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Minnesota Technical Assistance Program | University of Minnesota | 2005 issue 2

preventing pollution

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Celebrating 20 Years

The Minnesota Technical Assistance Program is celebrating 20 years of helping Minnesota businesses prevent pollution

Celebrate with us!

Join MnTAP in celebrating our 20 years of working with Minnesota businesses to prevent pollution on November 15, 2005, from 4:00 p.m. to 6:00 p.m.

The celebration will be held in the A.I. Johnson Room, McNamara Alumni Center, on the University of Minnesota Minneapolis campus. A reception will be followed by a program featuring 3M and Ridgeview Medical Center sharing their companies' perspectives on pollution prevention.

Pollution prevention

In our 20 years of service, MnTAP has responded to over 26,000 requests for technical assistance from Minnesota companies through telephone assistance, site visits, student intern projects, pollution prevention teams, presentations, workshops and its Materials Exchange program.

MnTAP has helped businesses save nearly $18 million in first year savings. Companies receiving MnTAP assistance have documented reducing over:

- 13.1 million pounds of air emissions
- 324 million pounds of solid waste
- 9 million pounds of wastewater loading
- 307.8 million gallons of water

"We're proud to have worked with so many Minnesota companies on pollution prevention," said Cindy McComas, MnTAP director. "People in Minnesota businesses want a clean, healthy environment. They want to find ways to reduce waste at the source."

Join MnTAP in celebrating pollution prevention. Reply by November 10 at <www.mntap.umn.edu/20years> or call 612/624-1300. ■

route: health and safety | maintenance | owner/president | process engineer | purchasing

3M—30 years of pollution prevention

3M is celebrating the 30th anniversary of its Pollution Prevention Pays (3P) program. Over the last 30 years, the program has prevented 2.2 billion pounds of pollutants and saved nearly one billion dollars based on aggregated data from the first year of each 3P project.

In 1975, 3M adopted a global corporate environmental policy and launched the 3P program. One of the directives in the policy is that 3M "will prevent pollution at the source wherever and whenever possible."

3M was breaking new ground. Applying pollution prevention on a company-wide basis and documenting the results had not been tried before. Now the company is pursuing sustainable development as it looks towards its future, and how to handle the future from an environmental perspective.

"In order to drive continuous improvement, we have to use innovative solutions. We have to ask ourselves 'How can we make our products better? How can we improve on what has been done over the past 30 years?'," said Jim Kotsmith, 3M Environmental Initiatives and Sustainability.

"The 3P program is an integral part of 3M's sustainability strategy. 3P is about coming up with better ways of making products so we have resources for the future. If it fits within the cost structure of saving money, it works for business," noted Kotsmith. "3P is the essence of sustainability in its early phase. It's alive and well today at 3M, even more so than it was 30 years ago."

Sampling of pollution prevention projects

3M employees worldwide have completed over 5,600 3P projects. The 3P program depends directly on the voluntary participation of 3M employees. Innovative projects are recognized with 3P awards. Here are a few examples.

Abrasive-backing production process. The Alexandria facility reformulated its process for producing abrasive backing. The new process improves product performance and consistency, and nearly eliminates air emissions. It prevented three tons of air pollution and saved $45,000 in its first year.

Hot-melt process. Surgical tapes are now manufactured with a hot-melt process, eliminating 2.3 million pounds of solvents each year and reducing energy consumption by 77 percent.

Returnable steel crates. The Cottage Grove facility developed a collapsible, reusable steel crate to replace multi-piece, single-use wooden crates for shipping automotive products to Germany. The team's work eliminated 315 tons of solid waste and produced $101,800 savings in the first year alone.

Waterbased process. Scotch Magic Tape was reformulated in the 1970s. Since that time, the tape has been made with a waterbased adhesive process rather than a solvent-based one.

Jim Kotsmith will speak on pollution prevention from a manufacturing perspective and his facility's experience as a pollution prevention leader, on November 15 at MnTAP's 20th anniversary celebration. ■

Ridgeview Medical Center plans for a sustainable community

Unlike most businesses, health care facilities include improving public health as part of their mission statements. Embracing the health care ethic "first do no harm," Ridgeview Medical Center (RMC), in Waconia, decided to become a model sustainable hospital—the first of its kind in the nation.

