



# American Recycler

NewsVoice of Salvage, Waste and Recycling

AmericanRecycler.com

## Commercialized plasma gasification of solid waste offered by S4 Energy

by MIKE BRESLIN

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One need not be a physicist or chemical engineer to understand what plasma gasification can mean to the future of solid waste. This intriguing technology for converting solid waste into chemicals and energy has been in the demo phase since the mid-80s. But in May it took a major step forward towards commercial deployment when Waste Management (WM) and InEnTec announced a joint venture to form S4 Energy Solutions. S4 plans to build plasma gasification plants and WM has the nationwide infrastructure to deliver a smooth flow of segregated feedstock.

PHOTO COURTESY OF INENTEC



Molten waste created by the InEnTec's Plasma Enhanced Melter.

WM, North America's largest waste management company, is embracing plasma gasification for the first generation of commercial facilities. "We are choosing some sites right now and have a few identified. Short term, we are looking at three to five different locations. Long term we are going to be looking at the majority of the 50 states. We expect to announce our first plant in three to six months. At that time we will expect to have already started construction. We are beginning the permitting process in a few cases and doing prep work for those facilities," stated Jeff Surma, president and CEO of S4.

"The point lost on a lot of people is that this technology has been around for a while. From a chemistry perspective it works," said Joe Vaillancourt, senior vice president of S4 Energy Solutions. "What no one had done in the past is put together a model where the collection of waste can be done efficiently, routed and pre-processed efficiently. This



InEnTec's Plasma Enhanced Melter plant in Richland, Washington.

collaboration allows the technology to marry a very large WM infrastructure that from an economic standpoint allows it to work commercially."

This is how InEnTec's Plasma Enhanced Melter

(PEM) technology works. Solid waste is fed into an oxygen deprived chamber and heated to temperatures reaching 10,000 degrees Fahrenheit using an electricity-conducting plasma arc gas. Intense heat rearranges

the molecules and transforms organic, carbon-based material into a synthesis gas, called syngas. Syngas is then converted into fuels such as ethanol and diesel, and into hydrogen and

See PLASMA, Page 4

## Early repeal threatens paper industry and workers in weak economy

The United Steelworkers (USW) has filed comments strongly opposing a Senate Finance Committee staff draft of legislation that if enacted would specifically target the pulp and paper industry for repeal of a vital tax credit.

The tax credit in question gives users a tax credit for the use of the alternative fuel when it is mixed with very small amounts of taxable motor fuel. The paper industry is the largest industrial user of bio-fuel in the United States. Last year, the IRS issued a ruling to qualify for the credit, provided companies met strict conditions mandated by the agency.

"This tax credit is encouraging paper companies to make greater use of bio-fuel, and in the case of one Maine producer, Old Town

Fuel & Fiber in Old Town, it's allowing this company to pursue a project to produce jet fuel in addition to pulp," said USW president Leo G. Gerard. "In addition it is saving thousands of steelworker and other jobs."

The tax credit began to cause controversy when International Paper and other companies reported the receipt of large tax credits from their use of the biologically-based by-product known as "black liquor" to produce in some cases, nearly all of the power that runs their mills.

"This was controversial because no one knew the massive size of the contribution the paper industry is making to increase the use of

See PAPER INDUSTRY, Page 7

## Thin film PV turns old dumps into solar assets



Focus Section Cover, Page B1

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# Producer responsibility resolution adopted for unwanted medicines

The National Association of Counties (NACo), the country's largest local government organization, unanimously adopted a policy supporting producer responsibility for unwanted medicines.

The expense of taking back unused prescription and over-the-counter drugs would be handled by the pharmaceutical industry, without relying on state or local government funding.

"There are examples of successful take back programs in the United States and Canada that benefit the health both of the environment and the population," said Commissioner Victoria Reinhardt of Ramsey County, Minnesota, who introduced the proposal along with three council members from Washington State. "NACo's adopting a product stewardship policy for the pharmaceutical industry is a great step forward."

The council members from Washington were Dave Somers from Snohomish County and Dow Constantine and Julia Patterson from King County.

According to the resolution, the environmental and social problems created by the storing and disposing of unwanted medicines are numerous and complex. Leftover medicine may play a part in drug abuse and accidental poisonings. Disposing of these medicines by flushing or trash disposal contributes to ground and surface water contamination.

Athens, Georgia-based Product Policy Institute (PPI) helped develop Tuesday's resolution on unwanted medicines. The non-profit institute works with local governments to advance comprehensive state policies focused on producer responsibility. Reinhardt is a PPI board member.

Last week, NACo attendees heard a presentation from PPI executive director Dr. Bill Sheehan on a successful program in British Columbia that makes brand-owners of pharmaceutical products sold there responsible for the safe management of unused medicines. Over 93 percent of licensed pharmacies in this province of 4.4 million people collect unused medications, with no fees to consumers, and turn them over to producers.

"The cost of this program in 2008 was a mere \$315,000, which was shared by pharmaceutical companies," said Sheehan. "Like Europe and Canada, the United States can develop programs to cover the costs of collecting, transporting and disposing of these medicines. It's imperative we do so."

Commissioner Reinhardt has written and introduced four previous NACo resolutions on product stewardship that were readopted this year, including ones advocating producer responsibility for paint, electronics, and mercury-containing lamps.

# Minnesota partnership brings free statewide recycling

The Recycling Association of Minnesota (RAM) and Minnesota Waste Wise (MWW) announced a new partnership between RAM's Message in a Bottle™ (MIB) away-from-home recycling program and Waste Wise's It's in the Bag™ (IITB) plastic bag recycling program which will be expanded to ten additional communities throughout Minnesota beginning in October 2009. These programs currently work with vocational centers in four areas throughout Minnesota to offer free recycling services to local businesses and their customers.

"There is a great need to have easily accessible recycling programs such as these when Minnesotans are on the go. Message in a Bottle and It's in the Bag fulfill this need," stated Ellen Telander, executive director of RAM. "It is a value-added service for customers of local businesses, it can save businesses money on waste disposal costs, and it

provides jobs for Minnesotans," she added.

MIB and IITB have been largely successful at convenience and grocery stores in the Twin Cities, St. Cloud, Mankato and Hutchinson. RAM and Waste Wise attribute this success to the eye-catching, pop bottle-shaped recycling containers and clear bag recycling containers the programs used. To date, MIB has recycled more than 500,000 pounds of beverage containers and IITB has recycled more than 4.5 million pounds of plastic bags and shrink film.

The program expansion is possible due to a grant from USDA Rural Development's Solid Waste Management grant program which will enable these programs to be set up in 10 additional areas throughout Minnesota. "The beauty of this program is that it becomes self-sustaining in six to twelve months time," said Telander.

# WeRecycle emerges from Chapter 11

WeRecycle!, a company specializing in the recovery, management and environmentally responsible recycling of end-of-life electronics, has emerged from Chapter 11 restructuring as WeRecycle! LLC.

The newly-restructured WeRecycle benefits from significant support from Hugo Neu Corporation, which is now the

largest shareholder in the company. Hugo Neu will bring its resources and expertise to help WeRecycle grow and expand.

Management of WeRecycle remains – Mick Schum, P.E. has been appointed president of WeRecycle, while Gina Chiarella will serve as executive vice president.

# Susan Collins to lead CRI

The Container Recycling Institute (CRI) has appointed Susan V. Collins as its new executive director. Collins joins CRI after 20 years of advising municipalities on municipal solid waste and recycling programs and sustainability issues. She was a manager and director at firms such as SCS Engineers, R3 Consulting Group, and HF&H Consultants.

One of Susan Collins' first acts as executive director was offering CRI's expertise to Governor Markell as Delaware begins the process of revamping its recycling program. CRI is considered an authoritative clearinghouse for container recycling information.

As the Southern California Practice Director of R3 Consulting Group, Collins led an extensive international research project comparing the financial, operational and policy aspects of container

deposit and packaging systems in California, Germany and the Canadian provinces of Ontario and British Columbia.

Collins also served nine years on the board of directors of the California Resource Recovery Association and has promoted advanced knowledge of product stewardship through the California Product Stewardship Council. "Between her MBA, her experience with nonprofits, her advanced research skills and her background as a manufacturing engineer, Susan is uniquely qualified for her new role with CRI," said Marge Davis, CRI treasurer and coordinator of Tennessee's strengthening bid to become the 12th state with a container deposit law.



—Susan Collins

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# Plasma

■Continued from Page 1

methanol that can be substituted for natural gas to make heat or electricity.

Recovered pure hydrogen can also be sold to commercial customers or used for fuel cell technology. In a secondary stage of the process, inorganic materials like glass and rock are drawn off as slag which can be incorporated into a number of construction materials.

The PEM process has been field proven in a number of small pilot plants, including a plant in Taiwan for the past four years that treats medical wastes and NiCad batteries. InEnTec also sold a system to Kawasaki in Japan, which was used to process hazardous waste and asbestos containing waste materials. Kawasaki continues to develop opportunities in Japan for the PEM technology. For the past nine months, InEnTec's 25 ton per day plant in Richland, Washington has been running tests on various solid waste feedstocks for analytical purposes. "Once you have the analysis of syngas relative to waste composition and energy content you can calculate what you can do with the various energy off-take options," said Surma. The syngas produced from the Richland plant is not actually used for chemicals or energy,

rather disposed though an EPA approved combustion process.

Permitting and emissions do not seem to pose problems for this type of plasma gasification configuration. "We have actually permitted a number of these plants. Even though they were small we did not have any permitting issues," Surma said.

