



PREVENTION

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Office of

Pollution Prevention

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Focus on Environmental Management Systems

Because of recent requests by major automobile and other manufacturers, you can expect to hear more about environmental management systems (EMS) at Ohio companies in the near future. An EMS could even be *required* by your customers. And because EMSs can greatly enhance P2 and compliance programs, Ohio EPA is very interested in encouraging their use.

In recent years, EMSs have been a focus for many organizations. Some of the benefits to an organization that has an EMS include potential cost savings, improved regulatory compliance, potential raw material reduction, improved health and safety, improved public image, and reduced negative environmental impact.

The concept of an EMS is to outline a strategy on how an organization approaches its processes and the impacts those processes have on the environment. It states how the organization intends to evaluate, develop, and change those processes. The EMS is an explanation of how an organization incorporates knowledge and improvement of the environmental impacts of their processes into its

daily operations. With an EMS, an organization continually improves its processes, and has ongoing evaluations of how its operations affect the surroundings.

A company may choose to have its EMS formally recognized. One way to do this is to have its EMS assessed against the ISO 14001 standard. There has been a general movement toward this in the United States, especially in the automotive, electronic, chemical and pharmaceutical industries.

However, having an EMS certified is a voluntary action of the organization. In some major industries, though, companies are requiring their suppliers to become certified in order to do business with them.

Gaining ISO 14000 certification requires an organization to include specific components in their EMS, as outlined in ISO 14001. The organization would then select an accredited registrar to perform an audit at the organization. This registrar reviews the organization's EMS, and measures how the EMS matches up against ISO 14001 criteria. Registration is granted depending on how the organization meets the ISO 14001 standard.

A company may also elect to have a gap analysis performed prior to an official audit. A gap analysis is an initial review of the plan, and is performed in order to identify areas of the EMS that do not yet meet ISO 14001 criteria. A report is usually prepared, which outlines the areas that may fall below the requirements. A gap analysis may be performed by an outside consultant or by an internal work team or internal auditor.

An organization may also approach ISO certification another way. The organization may opt to 'self declare' their ISO 14001 status. This basically means that the company feels it meets all of the criteria listed in ISO 14001, but does not seek the approval of a third party audit.

However, there are some benefits to deciding to become a registered ISO 14001 company. Recognition by a third party may give an EMS more credibility in the public eye. Recurring audits keep an organization compelled to maintain the EMS continually. A third party may find items that were not recognized within the organization, and may have suggestions on how

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to improve the EMS. Endorsement through a third party helps ensure that the organization's EMS is acceptable in comparison to other organizations' EMS components.

ISO 14000 is not the only standard of measurement available; others are available. It is important to note that being certified does not necessarily mean that an organization runs as effectively as it can, or that it will always be within environmental compliance. It is only a strategy which outlines how an organization's operations impact the surrounding environment, and an explanation and documentation of the actions an organization will take in dealing with its environmental impacts. The actual environmental impact of the EMS will depend on how the organization uses the system.

Because of corporate and public demands, your business may need an EMS in the near future. If it already has one, you may want to improve it. For more information on EMSs, see OPP's Web site at www.epa.state.oh.us/opp/oppmain.html, or contact Debora Depweg at (614) 644-3257, debora.depweg@epa.state.oh.us.

OSEN Update

The Ohio Statewide Environmental Network has received grant funding from U.S. EPA to provide pollution prevention seminars and assessments. The University of Toledo and four Edison Centers-CAMP, IAMS, EISC and Edison Welding Institute (EWI)- will be sponsoring workshops on a range of topics in 2000 and 2001, including lean manufacturing, ISO 14000 and environmental management systems, electric restructuring opportunities, and pollution prevention of persistent bioaccumulative toxic substances. Additionally, each of the Edison Centers will have funds to perform assessments for small and medium sized manufacturers in Ohio to help them improve the way they do business. For more information on the Ohio Statewide Environmental Network, the workshops or the assessments, contact Ashok Kumar, University of Toledo Department of Civil Engineering, at (419) 530-8136 or Greg Stewart, EISC, at (419) 535-6000.

