

December  
1995

# Waste Matters

A Quarterly Publication of the Waste Management Assistance Division, Iowa Department of Natural Resources



## Construction and demolition waste finds a "Home"

*Environmentally friendly and non-toxic home materials are expensive, low quality and an installation nightmare.*

This common image has been destroyed by the American Lung Association (ALA) of Iowa's Healthy House. Located in the NorthGlenn community in Johnston, the Healthy House is a standard Iowa home featuring healthy options for homeowners and builders. Recycled content products and alternatives to household hazardous materials were used throughout the house. With a priority on the overall wellness of the occupants and environment, the house is a marketable, high-quality, beautiful home.

"This house shows the choices that people have available in order to make their home more air, energy and environmentally friendly," said Jeanine Mixdorf, ALA director of public relations.

The project is a partnership among the ALA, Hubbell Realty Company, and Jerry's Homes. Air, energy and environmental technical assistance was supplied by Metro Waste Authority (MWA), the Waste Management Assistance Division of the Iowa Department of Natural Resources (DNR), and the MidAmerican Energy Company.

Through the use of energy-efficient products, reduced pollutants and non-toxic materials, the house created an environment of wellness both inside and out. In addition to displaying healthy options and products, the project offered an opportunity to gather information about construction and demolition (C&D) waste generation and recycling. Although a major source of landfill waste, C&D waste recycling is a relatively unexplored area of recycling in Iowa, according to Jeff Geerts, environmental specialist with the DNR.

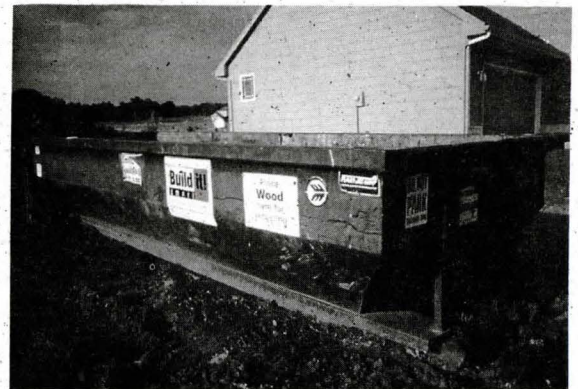
Every year more than 250,000 tons of C&D debris is dumped into Iowa landfills, said Geerts. This waste is costly — environmentally and financially. With tipping and hauling fees steadily increasing, C&D waste disposal has become an expensive part of doing business for contractors. Recycling can be part of the solution to this growing problem.

During the construction of the Healthy House, MWA coordinated the collecting and recycling of the C&D debris including wood waste and cardboard. While drywall debris was not recycled, the amount generated was calculated for future study.

"We are just getting our feet wet in dealing with C&D debris. We don't have a lot of data yet but these kinds of projects help us collect more information. We will then use that information to educate contractors on recycling C&D

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*Wood waste was collected at the construction site and hauled to a recycling center.*



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*Waste Matters*

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## Regulatory Update

### White goods allowed at landfills; recycling a better option

*Because of safety concerns of hazardous components, the proper handling of white goods for recycling or disposal is essential. Rules concerning white goods including microwaves are explained in the Iowa Code and the 1994 Iowa Recycling Directory. Landfill operators and recyclers should be familiar with these rules.*

**T**raditionally, white goods -- large household appliances including refrigerators, air conditioners, microwaves, washing machines, water heaters, freezers, humidifiers and dishwashers -- were landfilled as part of the solid waste stream. And, it was not uncommon to see appliances in ditches, creeks and crevices. While opportunities for recycling existed, little was done to collect the hazardous materials they contained. Fortunately, state and federal laws now control the collection and disposal of white goods.

Landfilling white goods is legal in Iowa, according to Lavoy Haage of the Solid Waste Permit Section of the Department of Natural Resources, and easy recycling options are available. Depending on the area, white goods are collected by waste haulers, scrap processors, and appliance retailers. Landfills can collect white goods and hold for recyclers for a limited time.

