Driving Environmental and Economic Excellence in Minnesota

Minnesota Pollution Control Agency

Contents

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Brad Moore, Commissioner

Questions about this report?

Contact Cathy Moeger, MPCA

651-296-7369

cathy.moeger@pca.state.mn.us

The total cost of preparing this report includes $17,600 in staff time (352 hours) and $350 in printing costs. The MPCA is reducing printing and mailing costs by using the Internet to distribute reports and information to a wider audience.

The environmental issues Minnesota faces are diverse and complex. Pollutants in our air, water, and land come from many sources and many human activities. In July 2005, the Office of Environmental Assistance and the Minnesota Pollution Control Agency (MPCA) were merged into a new agency. As a result, the Minnesota Pollution Control Agency is in a unique position to respond to today's environmental challenges—including climate change, air particulates, impaired waters, and toxic substances in our environment.

To help move Minnesota toward environmental excellence, the MPCA enforces environmental regulations, offers technical and financial assistance, monitors environmental quality, identifies and cleans up spills or leaks that can affect our health and environment, develops statewide policy, and supports environmental education.

As part of this work, the MPCA uses voluntary, economically driven approaches to prevent pollution and conserve resources—working with partners to develop new, more efficient technologies and to promote business practices that use materials and resources efficiently. This, in turn, creates a stronger Minnesota by creating new jobs, fostering economic development, and protecting public health and our environment. This report highlights some of our recent key voluntary initiatives and their significant outcomes.

A Clean Water Partnership grant helped improve shoreland, wastewater, and agricultural practices around Lake Washington in Le Sueur County.

Partnerships

Using voluntary, market-based approaches to protect the environment

The MPCA works with many partners—businesses, communities, all levels of government, environmental groups, educators, and citizens. Partnerships allow the agency to:

> Foster greater commitment and responsibility for our environment.

> Work to eliminate the use and generation of toxic chemicals from products and buildings.

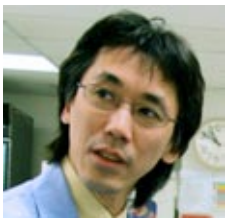
> Link market forces with opportunities to optimize materials, water, and resource use.

> Reduce costs and increase efficiency.

> Convert waste into resources—energy or high-value products.








Partners in water quality

Nonpoint sources of water pollution (pollutants picked up by rain and snow and carried to surface or ground waters) are widespread and difficult to control. These are the pollutants found in runoff from roads, parking lots, and other paved areas; from agricultural fields and feedlots, our lawns and failing on-site wastewater treatment systems; and in runoff from construction, mining, and logging operations. Reducing nonpoint-source water pollution requires partnerships among all levels of government, businesses, and citizens. Through such joint efforts, we can help:

- Minnesotans understand the impact of their actions on our water.
- Place local efforts in the context of entire watersheds.
- Diagnose impairments and focus our resources to achieve the greatest benefit.
- Build public awareness through education and action.
- Share information and data.

Clean Water Partnership and Section 319 programs

The MPCA provides financial and technical assistance to local government and other water resource managers to address nonpoint source issues through the state-funded Clean Water Partnership (CWP) and federally funded Clean Water Act Section 319 grant programs. The environmental results of these programs have been significant over the past ten years.

Reductions: Annual Environmental Impacts of MPCA 319/CWP Projects: 1997–May 2006

Type of project	Soil loss (tons/yr)	Sediment (tons/yr)	Phosphorus (pounds/yr)
Feedlots	—	—	4,568
Filter strips	27,680	11,286	14,900
Gully stabilization	9,236	5,333	5,831
Sheet & rill erosion control	18,686	16,298	17,169
Stream ditch stabilization	4,624	4,624	4,300
Wind erosion	13,441	—	555
Other	2,032	—	131,580
Total	**75,699**	**37,541**	**178,903**

Clean Water Partnership projects helped protect the Lake Shetek Watershed in Murray and Lyon Counties (left), and the Yellow Medicine River Watershed (right) in western Minnesota.

Citizen water-monitoring programs

Because lakes and streams are so central to Minnesota's economy and way of life, it is imperative that we try to maintain and improve their water quality. The MPCA leads two volunteer water-monitoring programs, which provide data that are essential to achieving these goals.

- Citizen Lake-Monitoring Program: 1,800+ volunteers monitor 15 to 20 lakes each year and collect water-quality information.
- Citizen Stream-Monitoring Program: 800+ volunteers take part in a statewide network to monitor Minnesota's 92,000 miles of streams.

These programs also provide an educational opportunity for Minnesotans to become more aware of their water resources, and how they change from season to season and over the long term.

Living Green Expo

Created in 2001, in partnership with the Minnesota Office of Environmental Assistance (now part of the MPCA) and numerous business and community partners, the Living Green Expo (a two-day event at the Minnesota State Fair Grounds) showcases products, services, and educational approaches that go beyond meeting just one or two environmentally friendly criteria and strive toward the long-term ideal of sustainability.

Living green means making choices in our day-to-day lives that enhance, rather than just reduce, our impact on the environment. A sustainable lifestyle is one that is ecologically sound, economically viable, socially just, and humane. The Expo uses two well-accepted sets of sustainability principles—the Natural Step and Cradle-to-Cradle frameworks—that establish conditions for how we can develop our products and services, our individual lives, our economy, and our society in a truly sustainable manner.

Visitors to the 2006 Expo liked the variety and large number of exhibits, the wealth of quality information, the ability to talk with friendly people, and free samples. Exhibitors overwhelmingly placed a high value on exhibiting, and the majority plan to return.

