and horticultural applications. In 1999, 2,088 dry tons of biosolids from the Seneca WWTP were blended with admixtures to produce approximately 18,559 wet tons of N-Viro Soil. Straight biosolids—without any blended components—are typically landspread on farm fields. A total of 1,520 tons from MCES Plants was land-applied in 1999.

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 IWPP, was a recipient of an honorable mention for the 1995 Minnesota Governor’s Award for Excellence in Pollution Prevention.

Pollution Control Agency — The new Brainerd office has leased premises that will feature water conservation fixtures including low-volume flush toilets.

Department of Transportation — Mn/DOT practices and promotes the use of native plants such as grasses, trees, and shrubs. By using native plantings, maintenance demands are reduced which includes less watering.

EDUCATIONAL INSTITUTIONS — COLLEGES AND UNIVERSITIES

Minnesota State Colleges and Universities —

North Hennepin Community College — Treated water is used in boilers, chilling towers; SC building

closed loop heating system.

36. Other

Department of Administration — The Plant Management Division composts yard waste when practical.

Department of Corrections —

MCF-OPH — Food waste from the food services program is sent to Stratton Farms for livestock food. The program was started in 1998 and is expected to continue indefinitely. The program saves waste disposal costs.

Office of Environmental Assistance — The OEA and the PCA have developed a successful composting project that during its pilot project turned over 10,000 pounds of compostable waste into a soil additive. This amount was 28 percent of the building's total wastestream.

Pollution Control Agency — Several regional MPCA offices have specific reduction programs in effect, including composting food waste, vermi-composting/leachate used as indoor plant fertilizer in office, using refillable soda bottles, promoting paper reduction initiatives, and employee-driven recycling efforts when a recycling hauling contract is not available.

The Minnesota Pollution Control Agency Waste Reduction and Recycling Committee is recognized for maintaining an extensive composting project since September of 1999. The project allows all compostable materials to be collected and managed separately from non-compostable refuse. The material list includes cafeteria food waste, napkins, biodegradable utensils, and paper towels from restrooms. In the first eight months of the program, 28 percent of the solid waste generated was composted. The new Brainerd office is recycling all compostable food wastes to a worm farm!

Part IV

Matrix of Agencies and Categories

The matrix on the following page shows which agencies provided activity summaries for each category. 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 checking the column for that agency or department.

Activity Type	Department of Administration	Department of Agriculture	Department of Commerce	Department of Corrections	Office of Environmental Assistance	Department of Human Services	Iron Range Resources & Rehabilitation	Metropolitan Airports Commission	Met Council – Environmental Services	Met Council – Metro Transit	Metropolitan Mosquito Control	Pollution Control Agency	Department of Transportation (MnDOT)	Board of Water & Soil Resources	Educational Institutions	Minnesota West Comm & Tech College	North Hennepin Community College	Southeast Technical College	Bemidji State University (4/02 update)	St. Cloud State (4/02 update)	University of Minnesota
Absorbents																					
Ongoing	X			X			X	X			X		X			X	X			X	X
FY00				X																	
Planned				X																	
Adhesives																					
Ongoing	X			X																	
FY00																					
Planned																					
Air Quality, CFCs																					
Ongoing	X		X	X		X		X			X		X			X	X			X	X
FY00				X																	
Planned				X																	
Antifreeze																					
Ongoing	X			X			X	X			X		X			X	X			X	X
FY00				X																	
Planned				X																	
Audits																					
Ongoing				X				X			X		X							X	X
FY00				X				X													
Planned				X				X													
Automotive Fuels																					
Ongoing	X		X	X			X	X			X		X			X	X			X	X
FY00																					
Planned								X													
Automotive Maintenance																					
Ongoing	X		X	X			X	X			X		X				X			X	X
FY00				X																	
Planned				X																	X
Batteries																					
Ongoing	X		X	X	X		X	X			X	X	X			X	X				X
FY00				X																	
Planned				X																	X
Cleaning Supplies																					
Ongoing	X			X									X			X	X				X
FY00																					
Planned							X														

