



15th Annual  
Governor's  
Pollution Prevention  
Awards



October 25, 2001  
The Crowne Plaza  
Springfield, IL

Hosted by:  
The Illinois Waste Management & Research Center,  
a division of the Department of Natural Resources



## 15<sup>th</sup> Annual Governor's Pollution Prevention Awards

The 2001 Governor's Pollution Prevention Awards are presented to honor businesses and organizations in Illinois that have successfully reduced the generation of wastes. These can include toxic air contaminants, wastewater, infectious wastes, plus hazardous and other industrial process wastes. By recognizing the outstanding pollution prevention achievements of these organizations, it is our hope that others will be encouraged to join this effort to help both the environment and the economy. It has been shown that by adopting pollution prevention strategies businesses can increase the efficiency of their operations and reduce their impact on the environment.

Since 1987, the Illinois Waste Management & Research Center has worked with the Governor's Office to recognize outstanding pollution prevention efforts in our state. Categories in the Governor's Pollution Prevention Awards include small, medium and large industries, trade organizations, vendors/suppliers, communities, educational institutions, service organizations and continuous improvement.

This year, the first "Innovate Illinois" award will be presented for Pollution Prevention Technology. The winner of the award must illustrate how innovative the new technology is, discuss the long-term beneficial impact of the technology on the environment, and show how it has been implemented. The "Innovate Illinois" award is funded by the Illinois Conservation Foundation. This year's winner of the Innovate Illinois Award will receive a \$1000 scholarship to be donated directly to an accredited college or university in the recipient's name. The scholarship can be used for a specific student or for general use.



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**Small Industry Category**

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**2001 Governor's Pollution Prevention Award Winners**

**Vendor/Supplier Category**

**Hardwood Line Manufacturing Company**

Hardwood Line Manufacturing (HLM) in Chicago, IL produces process equipment, tanks, plating barrels, and rinsing equipment, for the electroplating industry. The company has developed special application and rinsing systems for applying and removing plating chemicals.

Hardwood also has developed a process of specially shaped drainage holes that improve the drainage for plating barrels. Hardwood's unique design for plating barrels and rinse systems result in 100 % faster plating than similar process equipment. It also allows for 25 % less dragout than other types of equipment. These improvements lead to both increased production efficiency and reduced pollution.

Installation of Hardwood equipment and processes allowed one Chicago area electroplater to reduce water usage by 60%, increase productivity by 35%, and improve yield to 97 %. That company had been on the "worse violators list" from the Metropolitan Water Reclamation District of Greater Chicago's (MWRDGC) for many years. Thanks to the Hardwood Line equipment, that company now stays consistently in compliance.

**Small Industry Category**

**Able Electropolishing Co., Inc.**

Able Electropolishing is a small company in Chicago that faced the ever-increasing challenge of becoming environmentally compliant and staying in business. The company launched a conservation effort that included flow restricters, cascading rinse tanks, conductivity meters controlling automatic valves, and a recycling system for cooling water. The new systems cut water use by 66% and saved Able almost \$68,000 last year. The company also improved its cleaning operation to include state of the art vapor degreasers and other cleaning technologies. This effort prevented



the release of over 28,000 pounds of waste materials last year, and Able estimates that it saved the company \$75,000.

Able also invested in a new plate and frame filter press to de-water the sludge resulting from its wastewater treatment process. Because of this change, Able generates only 1/3 the amount of sludge it generated a few years ago. Through its investment in research and development the company also has been able to reduce the amount of raw materials it uses, recycle more cardboard and paper, and make its lighting more energy efficient. While Able has significantly reduced its environmental impact, it has increased its economic impact. The company has more than doubled its number of employees, increased its production lines and increased gross revenue since making its environmental improvements.