Highlights of the 2006 Expo

- 14,000 visitors.
- 1,500+ attendees at more than 65 workshops and presentations.
- 19 major sponsors.
- Extensive media coverage, including 85,000 inserts in *Minnesota Monthly* magazine.
- A nearly waste-free weekend—97% of the event's waste was recycled or composted.
- All Expo use of energy and paper was offset by purchasing green power and tree planting.
- 2,200 visitors made at least one commitment to take an environmental action.

Healthy Sustainable Schools

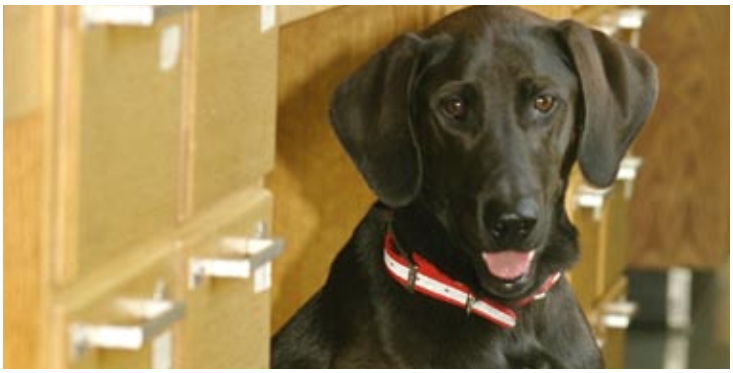
In 2006, three Minnesota schools (Houston public schools, Hutchinson High School, and Pine Point Elementary on the White Earth Reservation) completed demonstration projects to develop healthier, more sustainable work and study environments in schools. The project was funded by a one-time $40,000 grant to the Minnesota Pollution Control Agency from the U.S. Environmental Protection Agency. By incorporating sustainable practices, schools can reduce operating costs, reduce environmental impacts, and promote a healthy environment.

Preliminary results

- **Reduced waste.** Houston Elementary Schools recovered 3.75 tons of recyclable materials out of its normal waste stream in the first four months, which will save money on waste hauling contracts for next year.
- **Reduced toxicity.** Pine Point and Houston both switched to a single "green" product for general cleaning and disinfecting, replacing five more-toxic cleaning products.

  The MPCA's mercury-detecting dog, Clancy, visited all three schools to sniff out hidden mercury spills, uncovering a mercury-leaking blood pressure cuff in the nurse's office of a newly built elementary school.
- **Reduced pollution.** Houston schools implemented a "no-idling" policy where buses avoided unnecessary idling at the curb, reducing air pollution and noise.
- **Increased energy efficiency and reduced costs.** By adding controls to vary the start time of large motors such as pumps and fans, the schools benefit from lower peak demand expenses.

According to a recent national report, the average conventional school using green building practices would save enough money to pay for an additional full-time teacher.



Mercury reduction

The MPCA has been a national leader in addressing mercury issues since the early 1990s, undertaking many projects aimed at reducing mercury use and mercury contamination, both in products and air emissions.

Mercury-Free Zone Program

In 2001, the MPCA instituted its innovative statewide Mercury-Free Zone Program, in partnership school districts, individual schools, the University of Minnesota, and state and county environmental health staff. This unique program uses Clancy, the nation's only mercury-detecting dog, and state-of-the-art equipment to find mercury in schools so it can be removed and recycled. Alternative mercury-free products are provided at no cost to the school.

A total of 1,560 pounds of mercury has been collected from Minnesota schools. More than 22,000 students, teachers, and citizens have been educated about the dangers of mercury.

According to MPCA research, there is, on average, 2.5 pounds of mercury in each of Minnesota's 1,842 public and private middle and high schools. The agency expects to recover more than two tons of mercury from these schools, and is developing strategies to accelerate this effort.

Vehicle mercury switch collection and recycling

In 2004, in partnership with Minnesota Waste Wise and vehicle manufacturers, the MPCA helped establish, promote, and evaluate a two-year program to collect and recycle vehicle mercury switches in Minnesota. In 2005, vehicle manufacturers established a national mercury switch collection and recycling program modeled in part on this program.

MPCA staff participated in the national negotiations as a member of the Environmental Council of States, along with the U.S. EPA, automobile manufacturers, steel manufacturers, environmental organizations, the national Automotive Recyclers Association, and the national Institute of Scrap Recycling Industries.

www.epa.gov/mercury/switchfs.htm

Mercury switches like this (center object) were used with hood and trunk lights in many vehicles until 2003.

Governor's Awards for Pollution Prevention

Each year, outstanding environmental projects and programs throughout the state are recognized at the highest level through the Governor's Awards for Excellence in Waste and Pollution Prevention, which are presented to businesses and private nonprofits, and the Governor's MnGREAT Awards, which recognize public organizations and agencies. The winners represent a sampling of the commendable pollution prevention efforts occurring throughout the state.

Winners of the 2006 Governor's Awards for Excellence in Waste and Pollution Prevention:

- Allina Medical Laboratories, Metro Area
- Green Institute – Reuse Center (Minneapolis)
- Northern Engraving (Spring Grove)
- Sappi Cloquet, LLC (Cloquet)
- Tastefully Simple, Inc. (Alexandria)
- Tennant Company (Golden Valley)

These companies and organizations save more than $39 million and over 840 trillion BTUs of energy annually through waste reduction and efficient use of resources.