Activity Type	Department of Administration	Department of Agriculture	Department of Commerce	Department of Corrections	Office of Environmental Assistance	Department of Human Services	Iron Range Resources & Rehabilitation	Metropolitan Airports Commission	Met Council – Environmental Services	Met Council – Metro Transit	Metropolitan Mosquito Control	Pollution Control Agency	Department of Transportation (MnDOT)	Board of Water & Soil Resources	Educational Institutions	Minnesota West Comm & Tech College	North Hennepin Community College	Southeast Technical College	Bemidji State University (4/02 update)	St. Cloud State (4/02 update)	University of Minnesota
Commuting and Transportation																					
Ongoing	X		X	X	X	X						X	X							X	X
FY00																					X
Planned																					
Education, Communication, and Training																					
Ongoing	X		X	X	X			X			X	X	X						X	X	X
FY00																					
Planned																					
Electronics																					
Ongoing	X		X	X	X			X	X			X					X			X	X
FY00				X				X													
Planned				X																	X
Energy – Lighting																					
Ongoing	X		X	X	X		X					X	X			X	X		X	X	X
FY00				X																	
Planned				X																	
Energy – Production																					
Ongoing	X		X	X	X							X	X						X		X
FY00																					
Planned				X																	
Groundwater Wells																					
Ongoing	X			X									X				X				
FY00																					
Planned																					
Heavy Metals																					
Ongoing				X	X								X				X			X	X
FY00				X																	X
Planned				X																	
HVAC, Indoor Air Quality																					
Ongoing	X		X	X			X					X				X	X		X	X	X
FY00				X																	
Planned				X																	
Ice Control, Sanding																					
Ongoing	X			X		X	X	X			X		X				X			X	X
FY00				X																	
Planned				X				X													

Activity Type	Department of Administration	Department of Agriculture	Department of Commerce	Department of Corrections	Office of Environmental Assistance	Department of Human Services	Iron Range Resources & Rehabilitation	Metropolitan Airports Commission	Met Council – Environmental Services	Met Council – Metro Transit	Metropolitan Mosquito Control	Pollution Control Agency	Department of Transportation (MnDOT)	Board of Water & Soil Resources	Educational Institutions	Minnesota West Comm & Tech College	North Hennepin Community College	Southeast Technical College	Bemidji State University (4/02 update)	St. Cloud State (4/02 update)	University of Minnesota
Laboratory																					
Ongoing	X	X	X	X							X	X	X				X		X	X	X
FY00				X																	
Planned				X																	
Landscaping																					
Ongoing				X								X	X								X
FY00				X																	
Planned																					
Materials Exchange																					
Ongoing	X			X	X			X				X								X	X
FY00				X				X													
Planned				X																	
Office Supplies																					
Ongoing	X		X	X	X		X	X			X	X					X		X	X	
FY00				X																	
Planned				X																	
Oil, Oil Filters																					
Ongoing	X			X			X	X			X		X			X	X			X	X
FY00				X																	
Planned				X																	
Paints, Coatings, Stripping																					
Ongoing	X			X		X		X				X	X				X		X	X	X
FY00				X				X													
Planned				X																	
Parts Cleaning																					
Ongoing	X			X			X	X					X							X	X
FY00				X				X													
Planned				X				X													
Personal Care																					
Ongoing						X															X
FY00																					
Planned																					
Pesticides, Fertilizers																					
Ongoing	X	X		X		X					X		X				X		X	X	X
FY00				X																	
Planned				X																	

Activity Type	Department of Administration	Department of Agriculture	Department of Commerce	Department of Corrections	Office of Environmental Assistance	Department of Human Services	Iron Range Resources & Rehabilitation	Metropolitan Airports Commission	Met Council – Environmental Services	Met Council – Metro Transit	Metropolitan Mosquito Control	Pollution Control Agency	Department of Transportation (MnDOT)	Board of Water & Soil Resources	Educational Institutions	Minnesota West Comm & Tech College	North Hennepin Community College	Southeast Technical College	Bemidji State University (4/02 update)	St. Cloud State (4/02 update)	University of Minnesota
Policy Statement																					
Ongoing	X	X	X	X	X		X	X			X		X				X				X
FY00																					
Planned							X														
Printing																					
Ongoing	X		X	X	X			X			X	X	X				X				X
FY00				X																	X
Planned																					
Procurement																					
Ongoing	X	X		X	X		X		X		X	X	X								X
FY00				X																	X
Planned				X																	
Remanufactured Parts																					
Ongoing	X			X				X				X								X	X
FY00				X																	
Planned				X																	
Tanks																					
Ongoing	X		X	X				X					X				X				X
FY00				X				X													X
Planned				X																	
Technical Support																					
Ongoing	X			X	X			X					X				X				
FY00																					
Planned				X																	
Tires																					
Ongoing	X			X			X	X					X			X	X				X
FY00				X																	
Planned				X																	
Water Treatment and Conservation																					
Ongoing	X			X				X				X	X				X				X
FY00				X																	
Planned				X																	
Other																					
Ongoing	X			X	X							X									
FY00				X																	
Planned																					