Robert Stevens, Ridgeview's president and CEO, became a champion within the facility after attending a Natural Step seminar on sustainable businesses and communities. "After learning about Natural Step, I challenged staff to make the hospital an environmentally responsible facility. This builds on our commitment to the safety and health of our people and the community," said Stevens.

Each department developed key criteria for becoming sustainable that included an objective, steps to achieve the objective and a list of who is responsible for those steps. The criteria enable staff to track their goals and measure their progress in each area.

"Ridgeview has taken its sustainability initiative seriously. Staff have looked at everything they can. They've really made a cultural and operational shift toward environmental improvement, building on their commitment to community health," said Catherine Zimmer, MnTAP health care specialist.

Sampling of pollution prevention projects

RMC won a 2003 Governor's Award for Excellence in Waste and Pollution Prevention for applying pollution prevention strategies to improve the safety and health of the organization and the community. Here are a few of its successes.

Concentrate cleaners. Switching from ready-to-use cleaners to hyperconcentrates dispensed in a closed-handling system reduces the chance of spills and splashing, as well as decreases the volume of solid waste created. One quart of concentrate disinfectant replaces 180 one-gallon containers.

Fractional distillation. RMC distills formalin, as well as alcohol and xylene, from its histopathology lab. The equipment reclaims 90 percent of the formalin.

Infectious/red bag waste. This regulated medical waste costs five times as much to manage as solid waste. Staff working with isolation patients were throwing linens away as red bag waste. But, the linens can be reused because they are washed for infection control. A training effort was made to inform staff about what is infectious waste, and signs were posted at collection points instructing on the proper collection.

Less-toxic sterilants and disinfectants. The hospital took a good look at its disinfection practices and determined where disinfection was unnecessary and cleaning practices were sufficient. It also substituted less-toxic chemicals for ethylene oxide (EtO), glutaraldehyde and phenolic disinfectants.

Mercury-free equipment. Mercury in equipment and chemicals has been virtually eliminated. For example, sphygmomanometers and esophogeal dilators were replaced with mercury-free alternatives.

Water. To reduce water use, Ridgeview installed flow control devices on toilets, sinks and shower heads; uses condensate from air handling units as make-up water for the cooling towers; replaced portions of the lawn with more drought-tolerant native plants; among other activities. Despite the organization's growth it has improved the efficiency of water use by 21 percent.

Robert Stevens will speak on pollution prevention from a health care perspective and his facility's experience as a pollution prevention leader, on November 15 at MnTAP's 20th anniversary celebration. ■

Using compressed air

Giving paint the blow off

K-Bar Industries, Inc., Faribault, wanted to reduce the non-value added cost of sending racking fixtures out for burnoff.

Master hooks hang 20 to 30 inches from the powder paint line conveyor. They hold three-foot long racking bars which part hooks are hung from. Because these racks attract powder paint during the electrostatic coating they had to be removed after each run and sent for burnoff.

This past year the company installed air jets that blast air across these top two fixtures, blowing off the loose powder after paint is sprayed onto the parts. By preventing paint buildup on the fixtures, fewer racks need to handled and sent for burnoff.

The compressed air jets are activated by a photo eye as the parts pass. The jets are carefully aimed at the top two racking fixtures so they do not blow paint off the parts being coated. The blown-off powder can be reclaimed for reuse.

If the jets are not out of the way, they can be hit when large parts are run. The jet system was designed to "break away," moving on a spring loaded arm, to prevent it from breaking or damaging parts on the line.

Boyd Jones, of K-Bar's industrial engineering team, designed and built the jet system. Although the system is still considered in development, it is working well. Periodically, the line operators need to manually adjust the air jets.

"This work was an offshoot of having a MnTAP intern here," said Dann Henseler, industrial engineering manager. In 2002, a MnTAP intern helped the company save over $44,000 by reducing paint waste and burnoff.

The additional energy used to power the compressed air jets is offset by the amount of paint that can be reclaimed. Henseler estimates that labor costs to manage paint-coated racking is reduced by $40 a day and burnoff costs are reduced by $100 a day.

Evaluating compressed air use

Compressed air is probably the most expensive form of energy available in a plant, according to the U.S. Department of Energy.

K-Bar verified that compressed air was the right choice for its application. But, compressed air is often used when other options would be more economical. For example, instead of using compressed air to aerate tanks, use mechanical means. For cooling, use fans.

