



Michigan Department of Environmental Quality
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Jennifer M. Granholm, Governor
Steven E. Chester, Director

Protecting Michigan's environment through pollution prevention (P2) is a key element in preserving Michigan's natural resources for future generations. The state's P2 programs are administered by the Michigan Department of Environmental Quality (DEQ) in accordance the Natural Resources and Environmental Protection Act.

This legislation entrusts the DEQ with the responsibility for:

- *Infusing P2 into DEQ regulatory and permit programs,*
- *Educating and serving as a catalyst for change within the business community to bring about reductions in the generation of environmental wastes, and*
- *Providing technical and financial assistance to small businesses and institutions to facilitate in-plant P2.*

This annual report fulfills the reporting requirements to the Legislature and showcases Michigan's P2 programs and the importance of taking care of Michigan's resources.

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Department of Environmental Quality
Office of Pollution Prevention and Compliance Assistance
525 West Allegan
Lansing, MI 48933-1502

Mailing Address:
P.O. Box 30457
Lansing, MI 48909-7957

Environmental Assistance Center
deq-ead-env-assist@michigan.gov
Phone: (800) 662-9278
Fax: (517) 241-0858

2009

Pollution Prevention Annual Report

Michigan's diverse business community understands the power of being proactive at preventing pollution at its source of generation. The Michigan Department of Environmental Quality's (DEQ) Office of Pollution Prevention and Compliance Assistance (OPPCA) continues to concentrate its resources on helping businesses adopt practices and policies that encompass every aspect of environmental improvement that make a difference to our economy and environment. This report shares highlights from Fiscal Year 2009 (FY 09).

Green Chemistry

In October 2006, Governor Jennifer M. Granholm issued Executive Directive No. 2006-6, "Promotion of Green Chemistry for Sustainable Economic Development and Protection of Public Health" that established state policy encouraging the use of safer, less toxic, or non-toxic chemical alternatives to hazardous substances and the research, development, and implementation of green chemistry in Michigan. The DEQ has been given primary responsibility to implement the Directive, including establishing a Michigan Green Chemistry Program and convening a Michigan Green Chemistry Roundtable (Roundtable). The Roundtable, which is comprised of experts representing business, academia, and environmental interests groups, has played an active role in the development of the first annual Michigan Green Chemistry Governor's Award Program in order to promote excellence in innovation, economic development, and public health risk reduction by businesses and institutions.

The 2009 Award Winners were:

- Business: PPG Industries, Inc. & Dow AgroSciences
- Academic: Yinlun Huang, PhD, Wayne State University,
Phillip E. Savage, PhD, PE, University of Michigan
- Education: Chemistry Department, Grand Valley State University
- Public: Ecology Center
- Student: Nathan Craft, Grand Valley State University



GreenUp's Recycled Glass Award

The Green Chemistry Program hosted its first Green

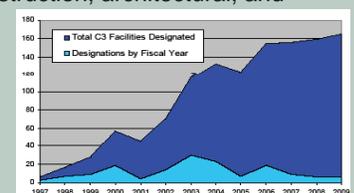
Chemistry Conference, GreenUp, which brought together leading experts in the field of technology, chemistry, engineering, and business process improvement to inspire and inform business leaders to develop an infrastructure for advancing and sustaining green products and processes in Michigan. Four Michigan institutions of higher learning were provided with funding to develop and teach pollution prevention, green chemistry, and green engineering courses designed for undergraduate students. In addition, three grants were issued to accomplish the following: build a green chemistry educational network; develop a means for community outreach and communication on green chemistry and green engineering; and advancing green chemistry in Michigan.

"I think this was a great first step on the way to Green Chemistry. I'd like to see more of these conferences."
GreenUp Conference Attendee

Clean Corporate Citizens

Six new facilities were designated as Clean Corporate Citizens (C3) in FY 09, including Bazzini Associates, the program's first green building construction, architectural, and design firm. Other new C3 designees include:

- Yazaki North America
- DTE Greenwood Energy Center
- Verso Paper Corporation, Quinnesec Mill
- Global Engine Manufacturing Alliance
- Haviland Enterprises, Inc.