U.S. EPA Unveils The First Virtual Auto Body Shop

The U.S. EPA Design for the Environment (DfE) Program, Office of Pollution Prevention and Toxics, has launched a first-of-its-kind auto body shop/information center on the web: www.epa.gov/dfe/autobody/autobody.html. The site advances the goal of DfE's Auto Refinish project to bring safer, cleaner, and more efficient practices and technologies to the auto refinishing shop that will keep painters and shop workers healthier, reduce pollution and emissions to the community, and increase spray painting efficiencies that will save money.

The site was co-developed with the Coordinating Committee for Automotive Repair known as CCAR-GreenLink at: www.ccar-greenlink.org, recipient of the U.S. Small Business Administration's "Model of Excellence" award for its leadership in providing environmental compliance assistance to the automotive small business community. The virtual shop links to DfE Best Practice Guide; fact sheets from New Jersey's Right-to-Know program on solvents, pigments, and other chemicals used in auto refinishing; the National Institute for Occupational Safety and Health (NIOSH) Alert for information on health effects of di-isocyanates (the hardener in clear coats used by shop painters and the leading cause of occupational asthma); and also directly links to paint companies who have publicly posted their material safety data sheets and health and safety materials.

Battelle Releases Forecast of Top Ten Energy Innovations

EarthVision Environmental News

COLUMBUS, OH, August 17, 2000 - These days, energy is intimately linked to many of our daily activities, from first turning on the light in the morning, to powering up our computers to driving in the car. Along with energy use comes paying for it - both in terms of money needed to obtain the energy to the environmental consequences of its use. Because of the ubiquity of energy use in society, Battelle Memorial Institute, which develops new technologies, commercializes products, and provides environmental and energy solutions for industry and government, has come up with a "top ten" list of the changes we can expect in the energy field in the coming decade.

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“We’re on the cusp of some major, fundamental changes in energy. In fact, it’s already starting,” said Dr. Steve Millett, Thought Leader and manager of Battelle’s forecasts.

A panel of energy experts from Battelle and the national laboratories that it manages and co-manages for the U.S. Department of Energy (including Pacific Northwest, Brookhaven and Oak Ridge National Laboratories and the National Renewable Energy Laboratory) says new energy innovations will be driven by economics, R&D, worldwide environmental regulation, consumer behavior and preferences, national energy policy and liability and legal issues.

Battelle’s top ten energy innovations with the most economic impact that will come about by 2010 include:

- ① A Shifting Energy Industry Structure - Deregulation of the natural gas and electric utilities will continue, resulting in more competition and more mergers but small independent utilities will decline. Oil companies will become energy companies, competing in both the mobile and stationary energy markets. Automakers may hold more influence in the energy industry.
- ② Hybrid Vehicles - Hybrids getting 70 mpg will become more attractive with rising fuel prices. Small hybrids are already here but large sedans getting 80 mpg are in the concept stage. While they might become a reality within the next ten years,
- ③ Smart Energy Management Systems - Computers, the Internet and Global Positioning Systems will do everything from reduce traffic congestion to regulate heating and air conditioning and appliances in our homes. Industry will also take advantage of these systems to increase efficiency in energy production and distribution systems.
- ④ Distributed Power Generation - Large-scale power grids will make way for smaller, distributed systems that will make major blackouts and energy disruptions a thing of the past. Individual or local power generation will be accomplished via microturbines, internal combustion engines and fuel cells powered by natural gas.
- ⑤ Fuel Cells - Fuel cells will be increasingly used in transportation and portable and stationary power generation. They must be made smaller and cheaper before gaining widespread acceptance though.
- ⑥ Gas to Liquid Conversion - advances in chemical engineering processes to transform hydrocarbon compounds from gases to liquids will permit more flexible use and storage of fuels. One example is the conversion of natural gas to diesel fuel for transportation.
- ⑦ Advanced Batteries - Next-generation batteries will be based on lithium polymer technology and have about three
- ⑧ Energy Farms - Crops will be grown for both food and energy value. Growing crops for ethanol production is an example.
- ⑨ Solar Energy - Although currently difficult to capture and store in large quantities in a cost effective manner, experts see substantial improvements in the next ten years. Progress is continually being made in the conversion efficiency photovoltaic cells.
- ⑩ Methane Hydrate Crystal Mining - Frozen natural gas crystals have been discovered on the ocean bottom, and the ability to get at this energy source would be a huge step forward in providing energy for the future. Currently, no attempts have been made to exploit this resource but over the next ten years it will be added to natural gas production.