The 1994 Iowa Recycling Directory contains a listing of all white

good recyclers in Iowa as well as information regarding the handling and processing of white goods. To receive a copy of the directory contact the DNR at (515) 281-8941.

#### Confusion over proper microwave disposal

According to Haage, some confusion over the handling of microwave disposal has arisen. It stems from the fact that radioactive materials are prohibited from disposal in Iowa landfills. While microwaves give off low levels of radioactivity when in operation, they do not typically contain radioactive materials.

However, landfill operators should be reminded that all white goods received at landfills must be checked for hazardous components.

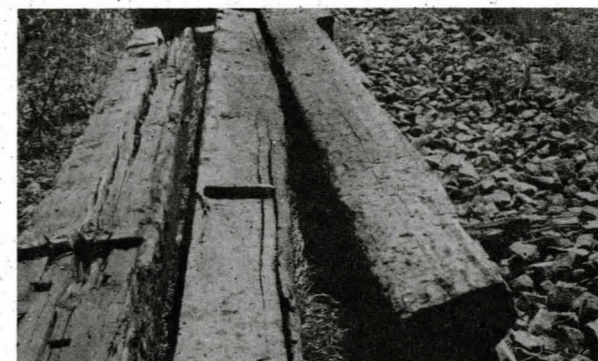
Microwaves made prior to 1978 contain oil-filled capacitors which may contain polychlorinated biphenyl (PCB). The U.S. banned PCB capacitor production and use in appliances in 1978. Components containing PCBs must be removed prior to processing or landfilling and stored in approved containers until transported to an EPA-approved hazardous waste facility.

Capacitors that do not contain PCBs are required by law to be labeled as not containing PCBs.

In addition, landfill operators need to be aware that many white goods have switches and temperature gauges that contain small amounts of mercury. These devices also require manual removal before recycling or disposal.

For questions regarding disposal of white goods or to receive a copy of the legislation contact the Solid Waste Permit Section at (515) 281-8941.

## Eco-tie: an ecologically safe railroad tie for the future



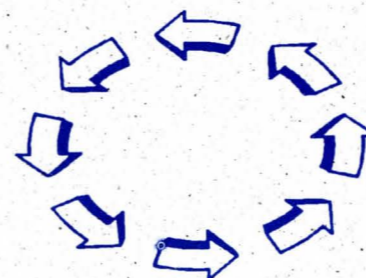
Millions of carcinogenic railroad ties line railroad tracks across the country.

*This unique railroad tie is a viable alternative to traditional creosote covered timber and concrete ties.*

**E**very year 12 to 15 million railroad ties are replaced in the U.S. Most of these ties are composed of timber treated with creosote, a wood preservative and protectant. Because creosote is carcinogenic and leaches into groundwater, tie disposal has become a major concern for the railroad industry and government organizations concerned with landfill management.

With so few alternatives, most discarded timber ties are stacked in remote locations or simply tossed by the side of the track.

Recently, an innovative alternative to timber and concrete railroad ties was developed. The Eco-tie, an ecologically sound railroad tie, is made entirely of a concrete-like aggregated and four types of waste products including tire chips.



The use of tire chips in the Eco-tie represents an environmentally safe disposal option for tires.

Ames Technologies, Inc., (ATI) is developing these unique ties.

As a technology transfer company, ATI has researched, developed, tested and marketed the Eco-tie. The company is based on a partnership between Jolene Hynes and Karen Piconi.

"There are mountains of tires out there that nobody knows what to do with. There is no reason why these tires can't be reused. We feel the Eco-tie will be a viable solution to these problems," said Hynes.

Another benefit of the Eco-tie is its ability to be recycled. The Eco-tie is completely recyclable, unlike timber and concrete ties. This may save the railroad industry time and money over the long run.