Site visit—cooling the compressor

Metropolitan Council Environmental Services asked World Aerospace Corporation if it could reduce its wastewater. When investigating how to reduce wastewater from cooling the air compressor, the company asked Kyle Bartholomew, MnTAP engineer, to evaluate its air compressor system, with two compressors and a dryer.

The company uses an air-cooled compressor nine months of the year, and a water-cooled unit during the summer because it doesn't put off as much heat as the air-cooled unit.

Using the company's measurements, Bartholomew helped evaluate payback for closed loop cooling—too expensive for the size of World Aerospace's compressor. Based on his research, the compressor needed to be at least 75 to 100 horsepower to justify a closed loop system.

"Kyle helped me figure out if I had options and what they were," said Kim Phelps, director of special projects and safety at World Aerospace. "Now I'm looking into new, more efficient equipment that can save us money on water coming in, on water going out and on power to keep the system going."

To evaluate if your company is using compressed air efficiently and to identify alternatives to using compressed air, call MnTAP for assistance. Links to resources and the K-Bar intern summary can be found in this article in the online *Source*. ■

Hazards left in the wake of disasters

Hurricane Katrina serves as a reminder that hazardous materials can unexpectedly become a threat to public health and the environment. Make pollution prevention part of your emergency preparedness.

Hazards after the hurricane

Hazardous material specialists were asked to come to New Orleans for six months to assist with cleaning up the city.

Floodwaters pumped into Lake Pontchartrain contained chemicals, petroleum, industrial waste and sewage. A Washington Post article stated that several scientists and environmental experts said the floodwaters were likely to have infiltrated the area's three Superfund waste sites—sites designated as having the worst hazardous waste contamination nationwide—and become polluted with a range of contaminants.

The U.S. Environmental Protection Agency (EPA) is conducting sampling and testing for a broad array of toxic chemicals to identify contamination in order to ensure the safety of returning inhabitants or for redevelopment.

The good news is that the emergency response preparations of large companies appear to have been effective. The companies reported that their hazardous materials were contained.

Minnesota emergencies

Although Minnesota does not need to worry about hurricanes, parts of the state do flood. Cleanup and rebuilding in Minnesota after the 1997 Red River Valley flood cost over $190 million.

"Floods give a lot of advance notice when they will occur, allowing businesses time to prepare their facilities," commented Dorene Fier-Tucker, Minnesota Pollution Control Agency (MPCA) Emergency Response Team. But, tornadoes, which can hit anywhere around the state, don't give much notice. And, we can't easily predict how destructive they will be. Terrorist incidents are another unpredictable threat.

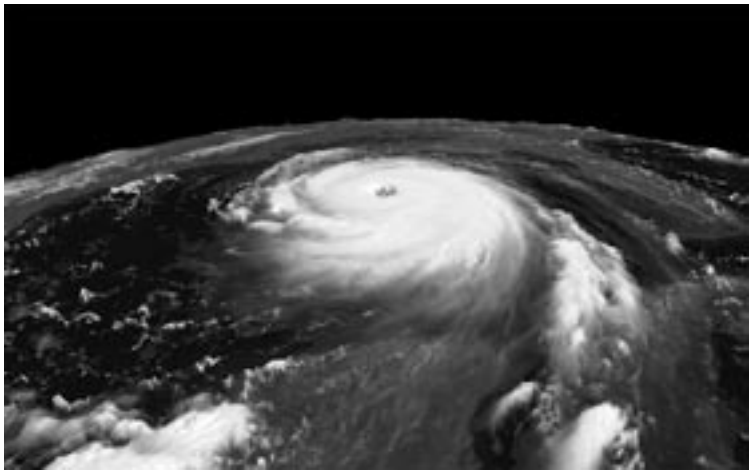

Photo courtesy of NOAA

After a natural disaster, petroleum from damaged or flooded tanks is a common source of contamination, leaving behind oil slicks and contaminated land and debris.

"I've seen strange things because of disasters. Huge tanks tip over. They move a few inches across their concrete pads or down the block," said Fier-Tucker. "You can never tell what will happen in a disaster."

Following good business practices for managing chemicals can help reduce disaster-related risk.