Clean Corporate Citizen Program Growth
1997-2009

"As a manufacturer, packager, and distributor of thousands of chemicals, it's especially gratifying that DEQ has cited our efforts to reduce, reuse, and recycle! Haviland prides itself on being respectful of the environment, our natural resources, and the Grand Rapids community in which we live."
Michael Marmo, Haviland

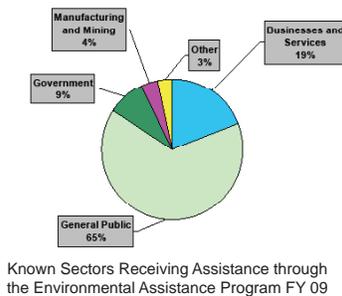
Climate Change

On March 1, 2009, the Michigan Climate Action Council (MCAC) completed the Climate Action Plan which identifies 54 policy recommendations for reducing greenhouse gas (GHG) emissions. The MCAC is a broad-based group of Michigan stakeholders charged by the Governor with making a comprehensive set of state-level measures on reducing GHG emissions that contribute to climate change. These actions to reduce GHG emissions can have positive economic and environmental benefits for Michigan including increasing energy efficiency, conserving natural resources, improving air quality, reducing water pollution, saving costs, creating jobs, and diversifying Michigan's economy. There were 35 policy recommendations that could be quantified and they are estimated to reduce 987 million metric tons of carbon dioxide equivalents between 2009 and 2025 and generate a net cumulative savings of about \$10 billion during the same time period. On July 29, 2009, Governor Jennifer M. Granholm issued Executive Directive 2009-4, following the recommendations of the MCAC by declaring that it shall be the goal of the state of Michigan to achieve a 20 percent reduction in GHG emissions below 2005 baseline levels by 2020 and an 80 percent reduction in GHG emissions below 2005 baseline levels by 2050.



Environmental Assistance Program

The Environmental Assistance Center (EAC) is an integral part of the overall Environmental Assistance Program (EAP) and serves as the single point of entry into all DEQ environmental programs. By calling 800-662-9278, business, industry, local units of government, and the general public receive direct one-on-one assistance from one of our EAP staff or referral to a network of technical staff within DEQ.



Known Sectors Receiving Assistance through the Environmental Assistance Program FY 09

The EAC/EAP staff handled 18,339 inquiries in FY 09.

Fostering effective partnerships with industry, government, and academia, the workshop team conducted 35 events held throughout Michigan. A total of 2,029 attendees participated in various training activities that encompassed technical training, compliance and enforcement activities, and innovative approaches to affecting change in various sectors.

*"Awesome. I was amazed at the timeliness and thoroughness of the response. Jim was the epitome of a professional in dealing with a very frustrating situation."
EAC caller after speaking to EAP staff*

Mercury Pollution Prevention

On June 26, 2009, DEQ Director Steven E. Chester directed the Mercury Strategy Workgroup to implement actions to achieve the top ten priorities for reducing mercury environmental impacts. This organized and directed ongoing efforts, including the following:

- A grant program was established for collecting and recycling old mercury thermostats removed from homes during energy efficiency improvements – for free. Under Act 492, PA 2006 the sale of mercury thermostats is prohibited, so this source of mercury should steadily diminish over time.
- A grant program was established to support the Department of Agriculture's Clean Sweep program that collects toxic pesticides, insecticides, and mercury from local residents for free.
- Act 503 PA 2008 regulates mercury amalgam from dental offices. Rules and program development began in 2009.
- A healthcare partnership has been formed that will assist in reducing mercury sources.
- Several products on the market still contain mercury although mercury free alternatives exist. Legislation was introduced to eliminate these new and preventable sources of mercury.

Chemical Management in Schools

In 2009, the DEQ and Grand Valley State University's Annis Water Resources Institute (AWRI) partnered with school districts in West Michigan to assess and improve chemical management in the classroom setting. Funding for the project was provided through the Community Pollution Prevention Grant and match funds from Grand Valley State University.