Significant research and development has been invested in the ties. Aside from Hynes and Piconi, the tie project has established a sophisticated research pool including engineers, metal fabricators, Iowa State University faculty and graduate students. Initial results of the Eco-tie have shown it to be superior in strength and

longevity to timber and concrete ties.

"Our research indicates that Eco-tie strength increases with age. And, compared to timber and concrete ties, the Eco-tie exhibits superior repetitive loading capability," said Hynes.

Now in the final testing phase, the ties are expected to be on the market within two years.

To complete the final tests and  
*Continued on page 7*

*Karen Piconi and Jolene Hynes of Ames Technologies and Don Barber of Barber's Metal Fabricating display the tire chips that go into the Eco-ties.*



## Catch the holiday spirit, save and reuse your holiday cards

The holiday season is here and that means one thing — thousands of cards will be passed out to friends and loved ones. A great way to celebrate the holiday season is to save some of the natural resources needed for the production of Christmas and Hanukkah cards by collecting and reusing cards.

Residents at St. Jude's Ranch for Children in Nevada remove the fronts of holiday cards and make them into new cards. St. Jude's will accept an unlimited number of cards at no charge.

Send your cards to:  
St. Jude's Ranch for Children  
100 St. Jude's Street  
Boulder City, NV 89005



### WRAP Tip

Your employees can be your best help when searching for pollution prevention strategies. Recently, a WRAP client received a substantial energy cost savings as a result of an employee suggestion. The employee noticed far too many lights were on outside the plant for

## Waste Reduction Awards presented at joint conference

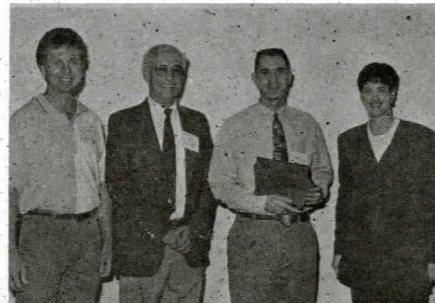
The Iowa Society of Solid Waste Operations and the Iowa Recycling Association held the first ever Joint Fall Conference in Davenport on October 10-12, 1995. The sessions offered information on public education and recycling market and landfill development. In addition, the 1995 Iowa Governor's Waste Reduction Awards were presented. The award-winning companies have reduced their annual solid waste generation by 6,775 tons, wastewater by nearly 17 million gallons and volatile air emissions by 46 tons. Through waste reduction methods, these companies have yielded an annual savings in excess of \$4 million.



Goodwill Industries of Southeast Iowa



Cargill Corn Milling of Cedar Rapids



Case Corporation of Burlington

## Employee suggestions target waste reduction

no apparent reason. The employee informed his supervisor who learned that the area had previously been used as an active storage area for large castings. These parts had long since been moved inside as a part of the company's aggressive inventory program. But the lights remained on — for 24 hours a day.

The cost of the wasted energy amounted to approximately \$3,000 per year. As a reward for bringing the matter to the supervisor's attention, the employee received a percentage of the cost savings.

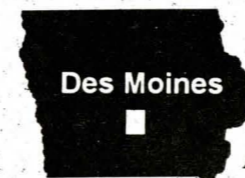
Put a boost into your pollution

prevention program by expanding your existing employee input program. Rewards such as a percentage of the cost savings or special recognition can be the spark employees need to begin looking for pollution prevention opportunities.

A simple sign asking for pollution prevention suggestions may be all you need to get employees thinking environmentally. Not only does this increase the environmental and cost savings for your organization, it will also raise the waste reduction awareness of your employees.

## GUEST COLUMN

### Using recycled products offers an incentive to recycle



Buying recycled products is a way of life for Beth Butts. She is currently purchasing agent and chair of the Environmental Committee for The Principal Financial Group. She is also an active member of the steering committee of Buy Recycled, Iowa!

How excited are you to hear 10 million pounds of paper was recycled last year? Or that the playground equipment at school is made from recycled plastics? I think it is pretty exciting to know that the things we recycle are made into something we use every day. Producing and buying recycled products "closes the recycling loop" and makes our recycling efforts worthwhile. Results like these are needed to sustain our recycling efforts.