- ❑ Store material properly on a daily basis to help build in safe guards.
- ❑ Practice just-in-time purchasing to minimize the amount of toxic chemicals on-site.

Pollution prevention—the best solution

One take away message from Hurricane Katrina and other disasters is if you don't have hazardous materials on site, you don't create hazardous waste—even when disaster strikes.

Include pollution prevention as part of your facility's emergency preparedness planning.

- ❑ Replace toxic substances with less toxic or nonhazardous substitutes, where possible.
- ❑ Reduce the volume and number of different chemicals used.

For pollution prevention assistance, contact MnTAP. Links to information on MPCA's newly developed *Standard Operating Procedures for Natural Disasters and Terrorism Incidents* written for emergency responders, as well as other emergency planning information, can be found in this article in the online *Source.* ■

Ten years of reuse

By Jessica Nytes

Over the last ten years, Minnesota businesses using the Minnesota Materials Exchange program have kept 10,900 tons of waste out of the landfills and have collectively saved over $7 million in avoided costs.

Analyzing the history of 3,200 exchanges, Suzy Mellem, Materials Exchange coordinator, has learned what materials move well and what ones don't.

"Office equipment and supplies, packaging materials, plastic drums and wood pallets are some of the easiest materials to find users for through materials exchange," said Mellem.

The fact that the exchange program is used mostly by commercial services, retail businesses and small manufacturers is one explanation for the types of materials that move quickly through the program.

Ten years of listings have shown that chemicals in opened containers are difficult to find new homes for. Businesses do not want to risk that a product is contaminated.

On occasion, rare and unusual materials may be reused through the Materials Exchange program. A barn, 30-foot bridge, 32,000 pounds of jelly and a chicken plucker all have been exchanged between businesses.

Mellem assures, "If companies have reusable items in good condition, we'll help try to connect them to someone who can use them."

Most frequently exchanged materials

1. Wood pallets
2. Plastic drums
3. Office furniture
4. Packing peanuts
5. Plastic buckets
6. 3-ring binders
7. Cardboard boxes
8. Office supplies
9. Bubble wrap
10. Photocopiers/printers

Ongoing relationships

Some Materials Exchange users form relationships with each other that result in continuing exchanges. A Minnesota wood product manufacturer was unable to reduce the 75 tons of sawdust it produced each week. Through the Materials Exchange program, the manufacturer connected with beef and dairy farmers to forge continuous exchanges that reuse all of the sawdust as animal bedding, keeping it out of the landfill and saving all parties money.

Listings 24-7

Electronic technology has helped MnTAP reduce paper waste by eliminating the need for a printed catalog. Not only is waste reduced, businesses have 24-hour-a-day access to the most current listings on the Materials Exchange Web site. If you don't want to go to the Web site, you can join the listserv to receive twice monthly emails containing the newest material listings.

Materials Exchange client Tom Fruetel, maintenance facility manager of the North Star Processing plant, in Litchfield, appreciates the format of the program that allows for both "available" and "wanted" listings on the Web. He loves the ease of the Internet for making reuse contacts, "I don't have to be making a million phone calls," said Fruetel.

Real people, local

Businesses can call MnTAP or any of the eight programs around the state that make up the Minnesota Materials Exchange Alliance to talk with someone knowledgeable about materials exchange. "Having programs throughout the state is beneficial because Alliance members have connections with the businesses in their areas," Mellem explains. "Alliance programs provide local service to businesses."

Don't let another ten years pass by without getting your business on the Materials Exchange. See the listings on the next page and visit <www.mnexchange.org> to find out what other materials are currently available. For more information call Suzy Mellem at 612/624-5119 or 800/247-0015. ■

materials exchange

A materials exchange program lists one company's unwanted material and makes it available for use by another company. The lists below are examples from the Minnesota Materials Exchange.