Battelle, headquartered in Columbus, Ohio, focuses on technology development and commercialization and product development. With 7,500 employees at more than 60 locations, Battelle develops technologies and products for industry and government. Annual revenues are approximately \$1 billion. For more information on Battelle and its technology forecasts, visit Battelle’s website at www.battelle.org.

P2 Provisions Contained in New Wastewater Rule for Transportation Equipment Cleaning Operations

By Jeff Lewis, Ohio EPA, OPP

U.S. EPA recently published the final Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards for the Transportation Equipment Cleaning (TEC) Point Source Category (Federal Register, August 14, 2000). According to U.S. EPA estimates, there are over 1,200 TEC facilities in the U.S. that may be subject to this rule. This new wastewater rule establishes effluent limits for facilities that generate wastewater from cleaning the interior of tank trucks, closed-top hopper trucks, rail-tank cars, intermodal tank containers, inland tank barges, closed-top hopper barges, ocean/sea tankers, and other similar tanks (excluding drums and intermediate bulk containers used to transport materials or cargos that come into direct contact with the tank or container interior).

TEC wastewaters include washwaters that have come into direct contact with the tank or container interior, including pre-rinse cleaning solutions, chemical cleaning solutions, and final rinse solutions. Additionally, the rule covers wastewater generated from washing vehicle exteriors, equipment and floor washings, and TEC contaminated wastewater for those facilities subject to the TEC rule.

Facilities that discharge less than 100,000 gallons per year of TEC process wastewater are excluded from this rule. This may encourage facilities to implement water conservation measures.

The new rule offers a pollution prevention (P2) alternative to compliance with numeric pollutant limitations for several categories established by the rule. Facilities can prepare "Pollutant Management Plans" as an alternative. These P2-based plans must contain: provisions for appropriate recycling or reuse of cleaning agents; segregated heels and pre-rinse/pre-steam wastes; and provisions for minimizing the use of toxic cleaning agents.

The compliance deadline for existing TEC facilities discharging into publicly-owned treatment works (POTWs) is as soon as possible, but no later than



August 14, 2003. According to data collected by U.S. EPA, approximately 27% of TEC facilities currently practice water pollution prevention, and approximately 61% of TEC facilities currently practice heel pollution prevention. In the TEC industry, "heel" means any material remaining in a tank following unloading, delivery, or discharge of the of the transported cargo.

The Technical Development Document for the rule provides additional information on pollution prevention controls and flow reduction technologies. This information can be used to develop the Pollutant Management Plans.

The development document along with the final rule is available from U.S. EPA's Office of Water homepage at www.epa.gov/OST/guide/teci/.

P2 Assessments Help Companies Find Those "Loss" Opportunities

By Jeff Lewis, Ohio EPA, OPP

Why a P2 Assessment?

Has your company ever thought



"It sure would be nice to be *less regulated*"...

"If we only had some more time, we could take a *closer look at those waste costs* and do something about it"...

"How is it possible to improve both our *environmental and economic performance*?"...

You may want to consider a Pollution Prevention (P2) Assessment from Ohio EPA's Office of Pollution Prevention. That's right, *Ohio EPA's* Office of Pollution Prevention (OPP).

Why would a company invite a team of OPP members into its facility? After all, Ohio EPA, they're the regulators, aren't they?