### ***C.J. Saporito Plating Company***

C.J. Saporito Plating Company in Cicero is a small industrial facility that specializes in metal finishing. The company has made a commitment to conservation and pollution prevention for years. To accelerate the process, it joined a Strategic Goals Program and set goals toward reducing water and energy consumption, reducing waste, and decreasing its metal emissions to both water and air. Within a year, CJ Saporito met all of its goals. The company reduced its water usage by 50% through implementing ion exchange, electrical coagulation, installing flow restrictors and reusing liquids. CJ Saporito saw a 25% energy reduction by instituting regular preventive maintenance for all pumps, motors, and rectifiers as well as replacing all Mercury Vapor lighting with HID Metal Halide lighting.

The company has also implemented a number of systems that allow for reuse of much of the metals used in the systems. It is able to utilize 98% of its metals again through anodizing purification, regenerative electroless nickel, and redesigning the barrels for barrel plating. Through these technical advancements, CJ Saporito Plating has gained an overall decrease in air and water emissions to help the environment and the people of Illinois.



### ***Isotech Laboratories, Inc.***

Isotech Laboratories is a service laboratory located in Champaign that specializes in isotopic analysis of gases, water and organic solids and liquids. One of their major areas of work is doing mud gas analysis for oil companies as they drill wells. Isotech received thousands of such samples in "gas bags" each year. The gas bags had to be sealed in metal cans, the can is then placed in Styrofoam, wrapped in plastic and placed in a cardboard box. This entire unit is the UN approved HAZMAT shipping box.

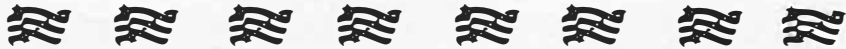
Isotech develop a better method with a system called "Isotubes." The reusable Isotubes are metal, and therefore can be shipped in a UN certified box, which Isotech designed and tested. The shipping box used for 25 tubes is equal to the shipping box used for four bag samples in the past. This new system reduced the waste volume produced by 94%, which will cut waste for Isotech by more than 11,000 pounds this year.

The Isotubes also cost about 50% less than the gas bags. With fewer boxes to ship, the shipping charges are reduced, especially when the flammable gases must be shipped by express delivery. The fact that most of Isotech's clients have switched to Isotubes indicates how innovating and simple they are to use. The simplicity of the system also has brought new customers to Isotech.

### ***Swenson Spreader Company***

Swenson Spreader manufactures snow/ice control equipment at its Lindenwood facility. The company undertook a variety of projects to improve its environmental footprint:

- Powder coating process - Swenson replaced the previous system where products were wet painted and air-dried. The new system has reduced emissions at the facility almost 30 tons. The process also recycles water and saves the company 45,000 gallons of water and \$1,500 in utility costs annually.
- Evaporator project- Swenson installed an evaporator to eliminate hauling of wastewater from the plant. The company estimates it will



save \$30,000 in annual transportation fees, permit costs, laboratory analysis and administration.

- Parts washer project - The Company had used a hazardous solvent-based cleaning chemical and parts washer tank leased from another company. Swenson bought a parts washer and changed it to a water-based cleaning solution to eliminate both a hazardous waste stream and a fire hazard.
- Fluorescent lamps are being replaced by new low-mercury content tubes, and the old tubes are being sent to a recycler. All aerosol applicators contain volatile organic material and hazardous fumes. Swenson installed a device for aerosol applicators which traps and filters the remnants of air emissions, captures residue paint and renders the container useless. In 2000, Swenson recycled more than 19 tons of paper and cardboard from the plant.

## Medium Industry Category

### ***Kester Solder Company***

Officials at the Kester Solder plant in Des Plaines set a goal of striving for zero discharge of industrial waste. If the primary filtration system works perfectly, it is possible to filter the effluent that is normally discharged into the sewer system and use the recycled water for purposes such as cooling tower water. But Kester wanted to go a step further and re-use the water in chemical products. This meant that the water had to be ultra clean to avoid any contamination.

Kester developed a system using four types of membrane filters, differing primarily by the molecular size and weight of the contaminants they filter.