For more information, call MnTAP at 612/624-1300 or 800/247-0015. Or, visit **<www.mnexchange.org>.**

Materials available

Dust mop treatment: 32 gallons. Merco T-C-10. Opened. Full 30-gallon drum and partial drum. Free. St. Peter. [17557]

Foam scrap: 5 to 10 boxes, 24 x 24 x 36 inches, per month. 1 to 24 inches long, 0.25 to 1.5 inches thick. Chair seat and back trim. Free. St. Paul. [17507]

Phosphoric acid: 400 pounds. 85%. Unopened. In 200-pound containers. Must pick up. Free. St. Paul. [17587]

Printing press: One. Original Heidelberg Windmill. Maximum sheet size 10 x 15 inch. In use. All accessories included. Must dismantle and haul away. Fee $1,000. Maplewood. [17508]

Stain, base coat: 45 gallons. PPG Rouge Toner. In 55-gallon drum, opened. Free. Minneapolis. [17451]

Stain, base primer: 45 gallons. PPG Autumn Toner. In 55-gallon drum, opened. Free. Minneapolis. [17450]

Stripping/etching agent, powder: 20 pounds. Technic TSC-1501, powder. Opened. In original packaging. Free. Brooklyn Park. [17546]

Materials wanted

Drill press: One. For occasionally shaping wood, metal and plastic. Prefer free. Duluth. [17596]

Drums, plastic: Any amount. 15 to 55 gallon. Will pay $2 each. Minneapolis. [17525]

Fence posts: 50 or more. 2 to 5 inch diameter, minimum 12 inches long. Prefer weathered cedar, round. For wildlife display. Prefer free. Backus. [17550]

Floor scale: One. Prefer free. Vadnais Heights. [17555]

Jewelry display: One. Prefer stand up. Prefer free. Woodbury. [17584]

Pallets: Any amount. Will pick up in southwestern Minnesota. Will pay fee for 40 x 48 inch, 4-ways. Prefer free. Ruthton. [17552]

Sprinkler head covers: 12 or more. Tyco Phantom model 1346-7. White finish. Will pay fee. St Paul. [17529]

Wire feed welder: One. Prefer free. Winsted. [17531]

Successful exchanges

- An Eagan computer company donated over $3,000 worth of office furniture to local businesses.
- A St. Paul distribution company donated 125 computer desks to schools.
- A Lamberton organization received $2,100 worth of high pressure sodium lights and fixtures from a manufacturer of lights.
- A Duluth company receives 150 foam rubber sheets a quarter from a local ice cream vendor. ■

Demand in China for efficient, clean production

China has a great demand for U.S.-made technologies for energy efficiency and cleaner production, as well as consulting services in these two fields, according to the Minnesota Trade Office, the state's export promotion agency.

As part of Governor Pawlenty's November 2005 trade mission to China, the trade office wants to promote Minnesota's strengths in energy efficiency and clean production.

"The U.S. manufacturers who are winning in today's economy are exporting," said Al Frink, Assistant Secretary for Manufacturing and Services in the U.S. Department of Commerce. "Nearly one-fifth of all Minnesota manufacturing jobs depend on exports and China presents an opportunity to break into one of the fastest-growing consumer markets in the world."

Several Minnesota manufacturers and consulting firms are planning to join this trade mission. See this article in the online *Source* if you would like to know more about the export opportunities in this field, and possibly have your company promoted to interested Chinese industrial leaders and buyers during the trade mission. ■

helping businesses implement industry-tailored solutions that maximize resource efficiency

mntap

The **Minnesota Technical Assistance Program** helps businesses and industries maximize resource efficiency, prevent pollution and reduce waste—which saves time and money. Located at the University of Minnesota, MnTAP provides free technical assistance tailored to individual businesses. By reducing waste and increasing efficiency, companies save on disposal and raw-material costs and make working conditions healthier and safer for employees.

MnTAP is funded by a grant from the Minnesota Office of Environmental Assistance to the University of Minnesota, School of Public Health, Division of Environmental Health Sciences.

calendar

Celebrating 20 Years

Tuesday, November 15, 2005

4:00 p.m. - 6:00 p.m.
A.I. Johnson Room
McNamara Alumni Center
Minneapolis
University of Minnesota

4:00 p.m. Reception
4:45 p.m. Program

20 years of preventing pollution

Bill Toscano, University of Minnesota, Environmental Health Sciences

Business perspectives on pollution prevention

Jim Kotsmith, 3M Environmental Initiatives and Sustainability, and Robert Stevens, president and CEO Ridgeview Medical Center, will share how pollution prevention has impacted their manufacturing and health care facilities.

For more information and other events, visit MnTAP's online calendar at <mntap.umn.edu/resources/cal.htm>.

☎ Call MnTAP 612/624-1300 or 800/247-0015 • www.mntap.umn.edu

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