Executive Order #99-4: Providing for the Implementation of Pollution Prevention and Resource Conservation by State Government

Rescinding Executive Order #91-17

I, JESSE VENTURA, 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, the Minnesota Environmental Policy Act, *Minnesota Statutes*, Chapter 116D, directs all departments and agencies of the state to promote efforts that will prevent or eliminate damage to the environment, and to improve and coordinate state plans, functions, programs and resources to carry out this policy; and

WHEREAS, for the purposes of this Order, pollution prevention shall include energy and resource conservation and waste reduction; 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, pollution prevention promotes sustainability, providing a better quality of life for all residents while maintaining nature's ability to function over time; and

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

WHEREAS, Minnesota state agencies benefit from interagency communication and joint problem solving;

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

1. All departments and agencies of the State of Minnesota shall promote policy and cultural reform to give priority to preventing pollution at its source of generation.
2. The Interagency Pollution Prevention Advisory Team, established in 1991, shall continue to:
 - a) promote regular communication and cooperation between state agencies in preventing pollution;
 - b) provide guidelines for state agencies in meeting requirements 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) recognize outstanding pollution prevention efforts of state agencies through such programs as the Minnesota Governments Reaching Environmental Achievements Together (MnGREAT!) awards;
 - g) promote efficiency in governmental pollution prevention efforts by reducing overlap of activities and by sharing innovative ideas; and
 - h) 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 Environmental Assistance. 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; Children, Families and Learning; Health; Human Services; Military Affairs; Natural Resources; Public Safety; Public Service and Transportation. The team shall also include representatives from the Minnesota Pollution Control Agency, Office of Environmental Assistance, Office of Strategic and Long-Range Planning, Office of Technology, Minnesota State Colleges and Universities, University of Minnesota, Minnesota Lottery, Board of Water and Soil Resources, Metropolitan Airports Commission, Metropolitan Council, Metropolitan Sports Facilities Commission and Metropolitan Mosquito Control Commission. The team shall meet regularly.
 4. State agencies that generate significant quantities of hazardous waste or use significant quantities of toxic chemicals shall develop or revise policy statements to indicate that pollution prevention is a priority. These agencies shall also undertake activities to reduce their generation of solid and hazardous waste and use of toxic chemicals and resources.
 5. State agencies that regulate activities in the state that generate significant quantities of hazardous waste or use significant quantities of resources and/or toxic chemicals, or whose policies have important effects upon such activities, shall develop or revise policy statements indicating that pollution prevention is a priority. These agencies shall also integrate pollution prevention into their regulatory and policy activities as a primary means of meeting standards.
 6. State agencies, subject to 4 and 5 above, shall prepare annual summary reports on their progress in preventing pollution with the reports to be completed by August 15 of each year. 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 shall, in cooperation with the Department of Administration, 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 for excellence in pollution prevention shall be established for state agencies.

10. The Office of Environmental Assistance shall provide technical assistance to state agencies in the implementation of this Order.

This Order shall be reviewed by the Governor, in consultation with the affected agency or agencies, every two years in order to assess its reasonableness and need.

Pursuant to *Minnesota Statutes* 1998, 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* 1998, section 4.035, subd. 3.

IN TESTIMONY WHEREOF, I have set my hand this second day of April, 1999.

Jesse Ventura
Governor

Filed According to Law:

Mary Kiffmeyer
Secretary of State

Pollution Prevention Summary Report for the fiscal year 2000 published September 2001 Bemidji Addendum

Part I

Agency Descriptions

Bemidji State University (BSU) – Bemidji State employs 511 faculty and staff as well as 663 student employees during the academic year. During the summer, the number of faculty and staff drops to 434 and the number of student employees drops to 175. The campus consists of two locations, including the main BSU campus and the Center for Research and Innovation. All BSU facilities are included in this report.