Beside the Richland plant, InEnTec has had five other United States permits issued. Another in Washington to process radioactive and toxic wastes, one in California and another in Hawaii for medical wastes and two in Nevada, one for a municipal solid waste system and the other for medical waste. Permits usually take from 90 to 180 days. The direct emissions from the PEM system itself are negligible. Primary emissions from the generator itself if the syngas was used to generate electricity, in which case all emissions would comply with EPA standards," Surma claimed.

The initial S4 plants will handle 25 tons per day and will be co-located at landfills or recycling centers, or as independent facilities close to feedstock supplies. In the near term, S4 will concentrate on processing high-value, high tipping fee materials such as medical waste and other commercial segmented waste streams.

Short term, medical waste will be S4's primary focus. Long term, as they prove out the technology, plants will be scaled up to 125 tons per day, which will be the common size for a plant. These will be deployed to sites as single or parallel units depending on the nature of feedstocks. Once S4 reaches the 125 ton scale they will be able to handle larger streams from industrial sites such as auto shredder residue. Eventually, S4 hopes to prove out the technology to process general residential waste.

"Whether we are talking about the very small 25 ton per day, or even the larger plants, they are still of the size that allows us the flexibility to site them as close to waste generation points as possible. So even with a larger facility, it is still significantly smaller than other alternatives," Vaillancourt noted. The 25 ton per day plant has a relatively small footprint, about 7,500 square feet and can be run 24/7/365 with a staff of 12 to 15, even fewer if co-located with another facility that has maintenance and operations staff. The PEM process itself can be operated by as little as two people.

InEnTec's Richland pre-commercial plant provides insight into material segregation before entering the PEM process. Municipal solid waste was received from the City of Richland landfill in raw form. Prior to a course shredding, large ferrous and non-ferrous metals, aluminum cans and large rocks were removed. Rocks, glass and other inorganic materials have no recovered

energy value and result in slag. While the demo plant has run a number of different feed streams, it has been running municipal residential waste to understand how the technology performs. It has also processed rubber tires, wood waste, auto shredder residue and industrial non-hazardous solid waste streams like cardboard and plastic. The plant has not run medical waste because InEnTec has extensive experience with this material at its other facilities.

When it comes to recovering energy from waste, WM is not putting all its eggs in one basket. They are, after all a leading developer of waste-to-energy incineration and landfill gas-to-energy facilities in the United States. As to the economics of plasma gasification, Joe Vaillancourt characterized it this way: "Instead of looking at a thumbnail on the cost of energy production, what we are proposing is a service where our pricing is competitive to market, both on the disposal and on the energy side. Where we have customers who have a need, we can come in very competitively and provide them a disposal way of creating energy."

Since the plasma arc process uses large amounts of electricity and uses some natural gas to heat vessels, the question is what is cost of energy consumed to the resulting value of the energy and products produced? It largely depends on material input. Waste streams heavily laden with plastics, cardboard or rubber will naturally have a higher BTU value. "Generally between the variability of the incoming waste and efficiency of conversion to different types of energy, the system uses 30 to 50 percent and we have a 50 to 70 percent net energy positive conversion. In addition to the energy recovered, we are also subsidized by tipping fees on the high value materials," said Surma.

"Our S4 initiative is being driven by a number of factors. Certainly the cost of energy has a significant impact on why people are starting to look at alternatives for the conversion of what used to be considered waste stream with no energy value to a resource that does have energy value. That's primarily the factor for looking at conversion technology like this."

An interesting aspect of PEM technology is that it allows S4 to mix a variety of wastes while giving WM the flexibility to deliver the types of waste mixtures as the plants need them. When co-located at either a landfill or recycling center or at a customer facility there are several segmented streams that could be combined efficiently. "It's a technology that we feel is very flexible and adaptable to customers' particular economical, environmental, and logistical needs. These units can be put close to the generator. They will become especially cost effective for customers who have high transportation costs and high tipping fees." Vaillancourt pointed out.

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# Chicago is first Illinois city to partner with RecycleBank

Chicago Mayor Richard M. Daley, along with 19th Ward Alderman Virginia Rugai announced that Chicago has partnered with RecycleBank®, a program that rewards households for recycling and other positive environmental behaviors. This program is designed to encourage additional recycling participation and compliment the City's transition to the Blue Cart Program – a recycling program which is already in place in more than 241,000 households in Chicago. Chicago is the first city in Illinois to join the RecycleBank program.

RecycleBank measures the amount of material recycled and then converts that amount into RecycleBank Points that can be redeemed for rewards, gift cards, groceries, and products at more than 1,900 local and national RecycleBank Reward Partners. There is also an option to donate your RecycleBank Points to local school environmental programs, charities and non-profits.

The City of Chicago selected 10,000 households in wards 5, 8 and 19 for Phase 1 of the RecycleBank rewards program. These areas were selected for of a variety of reasons with the purpose of enabling the City and RecycleBank to evaluate the increase in recycling and expansion of service.

These areas have the longest data collection from the Blue Cart recycling program and they have a good mix of single family homes and multi-unit buildings. They also selected routes within those areas that produced lesser quantities of recyclables. This ensures that the test will illustrate more clearly that the incentive system has the desired results.

Each Blue Cart in the pilot area will be retrofitted with an ID tag that matches

the Blue Cart to the household address and account number, while tracking recycling activity. Upon activating their account with RecycleBank, either online or by phone, the household will begin to earn RecycleBank Points.

On average, members earn hundreds of dollars in reward value each year through their recycling efforts. The city can expect to see about 600 tons of waste diversion and over \$500,000 in local economic stimulus as a result of this six month field test program.

Neighborhood businesses are joining the recycling efforts in droves. As an added benefit for Chicago RecycleBank members, two local hometown favorites are going the extra mile and offering bonus rewards to participating households. The Chicago White Sox and their partner Comcast will give away two free tickets to the first 200 households who activate their RecycleBank accounts.

“The City of Chicago has set many goals in order to be one of the greenest United States cities. Partnering with RecycleBank will both increase our recycling rates and lower our waste output,” Mayor Daley explained. “Our partnership with RecycleBank brings a proven recycling rewards program to our community and allows us to take the necessary steps to achieving our sustainability goals.”

The steps following the Phase 1 field test are to roll out fully in all three wards’ 38,000 households. “Through education, community outreach and the use of our Recycling Block Captain Program, we are confident that we will see great results with RecycleBank,” said the Mayor. “It’s important that residents understand that they must do their part when it comes to recycling and preserving resources.”

# Agromin receives association's Leadership in Organics award

Agromin, an Oxnard-based manufacturer of premium soil products and one of the state's largest green materials recycling companies, was honored with the California Resource Recovery Association (CRRRA) 2009 Dave Hardy Leadership in Organics Award. The award was presented at the CRRRA annual conference in Rancho Mirage.

Agromin was one of 10 government agencies and private sector companies honored for their innovative recycling programs. Specifically, the CRRRA Dave Hardy Leadership in Organics Award is given to the business, government agency, community-based organization or school that has shown excellence in the production, marketing and utilization of organic materials.

“Agromin is instrumental in helping cities comply with the AB 939 mandate,” said Bill Camarillo, Agromin CEO. Each year, the company receives

and processes over 300,000 tons of organics (green waste, wood waste, food and other waste) that would have otherwise ended up in landfills producing greenhouse gas emissions. “While many businesses accept organic waste, few specialize in the sustainable processing, managing, recycling and marketing of the materials as we do,” noted Camarillo.

Agromin offers green materials diversion services to waste haulers, landfills and municipalities and then converts the diverted organics into more than 200 types of sustainable products including compost, mulch and soil amendments for consumers, municipalities, agriculture and landscapers. It processes more than 300,000 tons of materials a year from more than 50 communities in California. In January, Agromin was named “Composter of the Year” by the U.S. Composting Council.

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## Pennsylvania dump site survey results released

The Department of Environmental Protection (DEP) recognized PA CleanWays' efforts to combat the illegal dumping of trash and littering by surveying, assessing and documenting illegal dump sites across Pennsylvania.



There are 4,159 illegal dumps identified in Pennsylvania to date.

PA CleanWays, is a non-profit organization that works to eliminate illegal dumping and littering, announced the latest survey results for Adams, Armstrong, Centre, Clarion, Forest, Franklin, Lackawanna, Lancaster, Perry, Montgomery, Snyder, Warren and Westmoreland counties and the City of Pittsburgh.

PA CleanWays began surveying illegal dump sites in 2005. To date, surveys in 37 counties have identified 4,159 dump sites containing an estimated 14,493 tons of trash. The organization's goal is to survey the entire state by 2014.

Completed survey results have shown that illegal dumping is a problem in urban and rural areas. For example, 279 illegal dump sites were identified in the city of Pittsburgh, while 105 sites were found in rural Perry County. Dump sites have been identified in municipalities that have mandatory trash collection and recycling programs, and many sites are still active.

Last fall, DEP awarded PA CleanWays a \$1 million grant to aid its efforts. In addition to identifying the sites, the organization is educating the public and raising awareness of illegal dumping.

In April, DEP announced the first Illegal Dump Cleanup program. Nearly \$500,000 was granted to help clean up 350 sites in 31 counties, some of which were identified through the dump site surveys.

## Call2recycle recognized by Basel Action Network

Call2Recycle, North America's most successful rechargeable battery recycling program, announced that it has become the first program of its kind to be recognized as an e-Steward by the Basel Action Network (BAN). This voluntary recognition affirms that Call2Recycle has completed BAN's initial audit and qualification requirements and is now in line to become one of the first independently audited, accredited and certified electronics recyclers in North America. The e-Stewards designation is given for electronics and battery recyclers that uphold the strictest standards for environmental safety and social responsibility.