2006 Governor's Award winners emissions & waste reductions – combined totals

Hazardous materials	85,250 tons
Nonhazardous materials	35,105 tons
Water	550 million gallons
CO_2	50 tons

Partners in air quality

Clean Air Minnesota

The MPCA participates in Clean Air Minnesota, a voluntary partnership of businesses, environmental groups, government agencies, and citizens working together to achieve significant, measurable reductions in air pollution. One of CAM's successes is Project Green Fleet, which reduces the in-cabin exposure of school children to diesel emissions by installing free pollution-control equipment on school buses and gaining commitments to eliminate idling of machinery. By the end of 2007, Project Green Fleet will install equipment on more than 500 school buses, benefiting over 30,000 children by reducing 5,190 pounds of carbon monoxide, 2,197 pounds of PM2.5, and 4,570 pounds of VOCs from the air. The Minnesota Environmental Initiative leads this nationally recognized effort. Through an environmental assistance grant from MPCA, CAM and the Hamline School of Global Environmental Studies have developed air quality learning opportunities for children in the participating schools. Learn more about Project Green Fleet at www.projectgreenfleet.org.

Executive Order As a member of the Interagency Pollution Prevention Advisory Team, the MPCA is working with other state agencies to comply with Minnesota Executive Order 04-08, which requires each state agency to make efforts to reduce air pollution in their daily operations. The estimated results of the first year under the Clean Air Minnesota executive order show total emission reductions of more than 2,200 pounds of VOC, nearly 1,000 pounds of PM2.5, and more than 9 million pounds of carbon dioxide.

www.pca.state.mn.us/oea/lc/ippat.cfm

Buy Green Power campaign

Working with the Department of Commerce and other partners, the MPCA is encouraging consumers to support clean energy by purchasing renewable energy from their electrical utility provider. These efforts have been very successful.

- Over 3,000 new customers have either signed up directly or have pledged to buy green power.
- Documented purchases of 1,100 of those customers, will result in the annual production of over 4 million kilowatt-hours of new green power—enough to build the equivalent of two new, utility-scale wind turbines.
- These green power customers will prevent the release of 3,732 tons of carbon dioxide, 11.2 tons of sulfur dioxide, 8 tons of nitrogen oxides, and 81 grams of mercury.

In order to model environmental stewardship, the MPCA has made a three-year commitment to purchase 450,000 kilowatt-hours a year of green power at the St. Paul office, matching the new green power purchases of its employees.

The Eco Experience

As the agency's largest single outreach event and the first of its kind in the country, the Eco Experience (co-sponsored by the Minnesota State Fair and the MPCA) created an opportunity to work with more than 140 partners to present environmental messages to a broad cross-section of the state's population during the 12-day Minnesota State Fair. The critical challenge was making the environment interesting to the average fairgoer and prompting some initial commitments to environmental behavior change.

Exhibit highlights

The exhibits, both inside and outside the 25,000 square-foot building, offered visitors many opportunities to learn what individuals can do to help the environment.

> A 123-foot tall, 6-ton wind turbine blade at the building's entrance highlighted the economic and environmental value of wind energy in the state. Small wind turbines and working solar panel displays also demonstrated the importance of renewable energy. Minnesota leads the country in community, farmer, and locally owned wind projects.

> A 900 square-foot 1½-story "eco-home" erected inside the building showcased green materials and furnishings, including natural linoleum flooring and recycled paper countertops. Outside the home, "rain" fell off the roof into a live rain garden in the front yard, which also featured porous pavers, an irrigation system, and a rain barrel.

> In the "green garage" section, real working electric and biofuel vehicles were displayed, including an all-electric Chevy S10 pickup truck, a plug-in gas-electric hybrid Prius, a solar-powered car, and an electric lawn mower.

> In the hydrogen area, people were able to sit on the driver's seat of the ICEBEAR, the world's first fuel-cell-powered ice refinisher and examine a working model solar-to-hydrogen fuel cell.

> In the waste reduction exhibit, fairgoers walked through a tunnel under Trash Mountain, which represented 4 tons of garbage—the amount of garbage produced by the average family of four in one year. Visitors could locate lost treasure (items with value discarded in trash), listen to a life-size talking burn barrel explaining the dangers of burning garbage, and check out recycled products on display.

> To learn about the relationship between water transparency and water quality, and encourage more

people to participate in the Citizen Lake- and Stream-Monitoring Programs, visitors to the water exhibit could lower a Secchi disk into a column filled with over 20 gallons of water from a local lake. In addition, interactive displays showed impacts of storm-water runoff, offered information on mercury in the environment, and encouraged anglers to switch from lead tackle to non-lead alternatives.

> The "Buy Green Power" booth explained the benefits of renewable energy and encouraged Minnesotans to support green power. Other demonstrations of wind and solar technologies rounded out the renewable energy area.

Results

The Eco Experience drew 350,000 attendees over 12 days and created mutually beneficial partnerships among more than 140 businesses and organizations whose onsite and in-kind contributions totaled more than $1 million. The Eco Experience was the subject of over 100 different media stories creating 23 million impressions with an ad value of over $2.5 million.

The State Fair administration noted that the building was the second-biggest draw on the grounds.

Of attendees surveyed upon leaving the Eco Experience 89 percent took away at least one environmental action that they said they would apply to their daily lives, and 98 percent found the building "very" or "somewhat" interesting.

In December 2006, the Eco Experience won the "Award of Excellence for a Fair and Partner Joint Exhibit Program" from the International Association of Fairs and Expositions for this partnership.