On-site assessments and trainings were conducted by a team of experts from the AWRI and the Muskegon County Health Department at White Cloud Schools, Muskegon High School, North Muskegon High School, Holton High School, and Allendale High School. The benefits provided to participating schools included:

- The creation of electronic chemical inventory systems.
- Updating Material Safety Data Sheets.
- Reorganizing chemical storage areas.

"Chemical Management in Schools," a workbook for Michigan schools looking to set up their own program, is available on the DEQ Web site.

Neighborhood Environmental Partners

The Neighborhood Environmental Partners (NEP) Program offers business and citizen groups the opportunity to work together to improve their neighborhoods, making them cleaner and more attractive places to live and work.

The DEQ Director Steven E. Chester awarded 13 facilities in Michigan the NEP Program Award for their outstanding commitment to environmental community outreach. Their community partners were also recognized for their outstanding environmental contributions.

The thirteen companies that received an award were:

- AkzoNobel Coatings Inc. – Pontiac
- Consumers Energy – J.R. Whiting Plant
- DuPont – Mt. Clemens
- Ford Motor Co. – Romeo Engine Plant
- Detroit Edison – River Rouge Power Plant
- General Motors (GM) – Flint Metal Center
- GM – Lansing Delta Township and Regional Stamping Plant
- GM – Orion Assembly
- GM – Pontiac Assembly Center
- GM Power Train – Romulus Engine Operations
- GM Power Train – Warren Transmission Plant
- Herman Miller Inc. – Grand Rapids
- Smurfit-Stone Container Corporation – Ontonagon Mill



Green Lodging

Michigan's Energy Office and DEQ jointly sponsor Michigan's 'Green Lodging' Program to help hotels, bed & breakfasts, motels, resorts, and other lodging facilities enjoy and protect our state's natural resources and environment.

Fiscal Year 2009 data:

- 45 new applicants
- 27 newly certified facilities
- 5 facilities moving to a higher level of certification
- 6 facilities received energy audits

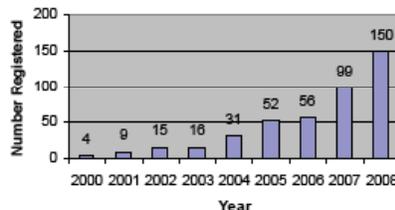
"My team and I are thrilled to have achieved the top level of Green Lodging certification and will continue to accept the challenge of finding ways to broaden our sustainability efforts. Each day we are striving to educate our guests and community of how easy it is to positively affect the environment."
Ellen Markel, Days Hotel Downtown Grand Rapids

Green Building

The state of Michigan has been constructing and improving the management of state buildings to make them as 'green' as practical and improve their energy efficiency, reducing tax payers dollars spent on maintenance and energy.

Three programs certify green and energy efficient buildings:

- EnergyStar has certified 293 buildings in Michigan as energy efficient, including the House of Representatives' Anderson Building, three DEQ district office buildings, and over 200 K-12 school buildings.



Trend in Michigan LEED Registered Green Buildings

- The US Green Building Council (USGBC) certifies green buildings under the Leadership in Energy and Environmental Design (LEED) program. There are 514 buildings registered that include museums, banks, nature centers, community centers, universities, etc.
- Green Built Michigan certifies green homes, however, the number certified is not available.

The DEQ maintains a Web site to provide resources to support the construction of green buildings to reduce landfilled wastes and improve recycling.

Healthcare P2 Partnership

The Michigan Healthcare Pollution Prevention Partnership seeks to work together with healthcare organization and providers to promote sustainable waste reduction solutions for the healthcare industry in Michigan.

The DEQ in partnership with Michigan Health and Hospital Association (MHA) and several Michigan hospitals formed the Michigan Green Healthcare Committee (MGHC). The MGHC was created to encourage and support sustainability initiatives that improve public and environmental health in Michigan. The committee meets monthly with healthcare providers.