BAN, a toxic trade and corporate responsibility watchdog, is named for the Basel Convention, an international treaty created to prevent the dumping of toxic waste from rich to poorer nations. In 1995 the Basel Convention passed a decision to prohibit the export of hazardous waste to developing countries. As a global organization, BAN works to prevent the global dumping of toxic e-waste and promotes responsible recycling here in North America. Call2Recycle will join a select group of e-Stewards recyclers whose collection and recycling process have been recognized by BAN, assuring that no toxic e-waste collected by these organizations is dumped in landfills or incinerators, exported to developing countries or sent to prison labor operations.

According to BAN, only 12.5 percent of discarded electronics products in the United States were collected for recycling in 2005, of which an estimated 80 percent was then exported to developing countries for processing. To generate support for the mounting crisis, BAN continually reports on the negative effect that the mismanagement and mishandling of e-waste has on the environment and society, most recently teaming with PBS's "Frontline" and CBS's "60 Minutes" news magazines to expose the deadly impacts of toxic electronics recycling operations in China and in Africa. BAN also uses its resources to create positive solutions, such as e-Stewards, and reward industry organizations that have taken steps to ensure the soundness of their waste management programs at all points in the process.

All of the rechargeable batteries collected through the program are recycled at various processing locations in North America and none of the broken-down material makes its way into landfills. Cell phones collected through the program are recycled or refurbished and resold when possible with proceeds benefiting select charities. The transport and recycling of used rechargeable batteries and cell phones collected through Call2Recycle are in accordance with the United States Department of Transportation, Transportation Canada, and the Universal Waste Rule.

## Smurfit-Stone Container partners with Advanced Disposal

Smurfit-Stone Container Corporation announced a new partnership between its recycling division and Advanced Disposal Services in Cobb County, Georgia. Through this joint venture, Smurfit-Stone will convert Cobb County's composting facility in Marietta, Georgia, for use as a materials recycling facility (MRF). Advanced Disposal will manage the adjacent waste transfer station.

Smurfit-Stone is retrofitting sort line equipment in the 200,000 square foot composting facility to provide residential and commercial recycling services. Smurfit-Stone also operates Advanced Dis-

posal's MRFs in Jacksonville, Florida, and Atlanta, Georgia.

With 29 plants in the United States offering comprehensive recycling and waste solutions, Smurfit-Stone is investing in automated sort systems and focusing on strategic partnerships with cities and waste haulers to dig deeper into the waste stream.

Smurfit-Stone also has invested in production tracking equipment to improve customer service and efficiency by identifying and reducing the causes of downtime on its sort lines and balers.

## Tomra Pacific opens RePlanet recycling center

TOMRA Pacific Inc., a unit of Tomra of North America, a provider of advanced recycling solutions, announced that it will open its first RePlanet recycling center at Albertsons in Tustin, California. The RePlanet kiosk will help consumers in the city – a highly underserved market for recycling – gain access to beverage container recycling and California Redemption Value (CRV) cash.

The RePlanet center, a colorful kiosk that will sit in the parking lot, will house four bulk reverse vending machines (RVM) that consumers use to deposit their used containers. In return, consumers will receive vouchers to bring inside the Albertson's store to redeem.

RVMs automate the process of collecting and sorting beverage containers by material and size. TOMRA's patented recognition technology, Sure Return™, provides continuous video surveillance of inserted items, ensuring correct deposit refunds for consumers and accounting accuracy for the store.

TOMRA Pacific has over 440 RePlanet centers in California, and has recycled 3 billion containers in the state, 19 percent of the state total.

## EPA takes action against California aluminum company

The United States Environmental Protection Agency (EPA) has fined Frontier Aluminum, an aluminum extrusions manufacturer, \$36,500 for failing to comply with federal hazardous waste management regulations at two of its facilities located in Corona, California.

The EPA inspected the Frontier Aluminum facilities on May 21, 2008, and found that the company violated the Resource Conservation and Recovery Act by engaging in multiple hazardous waste management violations.

"This agency will see that Frontier Aluminum, as well as any other business that generates hazardous wastes, will comply with all hazardous waste regulations or risk facing costly fines and legal action," said Jeff Scott, director of the Waste Management Division for the EPA's Pacific Southwest region.

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## PLASTICS

### Sutter Home switches to recyclable plastic wine bottles

Sutter Home Winery is now using PET bottles from Ball Corporation for all 187mL wine bottles that feature Plasmax®, a transparent, internal silicon oxide barrier coating technology that protects the wine and provides exceptional clarity without contaminating the PET recycling stream because it is easily removed during the recycling process.

“The plastic bottles weigh only one sixth what the glass bottles weigh and they’re much smaller, so consumers get the same amount of wine in a smaller, unbreakable, less wasteful and recyclable bottle,” said Wendy Nyberg, senior director of marketing for Sutter Home.

Sutter Home began using the custom-designed PET wine bottles in select markets in 2005 and has gradually increased distribution. The bottles preserve the look of the original glass container and run on the winery’s existing filling lines. Sutter Home has been pleased with consumer acceptance of the

plastic wine bottles as well as the entree they provide into venues that do not allow glass because of the potential for breakage.

Plasmax provides an FDA-compliant, enhanced passive barrier for oxygen sensitive products. This ultra thin (less than 100 nm) material is transparent and resists cracking, abrasion and delamination. Because Plasmax does not degrade over time, the length of time bottle inventory can be stored is not limited by the barrier material.

A recycling study conducted according to the European PETCORE protocols demonstrated that Plasmax is removable during the recycling process and does not negatively affect any of the test requirements.



### Company to recycle foam cups donated to marathon

Lodi, California’s Dart Container is the sole provider of recyclable foam cups for a marathon event to take place in Lodi. Dart is contributing more than 6,000 cups and collecting the cups to be recycled at its plant in Lodi, where they accept used polystyrene foam products for recycling at no cost to the public. Foam is ground up, converted to plastic resin pellets and sold for reuse as an ingredient in non-food service products.

From the moment that competitors register to the time they cross the finish line, participants will enjoy water and other liquid refreshments from 100 percent recyclable foam cups, instead of wax-lined or paper products that cannot be recycled.

Polystyrene can be recycled by:

- Depositing your foam in a sealed, clear bag.

- Rinsing cups and containers to rid them of food.

- No straws or lids.

- No packaging peanuts.

- Put shaped foam in a separate bag from your food service containers.

Dart’s products are made of foam polystyrene, a versatile plastic that includes cups, clamshells, plates, cutlery and more. Often improperly called “Styrofoam”, these products are recyclable and reusable.

The company is driving recycling efforts from its California manufacturing facilities in Lodi and Corona to workplaces across the state, and from its warehouse recycling centers to consumers’ homes in curbside recycling efforts, such as L.A.’s “New to Blue.”

### Paper industry

■Continued from Page 1

bio-fuels,” said USW vice president Jon Geenen, who handles the union’s relationships with the paper industry. “Repeal isn’t a solution. We believe the paper industry has significant expertise that could help jump start development of the second generation of bio-fuels. We think the tax credit is playing a large role in helping this happen, and we think any new legislation should create targeted incentives to encourage this behavior, not only with chemical pulp mills, but all across the paper industry.”

In April, Senate Finance Committee Chair Max Baucus (D-Mont.) and Finance Committee Ranking Member Charles Grassley (R-Iowa) criticized the tax credit and stated they were considering a move to repeal the paper industry’s eligibility for the credit. The USW immediately made contact with key Senators.

As a result, key Senate Finance Committee members expressed strong support of the tax credit. In May, dozens of rank-and-file USW paper workers visited Finance Committee members and many other members of the Senate and the House. “We made the point that the tax credit has turned out to be good for both jobs and for America’s energy future,” said USW Local 4-261 Vice President Dan Lawson, one of the leaders of the group that visited Capitol Hill.

In spite of all this work on June 11, Senators Baucus and Grassley issued their staff draft targeting the paper industry for repeal of the tax credit. “We feel the staff draft makes a mockery of the intent of Congress around increasing the use of bio-fuels, and is a specific slap in the face to the paper industry and to the tens of thousands of Steelworkers who work in it,” said Gerard.

### ‘Got Your Bags?’ campaign kicks off in San Jose

#### Statewide effort promotes reusable shopping bags and increases recycling

Non-profit, government and business groups joined together to kick off the “Got Your Bags?” campaign – a public education and outreach effort aimed at encouraging Californians to use reusable bags and bring plastic bags back for recycling.

California state law (AB 2449) requires grocery stores and pharmacies with more than 10,000 square feet of retail space to provide bins for the collection and recycling of plastic shopping bags. Yet research shows that consumer awareness remains low, and shoppers often forget to bring their bags back to the store. The same holds true for reusable bags.

“Our goal with this campaign is to give consumers that extra reminder so they translate good intentions into action,” said Christine Flowers-Ewing, executive director of Keep California Beautiful.

In San Jose, the “Got Your Bags?” campaign is working to bring together a coalition of partners that will help spread the important environmental messages in a number of creative ways. For example, Save Mart and Lucky Supermarkets are promoting the campaign at hundreds of stores throughout the Bay Area and Northern California, and this weekend will give away up to 80,000 reusable bags in their Santa Clara county stores.