Part II

Policy and Regulatory Activities

Bemidji State University (BSU) – No specific training was implemented. However, procedures and opportunities for participating in waste reduction and recycling activities, both on and off campus, are communicated through a faculty/staff computer information list, the campus newspaper, and information provided by the BSU Environmental Advisory Committee.

Bemidji State University adopted a significantly revised version of its environmental policy statement two years ago. Though not all provisions of the policy have been implemented to the same degree, we continually seek out and take advantage of opportunities that will allow us to do so. One example of this is a recent purchasing policy decision to stock low mercury content fluorescent light tubes. Though, under current state regulations the tubes will still have to be recycled, the lower mercury content reduces the chances of mercury being released into the environment, throughout the life cycle of the product.

4. Antifreeze

Bemidji State University (BSU) – As reported as a future activity in last year's report, during fiscal year 2000, approximately 120 gallons of antifreeze was removed from an emergency power generator as part of preventative maintenance work. This antifreeze was collected and used in our campus air conditioning system. The reused antifreeze reduced the amount of new product purchased for our AC system, taking the place of approximately \$500 of new product. The reuse also eliminated the contractor's charge of \$450 for collecting and disposing of the antifreeze.

6. Automotive Fuels

Bemidji State University (BSU) – During fiscal year 1999, Bemidji State University purchased a small electric powered vehicle, which replaced a full-size van, for use by maintenance staff. The vehicle was purchased in the fall and has now been in use through all four seasons. It was less expensive to purchase, maintain, and operate than the van and fully met our utilitarian needs. We will make future purchases as our budget allows.

11. Education, Communications and Training

Bemidji State University (BSU) – The University continued its strong commitment to environmental education during fiscal year 2000, both in and out of the classroom. Bemidji State University continues to require environmental courses for satisfactory completion of the Liberal Arts core.

“Focus on the Environment” is one of seven areas in the University’s Liberal Education Program. Students pursuing a bachelor’s degree must take a minimum of one 3-credit course from this area.

The University participated in the State’s 2000 Pollution Prevention Week activities by posting pollution prevention messages and information on the faculty/staff computer e-mail list. Articles on pollution prevention awareness and activities were also published in the campus newspaper during the school year. The Students for the Environment, a campus student organization, conducted food waste awareness activities in our campus dining halls.

13. Energy - Lighting

Bemidji State University (BSU) – Lighting in our Education-Arts building was upgraded to a T8 system.

14. Energy - Production

During the fiscal year 2000, Bemidji State University completed several projects that will result in energy conservation. Windows in Birch Hall, a combination resident hall and student services building, were replaced with new, energy efficient windows that are expected to significantly cut heating costs for that building. New variable frequency drive motors for our HVAC systems were installed throughout campus. Again, a significant decrease in power requirements is expected. An upgrade of the temperature controls for the Student Union is pending and when completed should improve both heat and electrical efficiencies in that building.

A planned replacement of steam traps throughout campus should reduce heat losses in our steam distribution system and therefore increase the efficiency of that system as well. Finally, completion of an additional cooling loop for our centralized chiller has not only improved energy efficiency in our HVAC system but has also allowed us to decommission an older chiller and cooling tower. The new chiller is a closed loop system that reduces the loss of refrigerant gases and other chemicals used in the process.

19. Laboratory

Bemidji State University (BSU) – The BSU Chemistry department continues to incorporate microscale laboratory techniques into its courses. This reduces hazardous waste generation and the quantity and associated purchasing expenses for chemical reagents.

22. Office Supplies

Bemidji State University (BSU) – The University continues to purchase copy machine paper with at least 30 percent recycled content for use in all campus copy machines. This policy results in a somewhat higher cost (\$1500 to \$1700 per year). An environmental benefit should be realized by reducing pollution generated by manufacture of virgin paper.

Remanufactured printing cartridges were used throughout campus during fiscal year 2000. Unfortunately, many users experienced problems with them and discontinued their use. A new source of remanufactured cartridges has been identified. We will be reintroducing their use on campus by offering free trials to selected offices to encourage a fair test of the new product.

24. Paints, Coatings, Stripping

Bemidji State University (BSU) – BSU maintenance procedures still include the use of electrostatic painting and low VOC paint whenever possible.

27. Pesticides, Fertilizers

Bemidji State University (BSU) – Application of herbicide and fertilizer on lawns around a single parent family housing dormitory was again deferred this year, in response to previous concerns by residents. The use of native plants and other landscaping techniques that could reduce fertilizer and herbicide applications as well as other maintenance activities were included in campus master plan discussions held throughout the year.