Well, yes and no. OPP is a technical assistance office within Ohio EPA. However, OPP has no specific compliance or regulatory responsibilities like Ohio

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EPA media programs for hazardous waste, air pollution or wastewater. OPP's mission is to develop and implement pollution prevention initiatives that effectively reduce pollutants in Ohio. These initiatives emphasize source reduction, and, as a second preference, environmentally sound recycling.

OPP's P2 Assessments

Companies look to OPP for assistance with pollution prevention efforts. OPP has provided free, non-regulatory P2 Assessments since 1994. An assessment is simply an on-site survey of a company's operations to identify and evaluate opportunities to reduce "losses". These losses often take the form of hazardous and solid wastes, air emissions and wastewater. Where there is loss, there is opportunity. Reducing losses through P2 can help you reduce operating costs, increase productivity, improve worker safety and reduce environmental liability.

In doing assessments, OPP often uses process improvement tools such as "process mapping" and "materials accounting" to identify key losses that can lead to P2 opportunities. OPP works with a company to collect information, analyze factors that lead to losses, and evaluate P2 opportunities to reduce those losses. OPP provides information in an easy-to-read report that provides important resources to help the company implement the P2 opportunities. These resources include vendor contacts, related case studies, recycling resources, and financial assistance information.

Some Examples

- ☑ For one P2 assessment of a small automotive parts manufacturer, OPP found that extending the life of cleaning solvent by 50% would result in an annual reduction of over 16,000 pounds of hazardous waste, and save over \$24,000 annually in cleaning costs. P2 recommendations included extending solvent life through filtration. The company also evaluated alternative cleaning solvents with the help of OPP. The company's goal is to use the P2 assessment to help become a RCRA small quantity generator, and reduce their hazardous waste requirements.
- ☑ OPP identified annual losses of more than \$456,000, resulting in over 2.8 million pounds of solid waste during an assessment of a facility that produced rubber parts by injection molding. OPP suggested ways to reduce this wastestream by minimizing excess trim/edge waste. OPP also provided some off-site recycling possibilities for the rubber scrap. This assessment showed that just a 10% reduction in these losses could save the company 280,000 pounds of solid waste annually, and save over \$53,000 in operating costs annually.
- ☑ A large wood furniture manufacturer used OPP's P2 Assessment to help identify finishing (coating) line losses. OPP's assessment provided recommendations and information to help the company improve coating usage by increasing transfer efficiency of the finishing line. A 20% improvement could help the company reduce over 180,000

pounds of volatile organic compound (VOC) emissions annually and save more than \$296,000 a year in coating costs.

For More Information

If your company could use assistance finding "loss" opportunities, consider a P2 Assessment. OPP has several openings for companies to sign up for P2 assessments for 2000 - 2001. To learn more about P2 assessments, visit OPP's website at www.epa.state.oh.us or contact Jeff Lewis of OPP, (614) 644-2812, jeff.lewis@epa.state.oh.us.

Elemental Mercury Collection and Reclamation Program Gets Dangerous Element Out of Homes and Hospitals

More than 1,290 pounds of elemental



mercury have been recycled through a partnership between Ohio EPA, Bowling Green State University and Rader Environmental Services of Findlay. Through the program, unwanted mercury switches, barometers, medical equipment and mercury in more unconventional containers are collected, then extracted, purified and reused.

Mercury is an extremely heavy, silvery metal that can vaporize, and, if breathed, cause numerous health problems. Improper handling can increase the potential risks.

Dave Heinlen, safety and health coordinator with Bowling Green's Department of Environmental Health and Safety, remembered taking a call

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from a Bowling Green-area grandmother who had two seven-pound glass tubes of mercury. The tubes had been used as counterweights for a grandfather clock.

“She had a 3 year-old grandson running around there, and didn’t want him coming into contact with it,” Heinlen said.