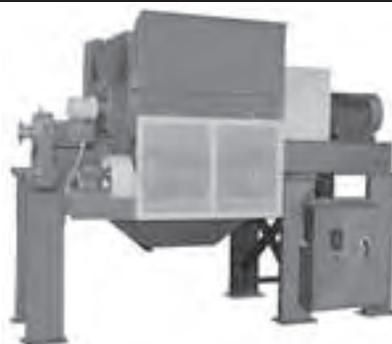
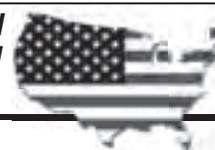
“Our company and our stores work hard at educating our customers to reduce

waste by using reusable bags and recycling their single-use plastic bags in our stores,” said Alicia Rockwell, director of public relations with Save Mart Supermarkets. “We all need to be reminded of the three ‘R’s’ and that is exactly what the ‘Got Your Bags?’ campaign is doing.”

The American Chemistry Council, which includes the Progressive Bag Affiliates – a group of manufacturers and recyclers of plastic bags and plastic resins in the United States – also are participating in the effort. “Plastic bags are too valuable to waste and should be recycled. We are delighted to work with Keep California Beautiful to help promote access to convenient recycling for San Jose residents,” said Tim Shestek, senior director of State Affairs with the American Chemistry Council.

The “Got Your Bags?” campaign originated as a grassroots effort with the Mariposa County Public Works Department (MCPWD) and the Mariposa County Unified School District, who worked together on a pilot stenciling project in local supermarket parking lots. MCPWD staff created the “Got Your Bags?” slogan and logo stencil design. The stencil painting was then incorporated into a lesson plan on recycling for summer school students.

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## ALTERNATIVE ENERGY

### Potential abounds for green energy storage industry

Alternative energy storage solutions are now opening up as a significant industry with immense potential. Different technologies in the developmental, near-commercialization and commercialized stages are garnering increasing attention. Catering to specialized applications and end-user markets, these technologies, if understood and utilized appropriately, can be highly beneficial to end users in the long term.

New analysis from Frost & Sullivan European Market for Alternative Energy Storage Solutions, identifies alternative energy solutions as the next big thing in the energy market. The following technologies are covered in this research: thermal energy storage, compressed air energy storage, flywheel, fuel cells and ultracapacitors.

"The need for environment-friendly storage technologies rather than conventional batteries is promoting interest in novel energy storage technologies," said Frost & Sullivan research manager, Malavika Tohani. "Moreover, the

demand for storage solutions with a long lifetime is supporting R&D into new technologies."

The future of the energy market hinges largely on environmental concerns. Heightened apprehensions over the environmental pollution caused by traditional lead-acid batteries have prompted several manufacturers to foray into green energy storage methods. Manufacturers in the alternative energy storage industry are attempting to devise cost-effective solutions that address energy storage concerns in a specialized way.

However, the high cost of alternative energy storage solutions is threatening market prospects. It is likely to hinder large-scale commercialization and result in limited uptake.

"Consumers focusing on short-term benefits rather than long-term returns are discouraged by the high initial investment required by alternative energy storage technologies," explained Tohani. "The sizeable outlay required for alternative energy storage technologies in comparison to conventional batteries is dampening demand for the former."

Understanding the most suitable application and identifying the appropriate end-user market for each technology are critical to boosting uptake. Market participants need to focus on R&D in order to reduce costs. To support volume sales, companies also need to educate consumers on the specific and effective uses of alternative energy storage as well as emphasize the advantages of various technologies.

"Manufacturers are confident of achieving significant reductions in the prices of alternative energy storage solutions over the next five years," remarked Tohani. "In addition, enlightening consumers about these technologies will enable manufacturers to tap into unprecedented opportunities for growth and expansion."

### Dow and Algenol build pilot-scale biorefinery in Texas

The Dow Chemical Company announced that it plans to work with Algenol Biofuels, Inc. to build and operate a pilot-scale algae-based integrated biorefinery that will convert CO<sub>2</sub> into ethanol. The facility is planned to be located at Dow's Freeport, Texas site.

Algenol's technology uses CO<sub>2</sub>, salt water, sunlight and non-arable land to produce ethanol. Dow, National Renewable Energy Laboratory (NREL), the Georgia Institute of Technology (Georgia Tech) and Membrane Technology & Research, Inc. are contributing science, expertise, and technology to the project. Their combined expertise offers new and innovative technology, with the opportunity for creating a breakthrough process for ethanol production.

Algenol submitted its formal request to obtain a grant from the United States Department of Energy for financial support to successfully conduct the

pilot. Upon approval of the grant, Dow and the other collaborators will work with Algenol to demonstrate the technology at a level to sufficiently prove that it can be implemented on a commercial scale.

In addition to leasing the land for the pilot-scale facility, Dow plans to develop the advanced materials and specialty films for the photobioreactor system. In addition, Dow will also provide the technology and expertise related to water treatment solutions and will provide Algenol with access to a CO<sub>2</sub> source for the biorefinery from a nearby Dow manufacturing facility.

The CO<sub>2</sub> will be supplied to the algae in the photobioreactors and will serve as the carbon source for the ethanol produced. The result is a CO<sub>2</sub> capture process which converts industrially derived CO<sub>2</sub> into more sustainable fuels and chemicals.

### \$200 million contract for largest pole-attached solar installation

Petra Solar, Inc., a provider of photovoltaic (PV) solutions for utilities, will be producing 200,000 smart solar systems for installation on PSE&G utility poles and street light poles in the largest pole-attached solar installation in the world, following the New Jersey Board of Public Utilities approval of a new PSE&G program. Petra Solar will also be creating more than 100 green jobs in installation, research and development, operational and manufacturing of the pole-mounted, grid-connected solar PV system.

In a contract of about \$200 million with PSE&G, Petra Solar will make

units for 200,000 poles in New Jersey's six largest cities and 300 rural and suburban communities in PSE&G's service territory. Over the 3 1/2 year life of the contract, Petra will add the green jobs to its employee base of 40-plus employees, most of whom work in the company's South Plainfield headquarters and manufacturing facility.

Petra's SunWave system combines highly distributed, grid connected photovoltaic generation and smart grid communications capabilities. In addition it provides enhancement of electric distribution grid reliability through a host of functions such as voltage support.

### Vercipia Biofuels advance the commercialization of cellulosic ethanol

BP and Verenium Corporation announced that its 50-50 joint venture company will operate under the name Vercipia Biofuels, and will relocate its corporate headquarters to Florida. Vercipia continues to focus on the development of one of the nation's first commercial-scale cellulosic ethanol facilities, located in Highlands County, Florida. The company is also developing a second commercial-scale cellulosic ethanol site in the Gulf Coast region.

Since announcing the formation of the joint venture company in February, Vercipia has applied for and been selected to move forward with due diligence on a Department of Energy Loan Guarantee for the Highlands project, which is now underway.

In addition, the team has continued to advance development activity in Florida and on a second site in the Gulf Coast region.

### Synthesis Energy Systems' president appointed to board of directors

Synthesis Energy Systems, Inc. announced the appointment of Robert Rigdon, the Company's president and chief executive officer, to its board of directors.

Rigdon was appointed by the board to fill a newly-created board seat and will serve for the remaining term which is set to run until the next annual meeting of stockholders.

The Company promoted Rigdon to the position of president and chief executive officer, in March 2009. Prior to the promotion, Rigdon held the Company's chief operations officer position since November 2008. Rigdon joined SES in May 2008 as senior vice president of operations and was responsible for overseeing the Company's coal gasification projects worldwide.

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## ALTERNATIVE ENERGY

### Vega's biomass plans fit Federal State Energy Program

Vega Promotional Systems, Inc. announced that the Company's plan to manufacture energy efficient pellet fuel from organic waste bi-products in the State of Georgia meets the qualifying criteria to apply for a grant from the State under the federal State Energy Program.

The United States Department of Energy announced in July 2009 that Georgia will receive \$32.9 million in federal money to support energy efficiency and renewable energy projects across the state. The money is part of a total of nearly \$82.5 million the department will award Georgia as part of the federal State Energy Program.

Georgia's proposal outlined plans for increasing the use of renewable energy and reducing greenhouse gas emissions. The state will get more than \$41 million in additional funding upon demonstrating successful implementation of that plan, according to the department.

Vega recently announced its plan to build a manufacturing plant in the State of Georgia to produce biomass products and bio-diesel products for power generation units. When completed, the fuel pellet manufacturing facility will capitalize on the abundance of biomass in Georgia's Bioenergy Corridor. The State ranks third in the nation as a potential source of renewable energy. The amount of privately owned forests in Georgia, more than any other state in the country, is the reason for the State's ranking. When completed, the Georgia plant would have the capacity to produce several hundred thousand metric tons of biomass fuel pellets annually.

The Company will seek financial assistance from the State to build its manufacturing plant. When complete, the facility will create nearly 200 direct or indirect green jobs and address state energy priorities to adopt emerging renewable energy and energy efficiency technologies.

### Algae-to-biofuels pilot facility proposed in Massachusetts

Plankton Power and the Regional Technology Development Corp. (RTDC) of Cape Cod announced the establishment of a public-private consortium focused on building a leading-edge facility to produce renewable biofuels from algae.

Under the leadership of Plankton Power, the RTDC, Massachusetts National Guard, Woods Hole Oceanographic Institution (WHOI), Marine Biological Laboratory (MBL) and Cape Cod Commission are joining forces to establish the Cape Cod Algae Biorefinery. The new facility will focus on pilot and commercial-scale development of algae biodiesel that is cost-competitive with existing petroleum and vegetable-based fuels, with improved performance characteristics.