As a result of the Eco Experience partnership, the MPCA and the State Fair are working to add other sustainable features to the fair. In 2006, the fair's Miracle of Birth Center featured a solar heating installation for the hand-washing fountains with MPCA and business partnership support.

www.pca.state.mn.us/ecoexperience

Economic impact of environmental programs

Successful partnerships benefit the environment, our communities, and our economy. By designing approaches that meet our needs without depleting resources and harming the environment, Minnesota can enhance economic opportunity and create healthier, sustainable communities. MPCA's partnership efforts to protect the environment have resulted in new business opportunities and sustainable economic growth, and shown how protecting the environment also helps Minnesota's economy.

Anchor Glass in Shakopee produces over 900 million bottles every year and is the biggest consumer of recycled glass feedstock in the upper Midwest. Anchor employs 280 workers.

Rock-Tenn in St. Paul processes 1,000 tons of waste paper a day.

Economic impact of recycling

For more than 15 years, the MPCA has been helping businesses in Minnesota develop uses for recycled materials by offering technical, financial, and marketing assistance. By using recycled materials (materials that would otherwise be landfilled or incinerated), these businesses increase profits, develop new products, and reduce waste in Minnesota.

The largest segment of the state's value-added recycling industry is made up of manufacturers who use recycled papers—post-consumer paper, old corrugated cardboard (OCC), and newspaper—as a raw material source, including Rock-Tenn (St. Paul), Liberty Paper (Becker), Stora Enso (Duluth), and Pactiv (Moorhead). Much of their recycled paper fiber comes from Minnesota curbside and business recycling programs.

www.pca.state.mn.us/oea/market

"I am a firm believer that a new "eco-economy" can be our future economic engine for creating jobs, while improving our chances of bringing environmental sustainability back into equilibrium."

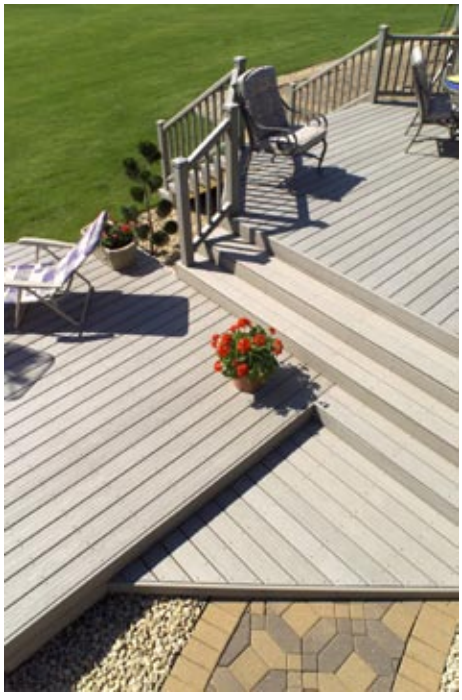
— Michael McMurchie

Renewal by Andersen, Andersen Corporation

The impact of Minnesota's recycling manufacturers: Jobs and dollars

Economic activity indicator associated with Minnesota's value-added recycling manufacturers	Based on reported employment	Based on total estimated employment
Direct jobs at the companies	6,499	9,003
Estimated indirect jobs Impacts on local suppliers statewide, unadjusted for displacement effects.	2,595	3,057
Estimated induced jobs Long-term effects on personal income and consumer spending, localized and statewide.	5,475	7,200
Total estimated jobs	14,870	19,260
Total estimated wages and salary disbursements The monetary remuneration of employees, including compensation of officers, commissions, tips, and bonus and receipts-in-kind that represent income to the recipient.	$560 million	$760 million
Total estimated tax revenue on direct jobs Business/personal state income taxes, sales tax, excise tax and miscellaneous taxes, real estate taxes, and business taxes.	$46 million	$64 million
Total estimated value-added activity Contribution to Gross State Product analogous to GDP (gross domestic product), output excluding the intermediate inputs (primarily compensation and profit).	$1.09 billion	$1.29 billion
Total estimated gross economic activity Amount of production in total sales, includes intermediate goods purchased as well as value-added (compensation plus profit).	$2.35 billion	$2.98 billion

Source scenarios calculated using the Regional Economic Models, Inc. (REMI) Minnesota Forecasting and Simulation Model, December 2004, Minnesota Office of Environmental Assistance, Wayne Gjerde.



Master Mark Plastics (Albany, Minn.) used 50 million pounds of recycled milk jugs last year to produce plastic lumber.

Minnesota Technical Assistance Program

As part of its technical assistance efforts, the MPCA has funded the Minnesota Technical Assistance Program (MnTAP), located on the University of Minnesota's Twin Cities campus. For more than 20 years, MnTAP has focused on pollution prevention assistance to manufacturing and service industries. Engineering staff with many years of technical and financial expertise, work alongside student interns to provide telephone and on-site assistance across a wide array of facilities. These industry specialists help identify efficiency gains for manufacturing processes and material/chemical substitutions that result in less risk.

Every dollar of state funding MnTAP receives results in three dollars in annual savings for Minnesota industry. MnTAP's services are designed to help businesses reduce costs by preventing pollution at its source.

www.mntap.umn.edu

Over the last two years (2005–2006), MnTAP has helped businesses:

- save nearly $4.5 million
- prevent 7.5 million pounds of waste
- conserve 36.5 million gallons of water
- reuse 11.4 million pounds of waste
- conserve 1.4 million kilowatt-hours of electricity, equivalent to the annual electricity used by 136 average Minnesota homes.