The DEQ in partnership with MGHC organized a one-day conference focusing on waste reduction and energy efficient initiatives in healthcare. Eighty-seven healthcare providers participated in the one day conference held at Metro Health Hospital located in Grand Rapids, Michigan.

Michigan Business P2 Partnership

Twelve new organizations joined the Michigan Business P2 Partnership (MBP3) in 2009 and committed to develop P2 goals and report results each calendar year.



The P2 results reported by partners during calendar year 2008 provided an estimated combined cost savings of \$33,010,331.59. (Source: P2RX guidelines and cost calculations)

Workshops, newsletters, and electronic mailings delivered P2 news and opportunities to partners.

The near future of MBP3 will bring focused workshops and outreach efforts based upon transferrable best practices, the launch of a unique online P2 tracking and reporting application, and the development of a strategic plan to enhance the long-term value and success of the program for its partners.

P2 results for 2008 reported by partners in terms of Metric Tons of CO2 Equivalents (MTCO2Eq) reduced:

Reduction	MTCO2Eq Reduced	Equivalency
energy use	177,835	The annual greenhouse gas emissions from 32,571 passenger vehicles
water use	524	The carbon sequestered by 13,442 tree seedlings grown for 10 years.
solid waste diverted from landfill	1,825,761	The CO2 emissions from the energy use of 166,129 homes for one year.

Source: USEPA GHG Equivalencies Conversion Tool

"While conserving energy and resources is very important to us, and important to the environment, these P2 programs also show real dollar savings for the company. This allows us to continuously improve our programs as well as our processes and procedures."
Arvco Container Corporation

Green Suppliers Network

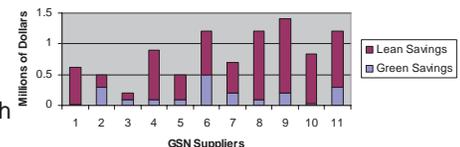
The Green Suppliers Network continued to create and demonstrate responsible stewardship, sustainability, and accountability, along the supply chain for Michigan manufacturers in 2009.

A total of 26 Lean and Clean Assessments were provided to participating suppliers in 2008-2009. Data from the assessment process identified recommended environmental improvements that added cost savings to the economic bottom line of several Michigan companies.

By combining the application of both lean and green objectives to achieve cost benefits the GSN provided suppliers with the opportunity to reduce their environmental footprint and save money. Realized

examples of environmental savings from suppliers include:

- A yearly 131,300 kwh of energy reduced at a cost savings of \$11,909 by modifying shop floor lighting.
- 16 million gallons of process water reduced, translating to a \$30,000 annual savings.
- Parts washing chemical use reduction of 20 percent resulting in a \$20,000 savings.



Potential Lean and Green Savings Identified for 11 Michigan GSN Suppliers (2008-2009)

In 2009, the U.S. Environmental Protection Agency posted the Michigan video "Green Suppliers Network, A Community of Practice" at <http://vimeo.com/1975644>

P2 Grants for Hospitals

The DEQ was awarded \$82,355 in Community Pollution Prevention (P2) Grant funding to four hospitals for projects focusing on P2 at healthcare facilities in the state of Michigan.

The hospitals receiving funding are:

- Covenant Medical Center; \$24,000
- Northern Michigan Regional Hospital; \$20,000
- Otsego Memorial Hospital; \$13,655
- War Memorial Hospital; \$24,700

These hospitals will be implementing various programs to support their goals including installing energy efficient lighting, purchasing environmentally preferred products, and implementing water conservation practices. The four community grant recipients will be required to match the state funds by at least 25 percent.

Small Business P2 Loan Program

All across Michigan, small businesses are taking advantage of the DEQ's Small Business Pollution Prevention Loan (P2 Loan) Program to assist them in deploying preferred technologies and practices. Established under the 1998 Clean Michigan Initiative (CMI) Bond approved by voters, the P2 Loan program has dispersed over \$4.3 million in 38 loans to small businesses. Any business that employs 500 or fewer people, is independently owned or operated, and not dominant in its field, is eligible to apply for a low interest loan.