The planned biorefinery is proposed for construction on five acres of land on the Massachusetts Military Reservation (MMR) in Bourne, Massachusetts, supported by the Massachusetts National Guard, pending legal and regulatory reviews. The pilot facility will provide the required infrastructure for testing commercial scale-up of a breakthrough algae-growth technology resulting from 20 years of cold saltwater species research and production. The biodiesel from Plankton Power algae is a "drop-in" replacement for home heating oil and petroleum diesel and will be produced for commercial distribution. The Cape Cod Algae Biorefinery Consortium recently submitted a \$20 million proposal to the United States Department of Energy that would leverage \$4 million in private funding to construct the proposed facility. MassDevelopment, the Massachusetts Clean Energy Center, and Loud Fuel Company are also supporting the initiative.

"Over the next few years, we are ready to set up the MMR as a partner for a

number of critical clean-energy initiatives that will not only help the military but boost the regional economy," said United States Representative Bill Delahunt (D-Mass.). "Working with entrepreneurs and the institutions based in Woods Hole, we want to make the MMR not just a center for the National Guard and Coast Guard, but an incubator for cutting-edge initiatives on algae as fuel, wind and solar energy, and unmanned aircraft for joint military and oceanographic research. The use of algae as a fuel has major potential and can be nurtured right on Cape Cod."

Beginning in autumn 2010, Plankton Power expects to initiate pilot-scale operations to generate up to one million gallons of biodiesel per year – enough fuel to supply Cape Cod's current biodiesel usage. The company projects that commercial-scale operations on 100 acres could eventually yield 100 million gallons of biodiesel, which would meet 5 percent of the demand for diesel and home heating fuel in the state of Massachusetts.

Said Curtis S. Felix, CEO and founder of Plankton Power, "The MMR location is ideal for this pilot project – the on-site wastewater treatment plant would provide an excellent source of nutrients for the algae, and MMR's location close to the Cape Cod Canal would provide a convenient source of seawater as well as a renewable thermal energy source for algae growth and temperature control."

The algae farm facility's location near MBL and WHOI will provide Plankton's team access to the scientific expertise and resources available at the Cape's two world-leading marine research institutions and facilitate a collaborative approach to address the challenges of efficiently producing commercial quantities of biofuel from algae.

### Florida flexible fuel vehicle awareness project begins

A national consumer awareness campaign aimed at owners of flexible fuel vehicles (FFVs) was officially launched at the Farm-to-Fuel Summit. The project is a cooperative effort between key Florida state government interests, gasoline/E85 distributors, ethanol companies, and several nonprofit environmental and energy advocacy groups.

The Florida Farm-to-Fuel Summit provided the forum for Charles Bronson, Florida commissioner of agriculture and consumer services, to announce that the state would be taking a proactive role aimed at increasing the use of higher blends of renewable biofuels, like ethanol, in FlexFuel Vehicles (FFVs). "Our state has developed a comprehensive strategy to become more energy independent with clean, sustainable, and affordable fuel sources," said Governor Crist. "Today's announcement is one more step that our state can take in the effort to become better stewards of our natural resources."

"We can stimulate the state economy and create new biotech jobs simply by using more ethanol. Several advanced bio-fuel projects in our state will use our abundant renewable biomass resources, waste from our agriculture processing plants, and trash from our cities. There are hundreds of millions of dollars that are being invested in Florida for these second generation ethanol plants and we need to develop the market by educating consumers now," said Bronson.

There are more than eight million FFV owners in the United States and 500,000 in Florida. Hundreds of auto dealers in the state will be selling millions more FFVs in the next few years. Project organizers say the program will be duplicated across the nation and can play a key role in meeting national renewable fuel use requirements.

"The FFV Awareness driver education project is designed to locate and encourage drivers of FFVs to try higher blends of ethanol when they are available. This will help Florida meet its goals of reducing the cost of and reliance on imported oil, improving air quality, and creating economic development opportunities – all while reducing greenhouse gases," said Douglas A. Durante, director of the Clean Fuels Foundation.

There are currently thirty E85 stations in the state, with a majority of them located in the South Florida market.

"Ethanol is the only renewable alternative fuel available today that is noticeably reducing our dependence on imported oil," said Renewable Fuels Association president Bob Dinneen. "Americans are willing to support a domestically-produced, renewable fuel over imported oil if they know where to buy it and if they can use. Making consumers aware of their fueling options puts the drive for energy independence in their capable hands. By partnering with the industry, the state of Florida is leading by example."

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**METALS**

**Steel imports decline in June**

Based on preliminary Census Bureau data, the American Iron and Steel Institute (AISI) reported that the United States imported a total of 849,000 net tons (NT) of steel in June 2009, including 798,000 NT of finished steel (down 18 percent and 22 percent, respectively, vs. May final data). Total and finished steel imports on an annualized basis are down 46 percent and 38 percent, respectively, vs. 2008. Annualized total imports of steel in 2009 would be 17.2 million NT. Finished steel import market share was an estimated 17 percent in June and year-to-date (YTD) through six months is an estimated 27 percent.

Key products with increases in June 2009 compared to May include Heavy Structural Shapes (up 33 percent), Wire Rods (up 32 percent) and Tin Plate (up 14 percent). For YTD 2009 vs. the same

U.S. IMPORTS OF FINISHED STEEL MILL PRODUCTS BY COUNTRY OF ORIGIN (Thousands of Net Tons)					
	JUN 2009	MAY 2009	JUN 2008	2008 Annual	% Change 2009 Annual vs. 2008
CHINA	44	150	369	4,821	-50.3%
SOUTH KOREA	40	118	168	2,305	-32.8%
JAPAN	59	61	124	1,614	-30.7%
INDIA	33	28	51	1,102	-31.2%
TURKEY	2	26	35	827	-21.8%
GERMANY	32	22	117	1,122	-47.4%
TAIWAN	12	33	66	662	-30.8%
NETHERLANDS	20	26	30	474	-51.3%
All Others	556	553	1,164	13,029	-36.0%
<b>TOTAL</b>	<b>798</b>	<b>1,017</b>	<b>2,124</b>	<b>25,956</b>	<b>-38.0%</b>

period last year, OCTG imports (led by China) are up 6 percent.

In June, the largest volume of finished imports from offshore was from Japan (59,000 NT, down 4 percent). This was the first time in 14 months that China was not the largest offshore sup-

plier of finished steel. Other major offshore suppliers in June were China (44,000 NT, down 71 percent) and South Korea (40,000 NT, down 66 percent).

**Aluminum recycler agrees to resolve violations**

Aleris International Inc., one of the nation's largest aluminum recyclers, and 13 of its subsidiaries have committed to implementing environmental improvements and controls projected to cost \$4.2 million at 15 plants located in 11 states, the Justice Department and United States Environmental Protection Agency (EPA) announced.

The company also agreed to a \$4.6 million civil penalty to resolve violations of the Clean Air Act, which will be allowed as an unsecured claim in Aleris's bankruptcy proceeding pending in Delaware.

Aleris uses recycled beverage cans, scrap, and other materials to produce aluminum in liquid or ingot form. Part

of the aluminum production process causes emissions of pollutants such as dioxins and furans, hydrogen chloride, and particulate matter.

The consent decree requires Aleris to better enclose its furnaces to improve the capture of emissions, retest every furnace using model test protocols, adopt model recordkeeping and reporting documents, and install pollution control or monitoring equipment at particular facilities. The settlement is expected to reduce annual emissions of particulate matter by up to 24,000 pounds, hydrogen chloride by up to 870,000 pounds, and dioxins and furans by up to one pound per year. Dioxins and furans, created during incineration,

are known to cause cancer and are extremely toxic at low levels.

In a complaint filed last February in the United States District Court for the Northern District of Ohio, the United States alleged that Aleris violated the National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production, which became effective in 2003. The complaint alleged that Aleris failed to design and install adequate systems to capture emissions of pollutants, to demonstrate compliance with federal emission standards through adequate performance testing, to correctly establish and monitor operating parameters, and to comply with recordkeeping and reporting requirements.

The settlement requires Aleris and its subsidiaries to implement pollution controls and take other compliance measures at facilities located in Goodyear, Arizona; Post Falls, Idaho; Morgantown and Lewisport, Kentucky; Chicago Heights, Illinois; Wabash, Indiana; Coldwater and Saginaw, Michigan; Uhrichsville, Ohio; Sapulpa, Oklahoma; Loudon and Shelbyville, Tennessee; Richmond, Virginia; and Friendly, West Virginia.

The states of Idaho, Illinois, Indiana, Kentucky, Michigan, Ohio, Oklahoma, Tennessee, Virginia, and West Virginia and Maricopa County, Arizona, joined the settlement and will share a portion of the civil penalty. This is the largest number of facilities ever included in a Clean Air Act settlement involving the secondary aluminum production industry.

For a direct link to a copy of the consent decree, view this article on [www.AmericanRecycler.com](http://www.AmericanRecycler.com).

*Because of his ongoing ability to increase office productivity, the 'Employee of the Month' award again goes to Mr. Coffee.*




Commodity		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
#1 Bushelings	per gross ton	\$165.00	\$169.00	\$180.00	\$188.00	\$300.00
#1 Bundles	per gross ton	165.00	170.00	175.00	185.00	290.00
Plate and Structural	per gross ton	230.00	180.00	212.00	205.00	285.00
#1 & 2 Mixed Steel	per gross ton	225.00	170.00	210.00	210.00	250.00
Shredder Bundles (tin)	per gross ton	183.00	182.00	178.00	150.00	195.00
Crushed Auto Bodies	per gross ton	183.00	183.00	183.00	155.00	200.00
Steel Turnings	per pound	62.00	75.00	72.00	80.00	150.00
#1 Copper	per pound	2.35	2.28	2.45	2.50	2.50
#2 Copper	per pound	2.21	2.15	2.31	2.39	2.39
Aluminum Cans	per pound	.50	.50	.55	.58	.65
Auto Radiators	per pound	1.35	1.27	1.50	1.45	1.50
Aluminum Core Radiators	per pound	.47	.40	.49	.48	.49
Heater Cores	per pound	1.00	.98	1.12	1.10	1.40
Stainless Steel	per pound	.68	.72	.80	.81	.92

All prices are expressed in USD. Printed as a reader service only.