Tennant Company (Golden Valley) hosted a MnTAP intern last summer to reduce water use in pretreatment and improve energy efficiency. The company expects to save more than $81,000 annually from improvements that the intern helped work on.

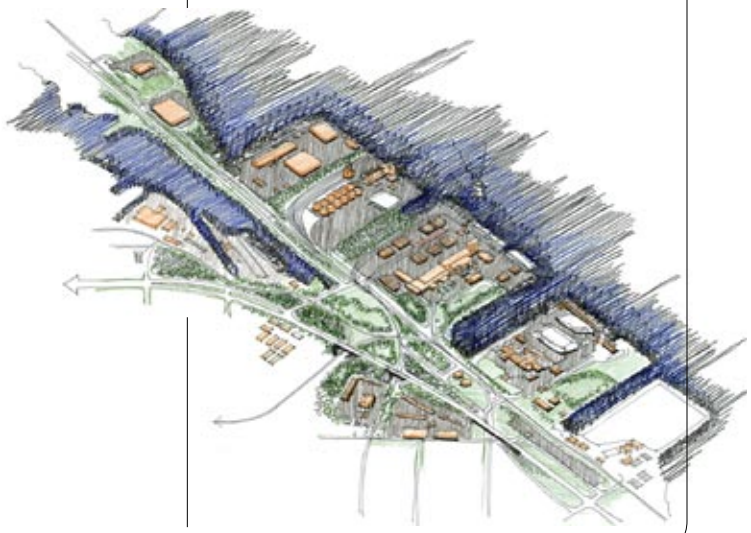
Eco-industrial development

Eco-industrial development (EID) is a network of businesses that work with each other and with their communities to use resources efficiently, expand markets, eliminate pollution, and foster economic growth. To achieve significant pollution prevention and encourage companies to adopt eco-efficient practices, EID also fosters the growth of clean technologies and eco-based ventures.

The MPCA currently supports a major EID project in the Duluth area. Since January 2005, the agency has provided a sustainable development expert to lead the first phase of this project, funded by a start-up grant from the Knight Foundation. This work resulted in the soon-to-be-launched Coalition for Eco-Industrial Development, whose goals include:

- increased energy security and independence.
- commercialization of clean technologies and eco-based ventures.
- improved economic competitiveness through adoption of eco-efficiency strategies.
- promotion of new industrial development.
- positioning the region as a leader in sustainable development.

Overview rendering of an emerging eco-industrial facility, Elkhorn Industries, Superior, Wisconsin.



Green building

According to the American Institute of Architects, buildings are responsible for 50 percent of all annual U.S. and global emissions. In 2005, the MPCA funded a study quantifying the pollution prevention and economic benefits of 41 energy-efficient, high-performing commercial buildings. Compared to buildings designed to meet only the minimum requirements of the Minnesota Energy Code, these 41 buildings:

- Prevented air pollution, including 206,000 pounds of sulfur dioxide, 229,300 pounds of nitrous oxides, and 15,300 pounds of particulates.
- Saved almost $6.25 million based on 2005 energy prices.

This valuable information is being widely shared with businesses and individuals in the state: www.pca.state.mn.us/oea/greenbuilding/cost.cfm.

The Green Building Program at the MPCA focuses on making the built environment as environmentally, socially, and economically sustainable as possible. With the help of a 2006 MPCA Environmental Assistance grant, the agency has been actively involved in the development of emerging green remodeling guidelines along with members of the National Association of the Remodeling Industry-Minnesota Chapter, the Remodelors Council of the Twin Cities (a council of the Builders Association of the Twin Cities), and the Green Institute. These guidelines (due to be published in 2007) will provide the remodeling community with a "roadmap" for achieving energy- and water-efficient, healthy, comfortable, environmentally friendly, and affordable home improvements.

(Top) Through a combination of the lastest energy-saving technologies and a hands-on approach by building maintenance staff, the Redwing Medical center achieves extraordinary efficiency and energy cost savings.

(Center) The first-ever certified green remodel in Minnesota, this Shoreview kitchen project installed high-efficiency windows, appliances, furnace and A/C, recycled the construction waste, and arranged for reuse of old cabinets and appliances.

Shingles recycling

As part of its market development program, the MPCA has been working with shingle manufacturers and the construction industry to divert some of the 300,000 to 400,000 tons per year of asphalt shingles from landfills into productive recycling. Minnesota asphalt companies and contractors are currently benefiting from using recycled manufactured shingle scrap (about 30,000 tons produced in Minnesota each year) to supplement virgin asphalt and traditional aggregates in their hot mix.

Work is proceeding on using tear-off shingle in roadway asphalt. In early 2006, the Solid Waste Management Coordinating Board (one of MPCA's partners) initiated a Shingles Recycling Project. The goal of this project is to accelerate the development of a new infrastructure for recycling tear-off asphalt shingles and to encourage the development of a Minnesota Department of Transportation draft or "provisional" specification allowing for its use.

This shingles recycling project, which started out as an environmental assistance grant 10 years ago, helps create new jobs, save energy in the form of virgin asphalt cement, and saves the state and local government between $7 to $15 million a year.

Recycled paint

Disposing of paint is the largest cost for local government household hazardous waste programs here in Minnesota. In order to address this issue, MPCA is participating in a national dialogue to promote product stewardship for unused paint. One outcome of this project is the successful effort to develop performance standards for recycled paint.