But whether it’s a single mercury thermometer or containers of the metal discovered in a basement corner, Heinlen said the program wants to clear it out. He urged people not to move mercury themselves, but rather call professionals who can assist in its removal.

“We’ll take it from anybody—colleges, universities, businesses,” Heinlen said. The partnership was founded in January 1998. More information can be found on the World Wide Web at www.bgsu.edu/offices/envhs/mercury.htm.

For information about where to call in your area for help removing mercury, call (419) 372-2173. To report a mercury spill, call (800) 282-9378.

ACEEE Guide to Energy-Efficient Commercial Equipment Helps Owners and Occupants of Commercial Buildings

Owners and occupants of commercial buildings spend over \$80 billion a year on heating, cooling, lighting, and other energy services. This guide provides commercial building owners and occupants with practical information on how to make the right purchasing decisions to reduce energy consumption, improve building systems performance, and increase worker comfort and productivity.

Energy-efficient options are readily available for virtually all the products covered, and optimum energy performance can be achieved without compromising other attributes. The guide includes case studies to illustrate practical examples of energy and cost savings, and other performance benefits of more efficient equipment. It also lists the most efficient equipment for products such as luminaires, central air conditioners, heat pumps, chillers, furnaces, boilers, motors, and ice makers.

Contact ace3pubs@ix.netcom.com or visit the American Council for an Energy-Efficient Economy Web site: <http://aceee.org>.

Largest PV Manufacturing Facility in the World Now Open

From the the U.S. Dept. of Energy EREN News

First Solar, LLC quietly began production at its new 75,000 square-foot photovoltaic (PV) manufacturing facility in June. The fully automated facility in Perrysburg, Ohio, is capable of producing 100 megawatts of solar electric modules per year, making it the largest PV manufacturing plant in the world. At present, the company is gradually gearing up to its full production capacity.

To achieve its high output, First Solar is using a patented Vapor Transport Deposition process to apply thin films of cadmium telluride, a semiconductor, onto a glass substrate. A laminate layer is then added to protect the films. The company claims the process can produce 70 meters (roughly 230 feet) of product per minute.

First Solar is currently producing a 50-watt PV module, which in July received the Underwriter’s Laboratory recognition for electrical and fire safety. The company claims that it will provide a full-service solution for solar electrical systems by engineering and assembling modules into large arrays, adding ancillary electrical equipment, and installing the systems. See the First Solar Web site at www.firstsolar.com.

For more information on thin-film technology, see the DOE Photovoltaics Web site on EREN at www.eren.doe.gov/pv/thinfilms.html.

Best Management Practices: Final Guidance

(Reprinted, with revision, from the Ohio EPA, Division of Surface Water, Pretreatment Monitor Newsletter, April 2000. Originally written by Bill Landshof, Pretreatment Unit, Division of Surface Water)

Local discharger limitations are constantly being reduced as more and more industries tie into existing publicly owned treatment works (POTWs) and national pollutant discharge limitations become more restrictive. Because of the Great Lakes Initiative (GLI), mercury is now being regulated at extremely low concentrations. Due to low water quality values and domestic background concentrations, local limitations for silver and copper also have been significantly reduced over the years.

Recently, Ohio EPA re-evaluated its traditional methods of strictly applying numeric limitations to indirect

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dischargers and considered *pollution prevention* and *source reduction* as methods that could be effectively utilized to achieve stringent numeric local limits. Ohio EPA's Division of Surface Water has finalized new guidance, *Best Management Practices (BMPs) as Local Limits*, for implementing pollution prevention and source reduction as an effective tool for regulating indirect dischargers.

The BMPs would be used in conjunction with or in place of numeric local limits. The conditions of a BMP also could be issued as a term and condition of the indirect discharge permit. These terms and conditions would then be an enforceable condition of the permit and violations of the conditions may be subject to enforcement.

The guidance is available on the Division of Surface Water's Web page at <http://chagrin.epa.state.oh.us/guidance/guidance.html> or by contacting Bill Lanshof, Ohio EPA, Division of Surface Water, at (614) 644-2009. The guidance provides information on the purpose and background for the guidance, legal authority, applicability of BMPs as local limits, reporting requirements and example BMP permit language.