**DISCLAIMER:** American Recycler (AR) collects pricing and other information from experienced buyers, sellers and facilitators of scrap metal transactions throughout the industry. All figures are believed to be reliable and represent approximate pricing based on information obtained by AR (if applicable) prior to publication. Factors such as grades, quality, volumes and other considerations will invariably affect actual transaction prices. Figures shown may not be consistent with pricing for commodities associated with a futures market. While the objective is to provide credible information, there is always a chance for human error or unforeseen circumstances leading to error or omission. As such, AR is not responsible for the accuracy or completeness of the information provided, or for outcomes arising from use of this information. American Recycler disclaims any liability to any person or entity for loss or damage resulting from errors or omissions, including those resulting from negligence of AR, its employees, agents or other representatives.

## METALS

### Steel imports permits rise

Based on the Commerce Department's most recent Steel Import Monitoring and Analysis (SIMA) data, the American Iron and Steel Institute (AISI) reported that steel import permit applications for the month of July totaled 951,000 net tons (NT).

This was a 5 percent increase from the 902,000 permit tons recorded in June 2009 and a 12 percent increase from the June preliminary imports total of 849,000 NT.

This was the first monthly increase this year. Import permit tonnage for finished steel in July was 851,000 NT, an increase of 7 percent from the preliminary imports total of 798,000 NT in June. July 2009 total and finished steel import permit tons would annualize at 16,392,000 NT and 15,249,000 NT, down 49 percent and 41 percent, respectively, from the 31,927,000 NT and 25,956,000 NT imported in 2008.

In July 2009, the largest finished steel import permit applications for off-shore countries were for Japan (87,000 NT, up 47 percent from June), South Korea (75,000 NT, up 88 percent), Turkey (32,000 NT, up 1,500 percent) and China (30,000 NT, down 32 percent). Finished steel import market share in July is estimated at 16 percent and at 25 percent year-to-date (YTD).

Finished steel import products that registered increases in July vs. the June preliminary include Sheet & Strip – All Other Metallic Coatings (up 135 percent), Plates in Coils (up 79 percent), Bars – Light Shapes (up 78 percent), Reinforcing Bar (up 70 percent) and Hot Rolled Bar (up 25 percent).

### Bruder joins Commercial Metals Company

Murray R. McClean, chairman, president and CEO of Commercial Metals Company, announced that the board of directors has elected Ann J. Bruder as vice president, general counsel and corporate secretary effective September 1, 2009. This follows David Sudbury's pending retirement on August 31, 2009 which was previously announced.

Ann Bruder has served as deputy general counsel since September 2007 and as the head of the legal department since June 2009 when Sudbury announced his intended retirement and began a transition of duties.

Prior to her tenure at CMC, Bruder was the chief counsel, chief compliance officer and corporate secretary of CARBO Ceramics, Inc. and had previously served in the legal department of American Airlines.

*A positive attitude will not solve all your problems, but it will annoy enough people to make it worth the effort.*

## South Carolina lawsuit against Nucor approved to proceed

"At Nucor Steel Berkeley and Nucor Corporation, we pride ourselves in being Equal Opportunity employers, and we acknowledge our employees as the key to our success as a company. We at Nucor strive to keep all of our employees satisfied, successful, and proud to be part of the Nucor team without regard to race, gender, national origin, religion, or any other protected category," stated Giff Daughtridge, vice president and general manager of Nucor Steel Berkeley, a division of Nucor Corporation.

Unfortunately, as with any successful company, Nucor has become a target for plaintiff's attorneys eager to score an economic victory based upon baseless allegations. In 2003, seven current or former Nucor Steel Berkeley employees filed a purported class action discrimination lawsuit against Nucor. The plaintiffs' case is made up largely of unconfirmed allegations by a few employees who did not report many of these alleged events until long after they were said to have occurred and this suit was filed. Nucor is confident that the

overwhelming evidence to be presented at trial will portray a workplace that respects diversity, rewards hard work and provides fair opportunity to all employees. A United States District Judge in Charleston, South Carolina has had jurisdiction over this case since 2004 and has held numerous hearings on the allegations raised by the seven plaintiffs. After years of examining the veracity of these allegations and the legal issues involved, the District Judge determined that the allegations were not sufficient to merit class action status and ordered in August of 2007 that the Plaintiffs' motion for class certification be denied.

Plaintiffs then appealed that decision to the Fourth Circuit Court of Appeals. Recently, in a 2-1 split decision, a three-judge panel of the Fourth Circuit Court of Appeals overturned the District Judge's decision denying class action status. The panel's written opinion focused upon highly inflammatory allegations that have little or no evidentiary support and ignored the District Judge's findings. Allegations of a plant-

wide radio system playing inappropriate materials, allegations of racial slurs by plant supervisors, and allegations of the sale of confederate flags at the company store are wholly unsupported by the evidence before the court. Most of the other allegations are based upon uncorroborated statements of individual employees and were never reported to Nucor until a lawsuit was filed. The District Judge heard all of the evidence and found it lacking to justify a class action. Nucor is confident that once the voluminous record in this case is reviewed in full, it will be vindicated. Nucor will continue to vigorously defend the case through the court process.

Nucor believes strongly in the appellate process established by the legal system and intends to fight these unsupported claims. Nucor will ask the full Fourth Circuit Court of Appeals to re-hear this case and re-examine both the sound ruling of the District Judge and the compelling analysis of the dissenting appellate judge who believed that the District Judge's ruling should be upheld.

### Aluminum can recycling up in 2008

The Aluminum Association, Can Manufacturers Institute (CMI) and the Institute of Scrap Recycling Industries (ISRI) have announced the 2008 Used Beverage Container (UBC) recycling rate which showed the highest recycling rate of any beverage container at 54.2 percent.

"The aluminum can is a sustainable beverage package," said Kevin Anton, chairman of The Aluminum Association and president, Alcoa Materials Management. "A can that is recycled can be back on the store shelf in as little as 60 days. Recycling conserves energy, saves resources and minimizes consumer and production waste. We model the benefits of recycling and will continue to promote these benefits."

Cans are infinitely recyclable. A recycled can requires 95 percent less energy, generates 95 percent less emissions and creates 97 percent less water pollution than generating new metal. Higher recycling rates ensure a steady supply of high value recycled aluminum delivering incredible value and benefits for all stakeholders.

The aluminum beverage can is 100 percent recyclable into new beverage cans indefinitely — a demonstration of recycling at its finest. The aluminum can is the only packaging material that more than covers the cost of collection and re-processing for itself. It also helps subsidize the collection of other recyclable materials.

### DTE Energy customers turn in over 1,000 old refrigerators

DTE Energy began dismantling more than 1,000 old refrigerators turned in by customers of its Detroit Edison subsidiary as part of a "cash for clunkers" appliance recycling program the company launched in June. The appliances are being dismantled at a newly opened recycling plant in Livonia, Michigan.

DTE Energy's appliance recycling program offers Detroit Edison customers \$50 for their older model refrigerators and freezers and hauls them away for free.

Since 2001, federal standards require new refrigerators and freezers to consume less energy. Current models use about 450 kilowatt-hours (kWh) annually, compared to older units that use up to 1,500 kWh per year.

Located in Livonia, the new recycling plant is expected to recycle more than

50,000 old, working refrigerators and freezers over the next three years – 30,000 of which will come from DTE Energy customers. The plant, which will create 20 new Michigan green jobs, is owned and operated by JACO Environmental, the company contracted to recycle the appliances. JACO Environmental will demanufacture the refrigerators using a mechanized process that prevents toxic oils, mercury and greenhouse gasses from escaping. Approximately 95 percent of each appliance will be recycled, keeping that material out of landfills.

Both refrigerators and freezers are eligible for the recycling program. The program is limited to removal of two units per household. Appliances to be recycled must be in working order with an inside measurement of 10 cubic feet or more.

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# ON TOPIC — Q & A

by Irwin Rapoport

## Solid waste removal disruption

With a population of nearly 2 million people, the City of Toronto experienced a disruption in residential garbage and recyclable collection for 39 days this summer as part of a municipal worker strike.

To learn more about how Toronto dealt with the disruption, American Recycler interviewed Geoff Rathbone, the city's general manager of solid waste.

**Municipal solid waste collection was disrupted for several weeks. Knowing that a strike was looming, did Toronto have a plan to deal with the situation in the event of strike and how important is it for cities to develop such plans?**

**Rathbone:** Service was disrupted for 39 days. Yes, we developed a plan many months in advance of the strike as permits and other items which required long lead times had to be dealt with in advance.

**Residents were asked to bring their trash to central points such as parks and other municipal sites. Looking back, was this the only option and how long did it take for the city to set up the collection centers and for citizens to get used to the idea of transporting trash in their personal vehicles?**

**Rathbone:** Based on our situation the temporary drop off sites met the needs of our citizens. We urged residents to store waste at home, but if necessary, to bring it in to one of the sites. Based on our criteria, which was to use only management staff to operate the sites, the storage concept was the only option.