The national Green Seal environmental standard for recycled-content latex paint was completed in 2006. The standard is aimed at assuring consumers that recycled paint, in addition to being environmentally beneficial, can perform as well as virgin paint.

Recycled paint meets the same Master Painters Institute (MPI) performance standards used for virgin paint in any given category. The final standard takes into account the quality, performance, and safety of recycled paint, as well as environmental attributes. The standard will be available at http://www.greenseal.org/certification/environmental.cfm.

Get the lead out

Since 2003, the MPCA has worked with the DNR and a variety of businesses and organizations to hold more than 100 lead tackle exchange events. Anglers turned in lead tackle and received free non-lead alternatives. As a result, nearly 4,000 pounds of lead have been kept out of Minnesota's rivers and lakes.

This effort fosters increased market demand, which in turn encourages the manufacture of new products. Minnesota is home to many of the nation's most successful tackle manufacturers. Several of the major tackle makers and a growing number of newer firms have ambitious efforts underway to continue the rapid expansion of lead-free product offerings.

Tundra Composites, based in White Bear Lake, recently announced plans to build a major manufacturing plant in Hoyt Lakes to produce tungsten polymers for use in fishing tackle, vehicle wheel weights, and ammunition. The plant will eventually employ up to 80 workers and produce tungsten composite raw materials for use by other tackle manufacturers.

Financial assistance

Minnesotans recognize the value of a healthy economy, environment, and community. They understand that in meeting our present needs we must also look ahead by preserving resources and leaving a clean and healthy environment for future generations.

To facilitate these efforts and to help organizations move toward more sustainable practices that prevent pollution and conserve resources, the MPCA's Environmental Assistance Grant and Loan Program and the Small Business Revolving Loan Program offer financial assistance on a yearly basis. As projects are completed, the results are shared so others can benefit.

Since 1985, more than $11 million in environmental assistance grants and loans have been awarded to organizations across Minnesota. Since 2004, MPCA has awarded 47 grants, totaling nearly $875,000. Approximately $500,000 is available for FY 2007.

A few diverse examples of how these grant dollars have fostered innovative practices are noted here.

HourCar Grant Project is an innovative transportation service in which groups of 15 to 20 geographically clustered members share use of one or more cars. Members pay only a small monthly administrative fee and for the hours they use the car and for the miles they drive. www.hourcar.org

This car-sharing program helps Twin Cities' residents save money while preventing pollution:

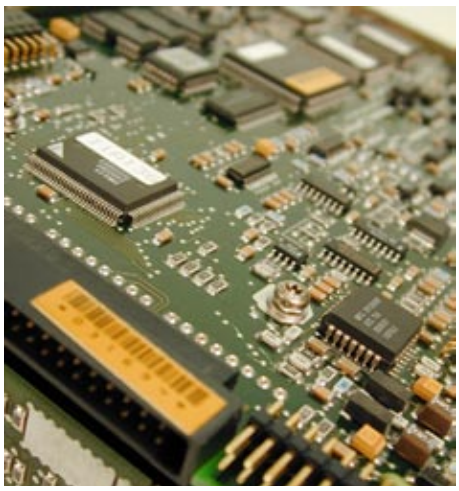
- Reduces pollution through reduced car usage.
- Encourages use of transportation alternatives such as biking and public transit. Members reported that since joining HourCar:
  - 37% use Metro Transit buses more
  - 22% use Hiawatha light rail more
  - 22% bicycle more
  - 45% walk more
  - 25% carpool more
- Provides access to vehicles for people of all income levels.
- Frees up urban space for higher and better uses than parking lots.
- Enhances the pedestrian atmosphere of the city's streets and public places.

Mattress Recycling Pilot Project Western Lake Superior Sanitary District (Duluth) received $20,000 to develop and implement a business plan for the collection, deconstruction, and recycling of mattresses.

As of May 2006, the project had processed and recycled 8,278 mattresses; 5,138 more than the pilot year. The project diverted 228 tons of material from regional and out-of-state landfills, saving 980 cubic yards of space with an estimated value of $30,576. Moreover, the project created three new jobs and recovered 145 tons of recyclables, generating $8,999 during the past two years.

In December 2004, the U.S. Army, an active partner in the project, sent 2,010 mattresses from Camp Ripley to Duluth for processing and recycling. Fort Ripley intends to ship more mattresses in the future.

This project received the Governor's MnGREAT Award and the Recycling Association of Minnesota's Award for best recycling project of 2005.



Design for the Environment Grant A $45,000 pollution prevention grant to Benchmark Electronics (Winona) helped them research and implement lead-free solder assembly for electronics. As conversion to lead-free solder assembly continues to expand at the plant, the company expects to eliminate 7,000 pounds of lead annually.

Conversion to lead-free assembly is a key competitive edge for businesses in the state that market electronic products in Europe and Asia since it allows early compliance with stricter regulations on lead in the recent Restrictions in Hazardous Substances. An MPCA case study details the conversion steps, sharing Benchmark's success with other Minnesota companies.

Compiling 15 years of environmental education research. In 2005, the Boulder Lake Environmental Learning Center received $9,000 to create an Environmental Education Research section on the Sharing Environmental Education Knowledge (SEEK) web site. This project makes available 15 years of Masters and Doctoral research in environmental education, much of which has never been published, gathered from Minnesota colleges and universities. The online database includes abstracts and can be searched by title, author, keywords, and more.

www.seek.state.mn.us/eeresearch

Recycling footwear
In 2005, Wipers Plus LLC (St. Paul Park, Minn.) received $9,000 to purchase a 20-horsepower grinder to recycle shoes and use the one-inch pieces, which are then fed into a conveyor, to produce an oil absorbent or floor-dry product.