- ★ Microfiltration is the most porous membrane and removes particles from .01 to 5 microns
- ★ Ultrafiltration removes colloidal and suspended solids
- ★ Nanofiltration is the latest technology and removes inorganic solids
- ★ Hyperfiltration, commonly called reverse osmosis, removes



contaminates below .001 micron size. Reverse osmosis has been a means of improving the cleanliness of potable water, but few companies use it for cleaning industrial water

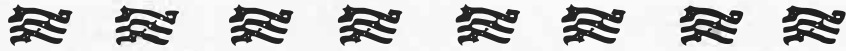
Kester now has stopped discharging water into the sanitary sewer and the recycled water enters into the chemical process cleaner than the water obtained from the city water system. The company avoids since waste into the environment and saves money through reduction of water usage, avoidance of sewer fees, eliminating sewer monitoring equipment, and solid waste disposal costs.

## Large Industry Category

### ***Midwest Generation EME, LLC***

Midwest Generation owns and operates 12 fossil fuel-fired generating facilities in Illinois. They are an independent power producer that generates electricity to sell wholesale on the open market. The company has installed low nitrogen oxides (NOx) burners and over fire technology. These changes will reduce NOx air pollutant emissions at eight coal fired power units. They plan to complete an additional seven units by mid-2003.

The first three installations in 2000 resulted in a reduction of 9000 tons of NOx emissions at the Joliet, Waukegan, and Will County plants. Low NOx burner technology is more economical than end of pipe controls, which rely on chemical injection and large catalysis. Capital costs for low NOx technologies range from \$10-\$40 per kilowatt hour. End of pipe controls range from \$80-\$160 per kilowatt hour. The company estimates that their initial investment will result in capital cost savings of about \$600 million compared to end of pipe controls. They also expect to achieve cost savings in operations, maintenance, energy consumption, catalyst disposal, and ammonia consumption.



## Continuous Improvement

### **Abbott Laboratories, Inc.**

Abbott Laboratories is a pharmaceutical company in North Chicago. The company took on four major pollution prevention projects in 2000.

1. In the past, Abbott used various hazardous materials in its the purifying equipment. The Abbott Advanced Technology Group developed new equipment that eliminated the use of hazardous materials and the generation of waste in the purification process. The new process eliminated 6,000 liters of hazardous waste in 2000.
2. Tritium is used in the research and development of pharmaceuticals to conduct drug safety evaluations. This process generates tritium waste in organic solvents. An Abbott team developed a technology that recovers 99.9% of the tritium, which previously had to be sent off site for incineration. The new process saves Abbott \$1.6 million annually.
3. The use of fast-acting oral anesthetics has grown substantially over the years but a problem persisted; they had to be packaged in glass containers. Abbott developed an unbreakable container for these drugs. Through use of these containers, Abbott will save \$200,000 annually in broken glass, and the product is recyclable. Patients also are saved from the risk of exposure to broken glass.
4. Native plant species were installed in selected turf grass areas, drainage swales, and a dry detention basin at the Abbott Park facility. As a result of this project, storm water runoff and quality were greatly improved, while ozone depleting emissions were reduced and habitats for wildlife were expanded.

### **American NTN Bearing Manufacturing Corporation**

The American NTN Bearing Manufacturing Corporation plant in Elgin manufactures precision bearings and bearing components. As a result of implementing an environmental management system, American NTN targeted a number of waste streams for pollution prevention and process efficiency efforts.

- ★ Production scheduling was used to reduce grease waste. By



scheduling bearings that used similar greases for manufacturing at the same time, the company reduced its grease use by 50-75%. This saves money and reduces operator time associated with cleaning out the pumps.