**How much trash was collected in these temporary sites and what steps were taken in terms of vector control? Was some of that trash collected and sent to landfills during the strike?**

**Rathbone:** About 20,000 tons were collected and stored at our 26 temporary sites and our 7 transfer station drop off points. All waste stayed on site for the duration of the strike.

All sites were sprayed daily for pest control and had rodent bait stations.

**What technologies were employed to minimize the odor from the trash collection points? Were there some that were more effective?**

**Rathbone:** We requested that all waste be double bagged. All sites were sprayed daily with odor control by a professional pest/odor control company.

**Once the strike ended, how long did it take to remove the trash that was deposited at the collection points?**

**Rathbone:** All waste was removed within 2.5 days of the strike ending. Final site remediation took an extra few days.

**How did the strike affect the collection of recyclables? Is there any evidence that more recyclables were set aside because of the strike?**

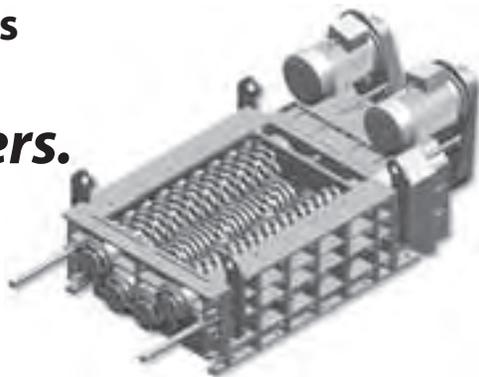
**Rathbone:** Residents were asked to store recyclables at home. Our first collection of recyclables after the strike collected about twice the normal amount. However, it is likely some recycling was lost with the waste brought to the sites – we will not know this final number for some time.

**While nobody appreciates a disruption in solid waste collection, was there a silver lining in terms of citizens learning more about the contents of what goes into a garbage bag and a desire to divert even more recyclables?**

**Rathbone:** Yes. We did hear from some residents that it woke them up to the sheer volume of waste we produce as a society and their contribution. It also made people realize how much material we normally can divert through the recycle and Green Bin programs – both of which were suspended during the strike.

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## AUTO

# Popular Cash for Clunkers program comes to an end

The United States Transportation Secretary Ray LaHood announced that after a successful run, the Cash for Clunkers program closed on August 24.

"This program has been a lifeline to the automobile industry, jump starting a major sector of the economy and putting people back to work," Secretary LaHood said. "At the same time, we've been able to take old, polluting cars off the road and help consumers purchase fuel efficient vehicles."

As of August 21, the CARS program recorded more than 457,000 dealer transactions worth \$1.9 billion in rebates.

The Car Allowance Rebate System, as it is officially known, has sparked intense interest, filling auto showrooms with buyers and revitalizing manufacturing plants. As a result of the program, automotive inventory has been depleted and both General Motors and Ford are ramping up production, adding shifts and rehiring laid-off workers.

The program has provided rebates of up to \$4,500 when people turned in

their clunkers for more fuel-efficient vehicles. Most consumers have turned in trucks and SUVs in exchange for passenger cars, with an improved gas mileage of about 60 percent.

Dealers across the United States have complained about not receiving payment from the government for the program. Numerous dealers have had to withdraw from the program because they could not afford to continue advancing funds. Some dealers indicated they were out over a million dollars waiting for reimbursement. The application required by the government is a ten page-plus application.

Dealers were also strongly advised to submit complete applications, which will expedite payment. Dealers will still be able to resubmit rejected applications after the deadline. The Department of Transportation is continuing to expand the number of people processing dealer applications for rebates by adding federal workers to the outside contractors currently at work.

## Automotive recyclers seek trade-in rules clarification

The Automotive Recyclers Association (ARA) is calling on the United States Senate to clarify an important consumer provision under the Car Allowance Rebate System (CARS) program that remains widely unanswered. The clarification centers on CARS rule language that centers on auto dealers ability to retain up to \$50 of the scrap value of the vehicle for their administrative costs for participation in the program.

Under the rules of the CARS program, automobile dealers are required to give consumers an estimate of the "scrap value" of their trade-in vehicle. While consumers are not expected to receive trade-in values for their vehicles because of the CARS requirement that will

not allow the vehicles back onto the roads, it is likely that automobile dealers will receive funds in excess of \$50 from either a salvage pool auction or automotive recycling facility.

What remains unclear, and what the United States Department of Transportation (DOT) did not specifically address in the CARS rule, is whether the consumer is entitled to those additional funds in addition to their \$3,500 or \$4,500 credit from the government.

Before the Senate passes legislation to provide additional funding for the program, ARA believes the Senate should address this important consumer issue and ensure those funds go to the consumer turning in their clunker vehicle.

## LKQ announces quarterly results

LKQ Corporation announced results for its second quarter ended June 30, 2009. Revenue for the second quarter of 2009 was \$492.8 million, an increase of 1.7 percent from \$484.4 million in the second quarter of 2008. Net income for the second quarter of 2009 was \$28.9 million, as compared to \$31.0 million in the second quarter of 2008. Diluted earnings per share was \$0.20 for the second quarter of 2009, as compared to \$0.22 for the same period.

For the second quarter of 2009, organic revenue declined by 3.3 percent. Excluding the other revenue category, aftermarket and recycled product and service revenue was \$446.6 million, an increase of 11.5 percent as compared to \$400.6 million for the second quarter of 2008.

On a six month year to date basis, revenue was \$1.0 billion, an increase of

3.5 percent from \$976.3 million for the same six month period of 2008. Net income for the first six months of 2009 was \$61.2 million, as compared to \$61.9 million for the first half of 2008. Diluted earnings per share was \$0.43 for the first six months of 2009, as compared to \$0.44 for the same six month period of 2008.

Excluding the impact of any restructuring expenses, LKQ anticipates full year 2009 net income will be in the range of \$116.5 million to \$124.0 million and diluted earnings per share will be in the range of \$0.81 to \$0.86.

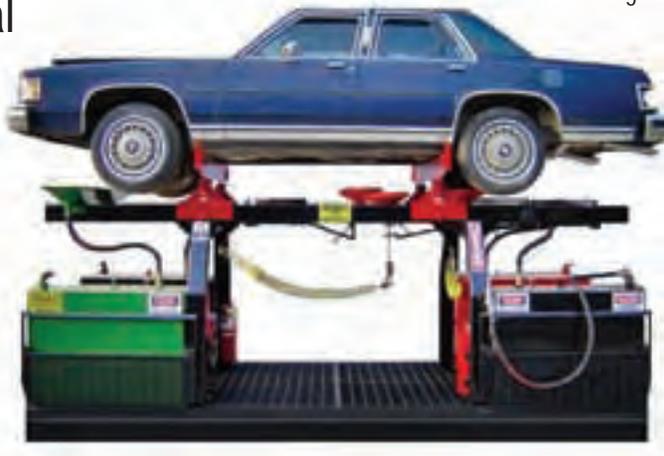
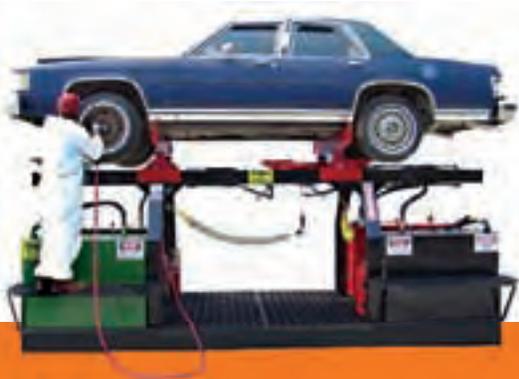
Weighted average diluted shares outstanding are anticipated to be approximately 144 million for 2009. Share numbers are estimates and will be affected by factors such as future stock issuances, the number of options exercised in subsequent periods, and changes in stock price.

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## AUTO

# General Motors faces calls to return to mercury switch program

Environment groups expressed concern and dismay with the “new” General Motors (GM) claim that it’s not responsible for funding the recycling of mercury switches from its old vehicles. The groups are demanding that the company continue meeting its obligations to fund legacy mercury recovery costs from GM end-of-life vehicles.

“GM should not be hiding behind a bankruptcy proceeding as an excuse for not meeting its on-going obligation to fund a vital program for keeping mercury out of the environment,” said

Charles Griffith, director of the Ecology Center’s Clean Car Campaign.

According to the industry estimates, 54 percent of all vehicles containing mercury are GM models. Therefore, it appears that GM is responsible for funding half the costs of the industry collection program.

GM’s lack of financial support detracts further from an overall lack of financing necessary for the national program to operate effectively, say advocates. Last month, a separate fund that helped pay incentives to auto dismant-

lers for turning in switches ran out of cash.

Furthermore, GM has denied responsibility for paying state-mandated incentives for the collection of auto mercury switches. Ten states have passed mercury switch legislation requiring automakers to pay for switch recycling and provide incentives to auto dismantlers for collecting switches.

By not paying bounties mandated by states, GM is also jeopardizing the effectiveness of state programs as well.

“GM’s latest maneuver throws a monkey wrench into state programs – if they stop paying bounties,” said Michael Bender, director of the Mercury Policy Project.

In addition, the recently adopted federal “Cash for Clunkers” program is also causing further difficulties for the programs, because a lot more vehicles are also now being retired.

Mercury switches were used to operate hood and trunk convenience lights in vehicles made before 2004, when automakers stopped their use. Upwards of 100 million of these devices were used in vehicles.