In May 1994, as president of the National Association of Purchasing Management of Central Iowa, I was asked to be on the steering committee of the Buy Recycled Business Alliance of Iowa. Having worked on various recycling committees throughout my tenure in purchasing, I was excited for the opportunity. I had just joined The Principal Financial Group and was starting to discover all of their pollution prevention efforts. The Environmental Committee at The Principal Financial Group is very active in many areas of waste reduction and recycling. After reviewing the Buy Recycled Business Alliance of Iowa's requirements — collecting, consolidating and report-



Beth Butts

ing — I recommended we join because we were already doing most of those things.

A few years ago I attended a purchasing conference where a speaker explained the State of Nebraska's philosophy on buying recycled paper. Several years before, Governor Kay Orr mandated that all stationery used by the state be recycled paper. The speaker explained that at the time there were no local suppliers and the cost was not competitive. However, it didn't take long for the recycled paper industry to develop, causing prices to fall dramatically. What the speaker said made sense. "If you don't create the market, then all the efforts to recycle won't matter." Buy Recycled, Iowa! is an organization that follows this philosophy.

I am proud to work at The Principal Financial Group where reduce, reuse and recycle isn't just a phrase — it is a policy. We have sensors in the vending machines to allow employees to use reusable cups, equipment to demagnetize floppy diskettes, and recycling programs for toner cartridges, paper, cans, glass, wire, and lots more. Employees are conscience of our efforts and want to use recycled products whenever possible. Many product suggestions come from the employees.

I feel great when I can see the results of my hard work — gardening, sewing, building a birdhouse. I can say, "Look what I did. Isn't that beautiful!" Sometimes collecting recyclables and carrying them to the curb doesn't offer an immediate result. Why should we continue our efforts? "For the environment" isn't always tangible enough but using a recycled product in my everyday life gives me the reasons I need to keep recycling.

## Q & A

Information concerning waste management issues in Iowa and programs of the Waste Management Assistance Division.

**Q: What kind of effect has the Bottle Bill had on Iowa?**

**A: A very positive one. Recovery of recyclable containers is much higher in Iowa and the nine other bottle deposit states than in other states. Every year 1.4 billion beverage containers are redeemed in Iowa.**

Based on research conducted in other deposit law states, an estimated 1,200 jobs have been created and \$17 million is generated annually in Iowa.

Since the bottle bill went into effect in 1978, more than 60 redemption centers have opened in Iowa.

The bottle bill has made Iowa a market leader in PET (resin from recycled plastic bottles).

If you have questions concerning the bottle bill, please contact WMAD at (515) 281-8941.

If you have a question you would like to see answered in this section, please write to: Waste Matters, Waste Management Assistance Dept. of Natural Resources, Wallace State Office Building, Des Moines, IA 50309

# Another landfill closes in Iowa

*Opening a new landfill as  
an investment for the future*

Today, \$2.2 million will pay for 15 special edition S600 coupe Mercedes-Benz, 250,000 shares of IBM stock or 88 Toxic Cleanup Days. Or, it will pay for the new Harrison County Landfill. The two-year, \$2.2 million project has changed the Harrison County Landfill from a substandard "dump" to a state-of-the-art landfill in a relatively short time, according to Bruce Jones, solid waste manager for the Harrison County Landfill. The project included the closure of the existing landfill, construction of a small vehicle transfer station and installation of a 12' by 70' motor truck scale and scale house.

"Historically, the Harrison County Landfill has not been great on keeping up with regulations. Things just didn't get done when they should have. But now we are on the road to responsible solid waste management," said Jones.

## ALTERNATIVES EXAMINED

Before deciding to construct the new facility, several alternatives were considered, including combusting solid waste, upgrading the existing facility and transferring solid waste to a facility outside the county. With careful examination and advice from design engineers from Olsson & Associates of Lincoln, NE, the Harrison County Landfill Commission voted to build a new landfill next to the existing site. They view a new landfill that exceeded current state regulations as an investment for the future. The landfill has an estimated life span of more than 90 years.