**Pollution Prevention Summary Report for the fiscal year 2000
published September 2001
St. Cloud State Addendum**

Part I

Agency Descriptions

St. Cloud State University (SCSU) – St. Cloud University employs approximately 1500 administrative, teaching, clerical, and technical maintenance personnel in both full- and part-time positions. The campus consists of 42 buildings and is situated on more than 100 acres. For purposes of this report, all campus locations will be included.

Part II

Policy and Regulatory Activities

St. Cloud State University (SCSU) – Pollution prevention continues to be a factor in purchasing and implementation of new procedures. Members of the SCSU staff are receiving an increasing level of training in the areas of pollution prevention and recycling. During the past year, the services of an outside consulting firm, MacNeil Environmental Inc., have been expanded to better address this training issue.

Electronic communication access and training, which reduces the amount of paper used, has recently expanded to include our custodians and maintenance craftspeople. Other pollution prevention activities include procurement policies which require office paper to have 30 percent minimum total recycled content and 30 percent post-consumer fiber content. Bath tissue is 95 percent, or more, recycled/post-consumer fiber.

1. Absorbents

St. Cloud State University (SCSU) – Absorbent pad and pans or other similar products and launderable rags are increasingly available and used at SCSU. Absorbent materials to contain hazardous chemical spills near floor drains are being supplemented with drain covers and increased training and inspections.

3. Air Quality, CFCs

St. Cloud State University (SCSU) – SCSU continues to go beyond recycling freon. A central chiller plant costing over \$3 million is now online. It added capacity to existing systems and reduced CFCs by using R22 refrigerant. The University has been able to continue the retirement process for cooling towers and R12 and R113 chillers as more buildings are linked to the chilled water system.

5. Audits

St. Cloud State University (SCSU) – MacNeil Environmental Inc. has performed increased environmental audit functions as part of their Environmental Health and Safety (EHS) contract with SCSU. These pollution prevention audits include elements of hazardous waste disposal, storage tanks, and the OSHA laboratory standards that encompass P2. The SCSU Chemical Hygiene Officer (CHO), who has received specialized off-site training, has become increasingly instrumental in hazardous waste audits, waste prevention planning, and hazardous waste removal. Departmental support, staffing focus, and investigative activities in these areas have also increased.

SCSU also continues to implement the suggestions of a recent Minnesota State Colleges and

Universities (MnSCU) facilities condition survey. The survey's environmental recommendations included specific purchases and capital/repair projects. These affect HVAC and electrical system revisions and both energy and water conservation measures. We are continuing to benefit from their insights.

5. Automotive Fuels

St. Cloud State University (SCSU) – SCSU has four alternative fuel (ethanol E-85) autos, which produce limited carbon monoxide, in its motor pool.

6. Automotive Maintenance

St. Cloud State University (SCSU) – The SCSU vehicle repair shop has revamped procedures for brake pad/shoe replacement to ensure release control of asbestos fibers. Replacement pads do not contain asbestos. The shop also has switched to a water-based parts washer that generates only a small amount of sludge to be disposed of as hazardous waste.

10. Commuting and Transportation

St. Cloud State University (SCSU) – SCSU subsidizes bus passes for students and faculty, including evening transportation in the campus area.

11. Education, Communications and Training

St. Cloud State University (SCSU) – The Environmental and Technological Studies Department of SCSU reflects increased opportunities for pollution prevention emphasis in the region of laboratory procedures. An internship program has expanded.

12. Electronics

St. Cloud State University (SCSU) – The SCSU business office provides for the reuse of some computers, electronic equipment and other property through the surplus property resale program. Other electronic equipment (eight shipments totaling about 40,000 pounds and a net cost of \$3,766.89) was recycled for offsetting commodity and precious metal credits. Styrofoam from computer, electronic, and other shipping cartons was recycled.

13. Energy, Lighting

St. Cloud State University (SCSU) – As part of a \$3 million energy conservation project with NSP, SCSU has shaved peak demand by about 25 percent. Occupancy sensors, LED exit lights, high efficiency fluorescent lights, and variable frequency motor drives also reduce consumption and pollution as does the computerized energy management system that was upgraded. Over 7,000 florescent bulbs were recycled. Trash was burned in Elk River to produce electricity.