Though the machine size proved to be inadequate to produce commercial quantities of the material, the project did produce enough material for marketing and testing purposes. Thanks to MPCA assistance in this pilot project, Wipers Plus LLC is currently negotiating with Homeland Security to produce and warehouse absorbents.

If successful, this project could divert a portion of the 6 to 11 million pounds of shoes landfilled annually in Minnesota.

Profile Powder Coating
In 2005, Profile Powder Coating Inc. (Rogers, Minn.) installed a new powder-coating spray booth. The project was financed through an $85,000 Environmental Assistance Loan and matching funds.

The new booth has a transfer efficiency of 95 percent, allowing the company to reclaim and reuse 88,000 pounds of powder and save $270,000 annually.

The loan also helped the company replace a convection oven with an infrared curing oven and upgrade to a more efficient air compressor. The infrared curing oven has improved powder coating of medium-density-fiberboard furnishings, and energy use per part was reduced by 33 percent, annually saving an additional $240,000.

Idling reduction
The MPCA, in cooperation with the U.S. Environmental Protection Agency, offers loans to help small trucking companies pay for idle-reduction devices such as auxiliary power units.

This equipment can reduce fuel consumption by 75 percent, which conserves resources and reduces the emissions that contribute to soot and smog. During 2006, 30 loans were issued, ranging from $7,500 to $50,000.

The MPCA is part of a diverse group of stakeholders working to develop a plan to clean up Lake Pepin and its affected rivers.

Future challenges and opportunities

This year marks the MPCA's 40th anniversary, and we've made significant progress during that time. We face new challenges in our efforts to clean up our waters and protect our natural resources, respond to global warming, and use our resources more sustainably. Although Minnesota's abundant natural resources can support many people and activities, the state's rising population, energy consumption, and land use patterns are putting pressure on our environment. A future with useable land, clear air, and clean water requires MPCA staff and Minnesota citizens to work hand-in-hand to respond to our environmental challenges.

Water samples collected at key points up and downstream from Lake Pepin.

Improving water quality

Protecting water quality through regulation of point sources is only part of the solution. The bigger challenge is to put practices in place to assure that reductions in nonpoint sources will also occur. Doing that requires strategies that reach the fundamental and diverse values and behaviors of homeowners, the building industry, farmers, and local governments—to name but a few.

The Lake Pepin project

Lake Pepin is a natural lake on the Mississippi River; its watershed makes up approximately half of Minnesota's total land area plus a portion of Wisconsin. Lake Pepin was placed on the 2004 list of impaired waters for two types of water quality problems—excess phosphorous and turbidity.

The MPCA, as the state agency responsible for protecting Minnesota's water quality, is working to identify and develop strategies to create citizen awareness and encourage positive individual actions that will contribute to cleaner water in the Lake Pepin Watershed.

There are four main sources of phosphorus in Lake Pepin—the Upper Mississippi, St. Croix, and Minnesota Rivers, as well as the Twin Cities Metropolitan Area. The Minnesota River contributes most of Lake Pepin's sediment load. Further, as the particles suspended in the water settle out, they cause a third problem for Lake Pepin—at current sedimentation rates, the upper portion of Lake Pepin will fill in within 100 years and eventually the lower portion will disappear. Once the lake disappears, its function as a protector of downstream water quality and valuable habitat will vanish as well.

Facing this large and complex problem, the MPCA, as part of a diverse group of stakeholders, is working to develop a plan to clean up Lake Pepin and its affected rivers. In early January 2007, the agency sponsored a Minnesota River Summit with an estimated 230 participants. In February, the agency is sponsoring a technical conference on the Lake Pepin issue. The MPCA is funding partnerships in the watershed to develop and implement innovative best management practices now, including low-impact development, pollution prevention at marinas, and efforts to prevent soil loss.

Higgins' Eye clams, an important part of the Lake Pepin ecosystem, are are being reintroduced by the Minnesota Department of Natural Resources.

Saving energy and acting on global warming

Global warming is an issue that requires immediate action, as we are already seeing its effects in Minnesota and elsewhere. Our energy and global warming problems result from pollution from power plants, vehicles, and buildings.

The vast majority of the energy we use in Minnesota comes from fossil fuels—coal, natural gas, and oil. Our state imports this energy, even though we are rich in renewable resources—wind, biomass, and solar energy. Transitioning to an economy that relys upon clean, renewable energy offers tremendous environmental and economic benefits.

We must continue to work harder to achieve solutions—innovative technologies and laws that require firm deadlines for emission reductions.

Minnesota manufacturers can save energy and bring increase profits by using recycled material in their manufacturing processes. These savings equate to $475 million in energy or 6.9 million barrels of oil yearly. By recycling 2.5 million tons of material in 2005, Minnesota reduced its greenhouse gas emissions by 1.6 million metric tons (carbon equivalent) compared to disposal. This is equal to taking 1.25 million cars off the road! Minnesota has an opportunity to increase its recycling rate, which will allow our manufacturers to compete in the global market, both environmentally and economically.