*On August 23, 1995, the Harrison County Landfill opened its doors and began receiving solid waste from county residents. The composite liner used in the landfill consisted of two feet of compacted sub-base and a 60 mil HPDE plastic liner.*

"The commission members felt they might lose control over the county's solid waste because they wouldn't have any influence on the rates or on the governing body of a landfill outside the county. You never know who might raise their fees or when. The commission felt it was important to take this route to meet the needs of the residents of the county," said Jones.

## EXISTING SITE USED FOR LANDFILL

Building on the existing property allowed the permitting process to go quickly and easily.

"We were in a good situation because the property was already here. The DNR (Department of Natural

Resources) was cooperative and easy to work with once we showed we wanted to get back on track. The permitting process went very smooth after we established our intentions," said Jones.

## LINER EXCEEDS REGULATIONS

A composite liner consisting of a two-foot compacted soil sub-base overlaid with a flexible plastic membrane was used in the new landfill's design. Beside exceeding current permeability specifications set by the DNR, the use of a composite liner was determined to be cost-effective, according to Jones.

Many landfills opt for a four-foot compacted soil liner constructed from existing landfill materials. At the Harrison County Landfill, this design would have required adding bentonite to the soil to meet compaction standards. The additional landfill space gained from the composite liner's two-foot sub-base compared to four-feet of soil was also a deciding factor.

## MANY RESPONSIBLE FOR SUCCESS

Jones credits many people for the success of the landfill. "The success can be attributed to local elected officials with a vision of the future, knowledgeable engineers, experienced contractors and a hardworking commission staff. This landfill secures the solid waste disposal needs of Harrison County for many years to come. This proves that even in a small rural county of 15,000, it can be done."

# Economic impact study, surveys are part of the REDA program



Creating economic opportunity through recycling

*Recycle Iowa, the recycling market development initiative aimed at creating economic growth within Iowa's recycling arena, is currently underway.*

Leisha Barcus is the Recycling Economic Development Advocate (REDA) for Iowa. Since receiving the grant from the U.S. Environmental Protection Agency in February, Barcus has launched many projects.

## ECONOMIC IMPACT STUDY

The economic impact of recycling in the state of Iowa is currently being studied. The purpose of this study is to assess the economic impact of the recycling system (collecting, processing and end use of recyclable materials) on the Iowa economy. It will explore and identify the direct, indirect and induced effects of recycling plastics, glass, paper, corrugated cardboard, aluminum and metals in terms of jobs created, income generated and increased tax base.

## SURVEY OF COLLECTORS AND PROCESSORS

A recent survey of Iowa glass, paper and plastic collectors and processors has been completed. The survey collected data on tonnage of recyclable materials sold and transportation and buyer information. The

results will be used to determine if Iowa's current glass, paper and plastic supply meets demand and provide direction to recruitment efforts of new Iowa processors and end users, according to Barcus.

## SURVEY OF IOWA PLASTIC INDUSTRY

Nearly 800 companies have been contacted about recycled plastic resin use and plastic disposal concerns. Results of the survey will be used to identify companies with the potential to use or increase their use of secondary materials.

"Additional information on resin disposal will help focus our assistance programs and may lead to market development opportunities," said Barcus.

Barcus can be contacted at (515) 244-0021, ext 522. The EPA funding for the REDA program is scheduled to continue until November 1996.

Continued from page 3

## Eco-tie offers environmentally friendly alternative to concrete/timber ties

facilitate production of the tie, the Waste Management Assistance Division (WMAD) of the Department of Natural Resources recently awarded Ames Technologies a \$195,000 Landfill Alternatives Financial Assistance grant.

"This project offers a product that will divert a significant amount of waste from landfills as well as begin to reduce the environmental damage caused by creosote covered ties," said

Mary Koens, environmental specialist with WMAD.