16. Heavy Metals

St. Cloud State University (SCSU) – Campus-wide efforts are underway at SCSU to minimize mercury use and mercury thermometers. Waste photographic paper and chemicals are processed off-site to render them nonhazardous and to recover silver. Conversion to a bulk storage and transfer process for spent photo-fixer has cut costs. Several conventional darkrooms across campus including ones in Environmental and Technological Studies have been removed. (They were replaced with electronic imaging systems.) Also, about 100 pounds of video film has been recycled through Generic Media of Minneapolis thanks to MnTAP's materials exchange program. Minor amounts of gold, silver, copper and palladium were recovered from our electronic recycling program.

17. HVAC, Indoor Air Quality

St. Cloud State University (SCSU) – SCSU is using 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 six air sampling surveys expanding to seven buildings. Water-based paints and varnishes and strict new carpet emission controls are used extensively to limit VOCs.

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. High efficiency vacuum cleaner bags and HVAC filters help.

18. Ice Control, Sanding

St. Cloud State University (SCSU) – Masonry sand works well by not being too abrasive on our SCSU equipment. Salt use in sanding mix was minimized by controlling salt content based on outside temperature. The small amount of mix that was stockpiled was kept on a slab and covered with tarpaulins to control salt leeching.

19. Laboratory

St. Cloud State University (SCSU) – MacNeil Environmental Inc. (MEI) trained Biology, Chemistry, Earth Science, Environmental and Technical, and Physics staff and faculty last winter on pollution prevention and waste minimization at SCSU as part of OSHA's Laboratory Standard Training. MEI's role has expanded to include principal consultants and special audits and newsletters.

The Chemistry Safety Committee and Chemical Hygiene Officer (CHO) have been instrumental in fostering better lab user training, labeling, eyewash/shower inspection and hazardous waste control. They have assisted in the expansion of SCSU's hazardous waste disposal and recycling program. A new staff member has been added to the SCSU Chemistry department to better focus on these areas.

After-hours work controls and the Chemical Hygiene Plan (CHP) have received special emphasis in all College of Science and Engineering (COSE) departments that have labs. Renovations have included the addition of seven plumbed eyewashes or showers and the plumbing upgrade of seven other laboratory showers. SCSU is researching better formaldehyde controls.

21. Materials Exchange

St. Cloud State University (SCSU) – Carpet and cardboard are recycled at SCSU; also lard and cooking oil. Leftover food is sent to a local farmer for hog food.

22. Office Supplies

St. Cloud State University (SCSU) – SCSU extensively uses paper with 30 percent recycled content and 30 percent post-consumer fiber content. Office and computer paper is recycled. Recycled photocopier toner cartridges are purchased. Ink and toner cartridges are recycled. SCSU encourages using e-mail to post surplus supplies for use in other departments.

23. Oil, Oil Filters

St. Cloud State University (SCSU) – Oil filters are drained for over 24 hours to qualify as special hazardous waste. Motor oil is collected and recycled.

24. Paints, Coatings, Stripping

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

25. Parts Cleaning

St. Cloud State University (SCSU) – SCSU has experimented with more environmentally friendly brake cleaner and parts washer fluids in the auto repair shop. The Art department and print shop use a solvent recycling service, which provides them pollution prevention We Care[®] training.

29. Printing

St. Cloud State University (SCSU) – SCSU recycles books, directories and newsprint.

30. Procurement

St. Cloud State University (SCSU) – SCSU uses toilet paper and towels of 100 percent total recycled fiber content and 40+ percent post-consumer fiber content.

31. Remanufactured Parts

St. Cloud State University (SCSU) – SCSU uses remanufactured photocopier cartridges.

32. Tanks

St. Cloud State University (SCSU) – Only a single unused underground storage tank (UST) remains at SCSU. It is empty and below the basement floor of an occupied house. Spill containment control was expanded outside the dike to the delivery connections of our twin #2 fuel oil aboveground storage tanks (ASTs).

34. Tires

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

35. Water Treatment and Conservation

St. Cloud State University (SCSU) – This past year, SCSU continued to make progress in replacing restroom urinal flushing systems to reduce water use. Payback was about one year. Extensive lead-in-water testing has been completed in the campus houses being used for office space. Results were all well below the action level and most were below 5.0 ug/l. A MnSCU survey resulted in some water conservation improvements.