In FY 2009, over \$558,000 was awarded in loans. P2 Loan Program participants include:

- Associate Orthopedists of Detroit and their local lender, Comerica Bank
- Allied Photo Lab and their local lender, Chemical Bank
- Roxann Baker DDS and their local lender, Citizens Bank
- Kenneth & Ruth Lubben and their local lender, Isabella Bank

*"Allied Photographic & Imaging is appreciative of working with Chemical Bank and the State of Michigan to successfully implement the low interest P2 Loan Program to purchase new environmentally friendly equipment."
Kim Toren-Freeman, Allied Photographic & Imaging*

RETAP

One hundred and one assessments were completed in FY 09 that identified over \$4.6 million in potential operating cost savings resulting in an average of over \$45,000 in potential savings per RETAP assessment.



Assessors provided 688 hours of additional pollution prevention technical assistance for small businesses and government facilities, which identified over \$161,000 in potential cost savings.

Two-year follow-up surveys were conducted with 67 RETAP assessed facilities. These companies reported implementing or acting on more than 74 percent of RETAP recommendations with measured reductions in waste disposal of over 2.3 million pounds and total cost savings of nearly \$1.9 million.

Total number of active retired engineers increased to 55, totaling more than 2,100 combined years of professional experience.

The retired engineers received pollution prevention and energy efficiency training on cooling towers / chilled water systems, and hospital and dairy farm operations.

Completed 101 Pollution Prevention Assessments in FY 09.	
Reductions	Amount
CO2 Emissions (equivalents)*	54.6 million Pounds
Electricity Usage	24.3 million kWh
Natural Gas Usage	1.2 million CCF
Waste Disposal	2.6 million Pounds
Water Usage	42.6 million Gallons
*natural gas and electricity usage	

"The [RETAP] assessment was painless, but very thorough. The report we received was clear, concise and descriptive of what was needed to reduce our energy costs. The added advantage of having the estimates of savings was very helpful in selling the ideas to upper management..."

*Overall this was a very rewarding experience and I would highly recommend the RETAP team to other companies."
John Metts, Dowding Industries, Inc.*

Michigan Sustainable Business Forums

The Michigan Sustainable Business Forums (SBF) offer local monthly programming to membership focusing on business innovation, social equity, environmental stewardship, and economic development. The DEQ OPPCA staff regularly collaborate with these forums. The Michigan SBF include the:

- Northwest Michigan Sustainable Business Forum (www.nwmsbf.org)
- Southeast Michigan Sustainable Business Forum (www.smsbf.org)
- Southwest Michigan Sustainable Business Forum (www.swmsbf.org)
- West Michigan Sustainable Business Forum (www.wmsbf.org)

In 2009, members of the Southwest Michigan SBF and the DEQ partnered in support of the newly formed "Southwest Michigan Regional Sustainability Covenant" to expand the capacity and facilitate the diffusion of sustainable practices into the region at the community level. Partners include, but are not limited to municipal and county governments, community foundations, institutions of higher learning, hospitals, Chambers of Commerce, and K-12 education. In conjunction with the already existing "Community Sustainability Partnership" in Grand Rapids, the DEQ also worked closely with local partners in that region to form the West Michigan Sustainable Purchasing Consortium. The consortium is designed to encourage environmental protection through the selective purchasing of sustainable products.

Both the Northwest Michigan and Southeast Michigan SBFs supported training and outreach in their regions during 2009 on the topics of Industrial Energy Optimization and Efficiency, Renewable Energy Use, and Carbon Footprinting.

The members of these organizations represent a strong, long-lasting commitment to economic growth in Michigan and maintaining the integrity of the diverse local environments and social structures of the communities in which they are located.

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AUTHORITY: PA 451 OF 1994

TOTAL COPIES: 100

TOTAL COST: \$306.27

COST PER COPY: \$3.06

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