The Eco-tie has generated a great deal of interest and enthusiasm within the railroad community, according to Piconi.

"This is an entrepreneurial venture. These organizations have the vision to take this leap with us. That's what successful businesses do," said Piconi.



*Extensive testing has ensured the durability and strength of the Eco-tie.*

## C&D waste reduction and recycling options available



A sketch of the Healthy House

The total amount of wood waste produced in Iowa is about 270,000 tons per year, according to a 1994 University of Northern Iowa study. The Waste Management Assistance Division of the Department of Natural Resources sees C&D wood waste reduction and recycling as an exciting opportunity. A task force is in the works to find alternatives to landfilling wood waste and develop a wood waste market in Iowa. The members of the task force will represent government agencies, wood waste generators and recyclers, trade associations and other interested parties. If you or your organization has interest in this issue, please contact Jeff Geerts at (515) 281-8176.



During the construction of Metro Waste Authority's Regional Collection Center in Bondurant, C&D waste was collected and separated. The waste was then sent to a recycler for processing.

debris," said Kevin Officer, environmental specialist with MWA.

In the recent construction of MWA's Regional Collection Center in Bondurant, the Koester Construction Company of Des Moines recycled the C&D debris and saved more than \$850 in landfill fees.

"It worked really well," said Steve Koester of Koester Construction Company. "It was cost-effective and relatively easy for us to recycle the waste. It's unfamiliar to contractors and subcontractors. They are just not used to doing it."

Communication and education are the keys to successful C&D reduction and recycling, according to Geerts. "Most contractors have not been involved in C&D recycling. It's a relatively new thing and it takes time to educate everyone on the proper procedures. Communication with contractors and subcontractors early in the project is essential to minimize contamination," said Geerts.

The DNR recently initiated a proposal to attract a C&D recycling processing center to Iowa. The center

will provide an opportunity to recycle C&D wastes including wood, cardboard, metal, drywall, asphalt shingles, concrete, asphalt paving and brick. Other projects around the state are chipping away at C&D waste.

- Rinderknecht and Associates of Cedar Rapids, a general contractor, have developed and implemented procedures to reduce material waste, recycle construction waste and use recycled materials when possible at commercial construction sites. Hundreds of tons of C&D waste have been diverted from landfills through their efforts.

- The Principal Financial Group saved more than \$40,000 in tipping fees through the recycling of concrete, copper piping and steel materials during the demolition process of an old building.

- MWA is coordinating five other C&D waste recycling projects including two residential homes, an apartment building and two commercial facilities.



"It was cost effective and relatively easy for us to recycle the waste."

— Steve Koester of Koester Construction Company  
Metro Waste Authority's Regional Collection Center

## Reducing waste earns award, cost savings for Case Corporation

Since 1842, Case Corporation has been producing heavy duty farm and construction equipment. Quality products through a quality process has been the recipe for success for this well-respected company, according to Leo Karris, plant environmental manager of the Burlington Case Corporation plant.

Case Corporation is the second largest manufacturer of agricultural equipment in North America and the second largest manufacturer of light and medium sized construction equipment in the world.

Recently, the pollution prevention strategies used in the manufacturing process at Case Corporation were awarded the Iowa Governor's Waste Reduction Award in the large manufacturing category.

The awards are sponsored by the Iowa Department of Natural Resources' (DNR) Waste Management Assistance Division (WMAD), the Iowa Waste Reduction Center in cooperation with the Iowa Safety Council, and the Iowa Association of Business and Industry. Awards are given in three categories: large manufacturing, small manufacturing and non-manufacturing businesses. The winners are pictured on page four.

"We are very proud to be this year's recipient of the Iowa Governor's Waste Reduction Award. Case Corporation management and employees have dedicated themselves to the

successful implementation and continued improvement of Case's pollution prevention program," said Karris.

In the last few years, Case Corporation has made remarkable progress in pollution prevention, said Julie Nelson, environmental specialist with the DNR.