- ★ American NTN used a degreasing operation with an expensive and volatile solvent to clean steel balls prior to final laser inspection. The washing system did not clean well enough for the bearings to pass the laser inspection and false scraps were a problem. The company replaced it with a new washing system that uses odorless kerosene, which is a less flammable material. The company also purchased new inspection machines that allowed a greater range of cleanliness, so contamination and scrap ratios dropped significantly. The project required a \$400,000 investment, but the company is now realizing an annual savings of more than \$120,000 and 3.4 tons in emissions.
- ★ Spindle wheel bearing rings were shipped to the Elgin plant in non-reusable wooden crates from a forging vendor. The company designed and implemented use of a returnable metal crate system that eliminated the disposal of about 2500 at an annual cost savings of about \$86,000.
- ★ American NTN also developed a returnable packaging design for their wheel bearing production line. The useful life of the container is five years, which allows for 43 cycles of shipping and returning. This meant the company avoided the purchasing and disposing of 280,000 pounds of cardboard, 2,016 pounds of plastic wrap, and 2,400 wood pallets. The cost savings over is about \$105,600 over five years.

### **Caterpillar Inc. - Mapleton**

The Caterpillar plant in Mapleton is an iron foundry, casting engine blocks and engine heads. The outside of a metal casting is formed by a sand mold and the internal cavities are formed by three-dimensional sand shapes called "cores." Caterpillar decided to implement a new core making complex to reduce waste, protect employees and save money.



The Mapleton facility installed a new Loramendi core-making complex, which generates a 160% increase in production over the previous machine. Core resins contain volatile organic compounds (VOCs) which are considered air pollutants. The new machinery uses fewer resins, which reduces air emissions. The Loramendi cores have lower sand weights, which leads to reduced waste disposal volume. The new process means a reduction of 74,000 pounds of resins and 1.4 million pounds of waste in sand. The new process also means an annual saving of \$2.7 million to the Mapleton plant, which keeps it profitable and means jobs for the community. It also reduces employee exposure to chemicals, there are less repetitive injuries, VOC emissions are reduced, and less energy is used to make the cores and to ship and process raw materials.

### **Caterpillar Inc. - Technical Services Division**

Caterpillar Inc's Technical Services Division (TSD), located in Peoria, strives to take the lead in creating and developing innovative pollution prevention technologies. TSD formulates strategic partnerships with internal customers to develop process improvements that reduce manufacturing and warranty costs and reduce natural resource consumption and other environmental impacts.

The TSD developed and implemented three projects including:

- Advances in welding technology have significantly reduced the fume emissions and slag waste. Employees are safer and .35-1.25 million pounds of waste have been reduced annually. Caterpillar Inc. is also saving \$24,000 annually on disposal costs.
- The High Velocity Oxygen Fuel (HVOF) thermal spray process has replaced chrome plating in five of Caterpillar's dealerships. This new process developed by TSD, no longer uses hexavalent chromium, a carcinogen, and eliminates the production of wastewater. The waste that is generated, the over spray powder and grit blast media is reclaimable. Caterpillar estimates saving \$374,680 annually on disposal and clean-up costs.
- The Visual Research Center is used to develop and test new designs prior to building prototypes. The virtual environment,



known as the Virtual Proving Ground, allows designers to experience and test a machine before raw materials are used to create a prototype. Prior to the implementation of the Virtual Proving Ground, Caterpillar would create 7 prototypes on average. For example, to build **one** prototype for Caterpillar's smallest agricultural tractor, 22,130 lbs of natural resources would be used and 70.95 cubic feet of waste volume would be produced. Caterpillar estimates \$1,000,000 in cost savings to develop, build and test one prototype.

### **Commonwealth Edison (ComEd)**

Commonwealth Edison (ComEd) is headquartered in Chicago. The utility company continues its ongoing commitment to environmental excellence through fostering community partnerships, promoting research and development and innovation. To meet the growing demands for power, while saving precious natural resources, ComEd is focusing on renewable energy throughout its service territory. Some of the programs that ComEd has implemented in its service area include:

- Community Energy Cooperative- this program allows communities to set up a cooperative that enables them to control their energy use and cost as well as benefit from advancements in energy technology.
- Chicago Public School Solar Partnership-ComEd is working to raise awareness and educate the public about alternative energy sources. Solar electrical systems have been installed in two Chicago elementary schools and five other systems are to be installed this Fall.
- Solar Museum Initiative-all of the museum in Chicago will eventually have solar electric systems installed under this program. Systems have been installed in the Peggy Notebaert Nature Museum and the Field Museum. By the end of 2001, systems will be installed at the Art Institute, Mexican Museum of Fine Arts, and the DuSable Museum of African History.
- Wind and Photovoltaic Generation Pricing Experiment—ComEd is working with the Environmental Law and Policy Center to allow





customers to sell excess electricity from wind and solar systems back to the power company.

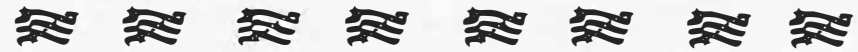
The solar systems that have been installed in Chicago will save approximately 25 million pounds of carbon dioxide from being emitted in the air over the next five years, the equivalent of 64 million miles of automobile emissions.

### **Homeshield**

Homeshield is a metal fabricating company located in Chatsworth. The company continued its commitment to pollution prevention through a variety of projects:

- ▶ Natural gas reduction project - Homeshield reduced the temperature of its afterburner which destroys Volative Organic Compound (VOC) emissions. This reduced the annual emissions, lower the use of natural gas, and reduced thermal fatigue on equipment
- ▶ Fluorescent lamp replacement project - the fluorescent tubes used for lighting in the plant contain mercury and lead. The company has replaced more than 90% of its fluorescent tubes with more environmentally friendly lights with much lower levels of mercury and lead.
- ▶ Metal scrap reduction project - by switching from stationary smash saws to mobile saws, Homeshield eliminated the need to run an inch of wasted material on each side of the lineal part produced (screen frame, window spacer, etc)
- ▶ Primer removal project - for many years Homeshield has painted aluminum screen frame material with a paint that requires a primer. By working with its product manufacturers, the company was able to produce a product that did not require a primer, which reduced air emissions and lowered operating costs.
- ▶ Returnable packaging project - Homeshield has been converting its "one-time use" cardboard package for thermo-window spacer shipments to returnable packages made of wood and steel. The success of this effort has caused other product lines to also convert to returnable packaging.

Homeshield estimates that these improvements have realized an annual



savings of more than \$235,000 with an annual reduction of over 215,000 pounds of discarded metal and cardboard scrap.

### **International Truck and Engine Corp.**

The International Truck and Engine Corp. facility located in Melrose Park continues to implement various pollution prevention projects in its efforts to reduce volume or the toxicity of any type of waste. The Melrose Park Plant has not generated ANY hazardous waste for the last three years.

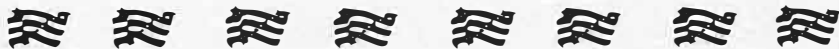
In its ongoing efforts to eliminate waste at the source, International replaced three old fashion cold parts cleaning with self-distilling parts cleaning units. The total waste reduction was approximately 480 gallons/month that translates into 99.5% waste and VOC emissions reduction. International estimates that its annual cost savings including labor is \$63,500.

Another major pollution prevention goal for the facility in 2000 was to reduce the usage of a tapping compound called Iloform 7132 that contains 45% Chlorinated Paraffin. By implementing a maintenance program and controlling the feed pressure allowed, the Melrose Park Plant saw a 53% reduction in the use of Iloform. These projects allowed the Melrose Park Plant to reduce its use of city water by 30 million gallons over the past three years.

### **National Manufacturing Company**

National Manufacturing is a family owned merchandiser of home and builder hardware operating factories in Sterling and Rock Falls. The company has been in business for 100 years and has maintained an ongoing environmental effort.