Cleveland Green Building Coalition Update

A recent article in Business Week stated that U.S. Employers could save \$58 billion a year in medical costs and approximately \$200 billion a year in worker performance improvements through improved indoor air quality. Indoor air quality is among the topics to be covered in an up-coming series sponsored by the Cleveland Green Building Coalition.

The organization's purpose is to generate broad support for various individual efforts, build momentum, and advance green building in Cleveland and Northeast Ohio through education, consultation, and cooperation.

The Cleveland Green Building Coalition's current educational activities include the Redesigning Cleveland for the 21st Century speaker series, which will bring four national experts to Cleveland to discuss ecological design and green building. Other activities include: the Cleveland Directory of Green Building Resources, currently available on the Web site www.clevelandgbc.org; a regular newsletter; regular membership meetings; and seven professional green building training workshops throughout the fall of 2000 and the spring of 2001.

September kicked off the Cleveland Green Building Coalition series of Professional Training Workshops

sponsored by the Ohio Department of Development's Office of Energy Efficiency.

Building Commissioning

This workshop will focus on building commissioning. This is the process of ensuring that a building and its systems are working to specification with the design intent and the occupants' needs. Mechanical systems and energy management control systems are a central focus of commissioning, and the process can be extremely useful in achieving optimal energy performance, particularly in buildings that utilize passive solar design and daylighting.

November 14th, 2000
9:00 AM - 12:00 PM
3 CEU Hours

Instructor Karl Stum assisted in developing the ASERTTI commissioning materials and is Director of Technical Services at Portland Energy Conservation Inc. at www.peci.org.

Integrating Green Design into Residential Building

This workshop is an opportunity to work with one of the countries leading experts to review plans and develop strategies to improve indoor air quality, decrease environmental impact, while maximizing financial savings. This workshop will use 20 green town homes currently being developed by Detroit Shoreway in the Cleveland EcoVillage as a case study.

December 5th, 2000
9:00 AM - 12:00 PM
3 CEU Hours

Redesigning Cleveland for the 21st Century, 2000-2001 Speakers, Cleveland Public Library

☛ November 16, 2000 5:30 PM Gunter Pauli, ZERI, Geneva, Switzerland

☛ January 9, 2001 5:30 PM Joyce Lee, Deputy Chief Architect for New York City

All speaker events are free, but require pre-registration. Call (216) 732-3385, or send an email to clevelandgbc@earthlink.net.

For More Information Contact:

Cleveland Green Building Coalition
3214 Monroe Ave
Cleveland, OH 44113
(216) 732-3385
Clevelandgbc@hotmail.com
www.clevelandgbc.org

Focus on Mercury in Schools

We have all seen the reports and the newspaper headlines about problems schools have had with mercury. For example, two recent incidents in the city of Springfield involved children with mercury contamination. There is still plenty of mercury sitting in schools, according to spill incident reports from state and federal agencies. Focusing on mercury in schools can achieve all of the following:

- help educate students, teachers and administrators about the health hazards and environmental fate of mercury;
- promote the proper management and recycling of mercury and mercury-containing products at schools;
- promote use of alternative products that do not contain mercury; and
- prevent mercury spills and promote spill cleanup.

Information and educational materials about mercury and mercury in schools—including curricula, fact sheets, and activities—can be found at www.mercury-k12.org. For further information on mercury, see www.epa.state.oh.us/opp/mercury_pbt.html, or contact Bill Narotski, Office of Pollution Prevention, (614) 728-1264.

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You can make the publication of Prevention Quarterly more environmentally friendly. Interested? Good. E-mail the Office of Pollution Prevention at p2mail@epa.state.oh.us, and request that we send you an electronic copy, an Adobe Acrobat PDF file, or a message indicating the newest version is now available on our Web page with the appropriate Web address. It's that easy to make a difference.

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