Sappi Cloquet LLC

One example of an energy-saving opportunity is the Sappi Cloquet pulp and paper mill. Sappi completed a mill-wide energy study as part of its efforts to recommission its manufacturing facility. Energy use at the facility is now optimized and use of renewable energy is at 95 percent—possibly the highest level globally for a pulp and paper mill. As a result, the company saved $6.5 million of natural gas and water. Sappi spent $4.5 million on this project and saw a payback of their investment in just 7 months. Continued cost savings from optimized energy use at the mill now exceed $6 million annually.

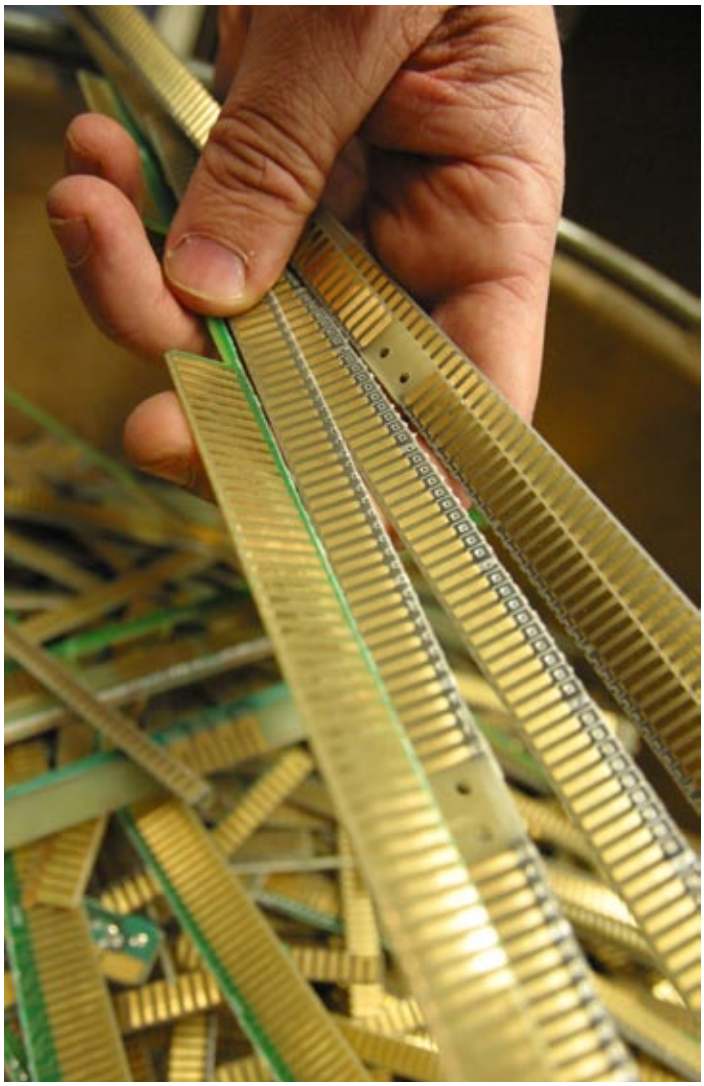
Water use was also optimized to a current reuse rate of a million gallons per day and a wastewater decrease of over a 1.5 million gallons per day—to generate over $200,000 in annual savings. The company was also able to decrease criteria air pollutants by 65 tons and over 50,000 tons of carbon dioxide emissions. To broaden the impacts, engineers at Sappi Cloquet have also shared what they learned from this outstanding effort with other Sappi pulp and paper mills.

Sappi received a Governor's Award for Excellence in Pollution Prevention in 2006.

Using resources wisely

The MPCA is working for a long-term solution to ensure that Minnesotans have the opportunity to recycle products like used electronic equipment, leftover paint, and used carpet. To advance this objective, MPCA has participated in several national product stewardship dialogues intended to develop a comprehensive approach to managing these projects at end-of-life. By involving manufacturers, retailers, government agencies, recyclers, environmental organizations, and consumers, we can manufacture, sell, and recycle products that are cheaper to produce, pollute less, have fewer toxic components, and recycle more easily.

www.pca.state.mn.us/oea/stewardship/



Asset Recovery Corporation (St. Paul) disassembles and recycles computers and other electronics, preventing toxics materials from ending up in the trash.

The challenge of e-waste

Thousands of used electronic devices, such as computer monitors, hard drives, and printers, need to be properly managed because of their rapidly increasing volume, the toxic materials they may contain, and the opportunity to promote resource conservation. A statewide ban on the disposal of cathode-ray-tube-containing products became effective in 2006, and the MPCA is working with all of the stakeholders along the product chain to develop an effective statewide program for the collection and recycling of old electronics. The Legislature has considered legislation to enact a producer responsibility approach for managing e-waste, and the agency will continue to serve as a resource to this effort by offering policy analysis and data to promote a convenient and economically efficient system.

MPCA staff has also been instrumental in the development and implementation of the national Electronic Product Evaluation and Assessment Tool (EPEAT). EPEAT enables large purchasers to evaluate and select information technology products that use less energy and incorporate recycled content as well as other environmental attributes. Agency staff worked with the state Office of Enterprise Technology to incorporate EPEAT into procurement standards that are now available for public entity purchasing in Minnesota, including our college and university system.

Looking ahead

The MPCA's goal has been and continues to be environmental and economic excellence in Minnesota. We know that success depends on strong partnerships, environmental innovation, and economic opportunities.

Looking ahead, we must continue to foster greater commitment and responsibility for our environment. While we have the ability and means to meet these challenges, it will require all Minnesotans working together to create a stronger and healthier environment, economy, and society. The challenges are out there—and so are the opportunities.

Minnesota Pollution Control Agency

www.pca.state.mn.us

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