Some of Case's pollution prevention efforts stemmed from a waste assessment conducted by the DNR's Waste Reduction Assistance Program. Implementing the new process improvements have netted an overall cost savings of more than \$4.2

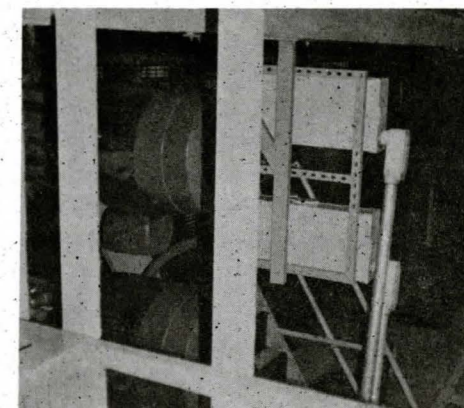
*"Case has set very aggressive goals for itself for waste reduction. It makes sense and is good business. We are also able to reduce the amount and toxicity of raw materials and wastes in the plant, thus providing a safer and healthier work environment."*  
Leo Karris  
Plant Environmental Manager

million annually.

"These are processes that reduce the total amount of waste generated at the source. That is the goal of pollution prevention," said Nelson. "If more companies followed Case's example, we would have a lot less waste to deal with."

"Case has set very aggressive goals

*Receiving the Iowa Governor's Waste Reduction Award and realizing a \$4.2 million cost savings has been the reward for their pollution prevention efforts.*



Efforts like this central coolant recycling system has helped Case Corporation realize \$4.2 million in annual savings.

for itself including a 50 percent industrial waste reduction by the end of 1995. Although it has been quite a challenge, it makes good sense and good business," said Karris.

Some of the waste reduction projects Case has implemented are:

- Established a pollution prevention scoreboard to measure progress. By analyzing waste volume, toxicity, cost and production ratios, the score provides an accurate measure of actual improvement and waste reduction.

- Created a parts preparation cell to wash all components prior to welding and painting. Weld quality and disposition rates are improved through this process. This improvement also reduces the amount of weld wire used, allowing for a reduction in smoke and emissions.

- Installed pulse welding equipment to improve low voltage welding. This creates a shorter weld arc and reduces material vaporized and emitted.

- Installed a closed loop water cooling system.

- Installed a centralized water treatment system to replace two less efficient systems.

- Segregated non-oily and oily rinse waters to reduce pretreatment.

- Installed a paint line to paint individual equipment pieces prior to assembly (allowing for the use of safer paints).



# Calendar of Events

**National Pollution Prevention Roundtable Semi-annual Conference** - Dec. 6-8, Miami, FL  
For more information call (202) 466-7272 or Larry Gibson, DNR, at (515) 281-8927.

**Iowa Recycling Association Legislative Luncheon** - Jan. 18, 1996, in Des Moines. Contact Margo Underwood, Landfill of North Iowa, at (515) 357-5452.

**Buy Recycled Purchasing Training Seminar** - Feb. 1, 1996, at the Botanical Center in Des Moines. For more information or to register contact Beth Hicks, DNR, at (515) 281-8672.

**Regional Collection Center Request for Proposal** - will be sent out Feb. 1, 1996. The deadline is June 1, 1996. For more information contact Caroline Gathright-Connor (515-281-8646) or Jeff Fiagle (515-281-5859).

**Recycling Market Development in the Midwest Trade Corridor: Canada to Mexico** - March 19-20, 1996, in South Sioux City, NE. For more information contact Beth Hicks (515-281-8672) or Jeff Geerts (515-281-8176).

**Best Practices Composting Workshop** - March 1996. More details will be announced soon. For more information call Garth Fable, DNR, at (515) 281-5105.

## ***Waste Management Assistance Division Mission:***

To educate and assist Iowans in protecting and conserving natural resources and the environment through the practice of responsible waste management.

### ***Waste Matters***

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