- Walgren Nickel-Brass Plating Line project - This new line replaced two antiquated plating lines. This line improved the racking and cleaning of parts, added the capability to lacquer and incorporated the ability to remove excess accumulated metal. A biological degreaser was included in the new line to promote waste reduction and an



automatic electrolytic nickel-stripping tank was included to eliminate the need for a nitric acid stripper. The process eliminated the use of 3,250 pounds of nitric acid annual and eliminated the dumping of 7,800 gallons of alkaline cleaner and a yearly reduction of more than 13 thousand gallons of other cleaner and acid. Total chemical use has been reduced by \$40,000 and more than \$104,000 is saved annually in labor hours. There the reduction in process time for the lacquer has produced an annual saving of \$147,000.

- Electroplating Process Improvement project - National has used an electroplating finishing system that applies a gray paint coating to closet hardware. Some changes in the equipment allowed for application of a new white finish that customers desired. The reformulation of paint allowed for elimination of a solvent routinely added to the gray paint to control thickness. And the new, white paint did not require pre-mixing with a solvent prior to use. This eliminated up to 405 gallons used per year, which means a yearly reduction of 1.5 tons of volatile organic content (VOC) emitted from this source.

### **Norcross Safety Products, LLC**

Norcross Safety Products, LLC is located in Rock Island. The company decided to improve its environmental impact through a variety of projects including:

- ◆ Implement of 100% recyclable parts washer fluids in the parts washer process. Historically Norcross used solvent in the parts washer fluids, although these fluids are non-regulated they are not 100% recyclable and ended up producing waste. The new program substitutes this spent solvent for a virgin solvent in the manufacturing process.
- ◆ In prior years, waste or used oil was sent out for disposal. NSP now has implemented a used/waste oil recycling program with outside fluid recovery service.
- ◆ In the past, any parts that were rejected and the flash trimmings in injection molding process and the cutting department were sent to the landfill. Every effort is made to reduce the number of reject parts by monitoring the cure process of mixed rubber compounds. NSP now reclaims and recycles these rejected rubber parts for use in making



athletic, recreational and safety surface products.

- ◆ NSP has implemented a program to manufacture “odd” rubber boots to match the “odds” in the packing department and make them usable pairs of boots.

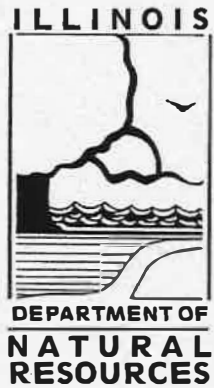
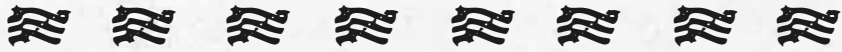
These programs result in an annual saving for NSP of \$336,000.

### **Noveon, Inc. (PMD Group)**

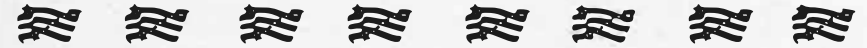
Noveon Inc. (formerly the PMD Group) facility in Henry provides chemical additives for the rubber, plastic and lubricant markets. By using Pollution Prevention (P2) techniques, the plant in recent years has gone from being a Large Quantity Hazardous Waste Generator to “Conditionally Exempt” status waste generator. Two projects highlighted this past year:

- ◆ The filtration media was improved in the plant. This resulted in a 10% increase in yield and a reduction in waste of 66,000 pounds per year. The company also will save an estimated \$107,000.
- ◆ Noveon began using a new technology which adds a coagulant to the rubber accelerator process. A wet scrubber has been used to catch fines for recycle to a filter system. The fines are small and difficult to filter. Use of the coagulant increases the size of the fines, which allows for easier filtering. The cost saving in improved yield alone is \$184,500. There also are cost savings in reduced waste treatment chemicals, energy and solid waste from the process.

Noveon realizes that there is positive community and environmental impact in reducing waste; and profits can be realized through capturing product or raw materials before it becomes waste. Being good stewards and smart business people are requirements in these competitive times.



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*“Pollution is nothing but the resources  
we are not harvesting. We allow them to  
disperse because we’ve been ignorant of  
their value.”*

**--Buckminster Fuller**