Unless they are removed first, the mercury from auto switches is released to the air when vehicles are recycled at steel mills. This source contributes to both local and global mercury pollution and contamination of fish.

## Quinn joins LKQ

LKQ Corporation announced that John S. Quinn will join the company as executive vice president and chief financial officer in the fourth quarter of 2009.

Quinn most recently was senior vice president, chief financial officer and treasurer of Casella Waste Systems Inc. beginning in January 2009. Previously he served eight years with Allied Waste Industries, Inc., a company with annual revenue of approximately \$6 billion, where he held various positions of increasing responsibility that included senior vice president of finance and chief accounting officer.

From 1997 through 2000, John served with Waste Management International Plc that included the chief accounting officer role.

## Recycler agrees with EPA order

United States Environmental Protection Agency (EPA) Region 5 has issued an administrative consent order to Auto and Scrap Recyclers to comply with EPA regulations at the company’s scrap metal recycling facility in Milwaukee, Wisconsin.

EPA cited Auto and Scrap for alleged violations of regulations requiring recovery of refrigerants from small appliances before they are recycled.

Auto and Scrap agreed, among other things, to verify recovery of refrigerant from small appliances and to stop accepting small appliances with cut or dismantled refrigerant lines.



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## AUTO

### Brookfield Resource Management acquires Kaufman Auto Parts

Brookfield Resource Management, Inc announced the acquisition of Kaufman Auto Parts located on Albany Post Road in Montrose, New York. Brookfield Resource Management will expand the auto wrecking facility by incorporating a recycling operation.

Since Kaufman Auto Parts is a 50-year-old facility, Brookfield will take any and all steps necessary to modernize the site and assure it will be a safe and healthy workplace for employees and the surrounding community.

## SALVAGING Millions

by Ron Sturgeon  
Autosalvageconsultant.com

### Taming your inbox: Seven tips to more efficient use of e-mail

E-mail can be a remarkable tool that boosts productivity or it can be a huge time waster. Mostly how well e-mail works depends upon how skilled you are at effectively managing it. I would like to share some of the tips and tricks that have helped me manage the hundreds of e-mails that I get every day.

- Handle it once if possible – when looking over e-mail, I have a goal of getting it handled with one touch. It saves time to respond, delete, forward, or move an e-mail to a relevant folder in one touch.

- Leave unresolved e-mails in your inbox – it's hard to overlook an e-mail issue that I am working on if I am diligent in handling my incoming e-mail and leave a few pending e-mails in an otherwise clean inbox. Keeping your inbox clean will help you find things and lower your stress level. Leaving the pending issues in your box, rather than a folder on the desktop, makes it less likely you will overlook an issue.

- Fretting about how to get started when you've got hundreds (or thousands) of e-mails in your in box? It's simple. Just create a new folder called "old in box before [date]". Move them to that folder. Now use your new set of folders beginning with the next e-mail received, and touch it once. If you get time, go back and sort those old ones, but chances are you won't need many of them. But they will be there if you do.

- Set up a sensible system of folders – for most people, the number of folders should not go beyond one or two dozen. Sub folders can help keep things organized

while minimizing clutter. Create a main theme that uses a good decision rule for folders. It's difficult to manage when some of your folders are named for dates, while others are named for people. Since e-mails include both names and dates, when designing your folders, consider a theme, then check it by going to your most recently, say the last few weeks, received e-mails. Scan them, writing down the folder name they would have gone to within that theme. With a few weeks of e-mails reviewed, you will have 80 percent of the folders you'll ever need. Create them and use them going forward.

- Set aside particular times for dealing with e-mail – some people feel compelled to constantly check their e-mail or respond every time they hear the ping of an incoming e-mail. Turn off e-mail notification and reserve time twice a day to do e-mails. Constant checking is a huge drain on productivity.

- Write good subject lines – it is a time waster to get an e-mail from an employee with a subject line that does not clearly communicate the contents. Here are two bad subject lines – meeting, issue to resolve. Make certain that your employees know how to write good subject lines – for example: Meeting with Tom Jacobs rescheduled to 2 pm, truck repair estimate 2k more than expected.

- Recognize the limits of e-mail – e-mail is a very poor way to discuss an issue when a decision needs to be made. Most e-mail discussions wander off topic. E-mail is also a poor way to build rapport. Apply these tips to make better use of e-mail.

#### Remember, only you can make BUSINESS GREAT!

*This article was provided by autosalvageconsultant.com, which was formed in 2001 by recyclers for recyclers, to help them improve their businesses.*

## Clunker bill successfully stimulated economy

The Cash for Clunkers program (CARS) began stimulating the economy even before the first rebate check was cut to a consumer for a new vehicle. "Manufacturers and dealers have spent millions to reach consumers who qualify for the \$4,500 government funded rebates," said Sharon O'Connell from [www.CashForClunkersInformation.org](http://www.CashForClunkersInformation.org).

Big budgets have been activated to implement campaigns targeting clunker consumers who are eligible for the program and the early results suggest the returns will be worth the investment. "We predict that the annualized selling rate for July will exceed 10 million vehicles for the first time this year due to the government program bringing dormant consumers back into the market," added O'Connell. "We think August could do even better with a million or more sales due to increased demand from the CARS program."

"The stimulus helps local markets more than national car companies because car dealers stimulate the local economy through their big advertising expenditures, job creation and enormous state tax revenue," said O'Connell. "A small dealership who sells 100 vehicles a month spends an average of \$500 per car in advertising, which is a total of \$50,000 that is spent in local advertising."

Courtesy Chevrolet, one of GM's largest dealerships in the country, "bought new inventory, hired additional salespeople and increased their ad budget by 88 percent," said Scott Gruwell. "We spent \$200,000 on a targeted direct mail and web campaign to every customer in our market and we launched a regional information portal called [www.CashForClunkersDC.com](http://www.CashForClunkersDC.com)," said Vince Sheehy, owner of [www.Sheehy.com](http://www.Sheehy.com) in Washington, DC, Virginia, Maryland and Baltimore. "So far we have sold over 100 vehicles while most dealers in our area are just getting started."

Since over 80 percent of consumers initiate their vehicle searches online, Automotive Manufacturers and retailers have spent a lot of money online. Ford Motor Company promoted its program on their home page where consumers could link to a website that promoted Ford models that qualify.

The New York Honda Dealers Association initiated an integrated campaign weeks before the final ruling to send a tar-

geted mailer to every qualified clunker owner on the Clunker List in New York while most other brands were focused solely on expensive television advertising. The Association also created a regional website, [www.NYCarsProgram.com](http://www.NYCarsProgram.com), to educate New Yorkers about the program.

"Honda is the most popular brand in the New York market and nearly all Hondas qualify for the Cash for Clunkers program, so we launched an interactive website to educate the public," said Rob Sabbagh, Jr.

[www.NYCarsProgram.com](http://www.NYCarsProgram.com) provided program information, a clunker calculator and a multi-media consumer tutorial that highlighted the fact that nearly every new Honda qualifies. "You don't really need a complicated chart to find a qualifying vehicle at a Honda dealer," said John Mendel, executive vice president of American Honda Motor Co., Inc.

Most of the economic activity generated up to this point has come from early spenders who also appear to be early winners in the race to reach clunker consumers. The winning retailers have been marketing to consumers for weeks while others are just getting started.

The National Highway Traffic Safety Administration and the National Automobile Dealers Association warned dealers against doing transactions before the final rules were announced on July 24th. Despite these warnings, Hyundai and a few dealers took the risk to help consumers get rebates when the law said they could. "Hyundai has attributed 10 percent of July's sales to the program and some dealers have generated hundreds of incremental sales," said O'Connell. "We quickly created a program that helped consumers take advantage of the program and it has helped our sales a lot," said Rick Case, who has six Hyundai stores as a part of one of the most successful automotive groups in the country. "So far all our sales are conquest sales. More than 70 percent of the clunkers were Ford or Chevy trade ins, 71 percent of the clunkers were SUVs, 93 percent had over 100k miles and 71 percent qualified for the \$4,500 because SUVs only need a 5 mpg improvement to get the full \$4,500 rebate. The average clunker trade in gets 17 mpg and the average new vehicle gets 25 mpg, which is an average of an 8 mpg improvement," explained Case.



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## ELECTRONICS

# Oregon's E-cycles Program collects 10 million pounds of waste in first 6 months

The Oregon E-Cycles Program, which provides free recycling of televisions, computers and monitors throughout the state, collected 9.54 million pounds of waste for recycling during its first six months, far above originally projected rates. The program, which launched January 1, originally projected collection of 12.2 million pounds of material throughout 2009.

The total amount of electronic waste collected at the more than 200 collection

sites in Oregon in April, May and June was 4.81 million pounds, up slightly from 4.73 million pounds tallied for the first three months. Of the 9.54 million-pound total for the first half of 2009, more than half (56 percent) was from collection of televisions, 33 percent from monitors and 11 percent from computers.

The amount of televisions collected remained consistent from first quarter to second quarter, said Kathy Kiwala, E-Cycles project lead.

"The proportion of waste was consistent with the first quarter, but we did not see the predicted tsunami of analog TVs from the (June 12) digital changeover," said Kiwala. Television collection numbers may spike up in the third quarter, she acknowledged.

Oregon E-Cycles is a statewide electronics recycling program financed by electronic manufacturers and jointly implemented by the Oregon Department of Environmental Quality. Anyone can

bring seven or fewer computers (desktop and laptop), monitors and TVs.

Many manufacturers support the DEQ-administered state contractor collection and recycling program. Three other manufacturer groups operate their own collection and recycling programs, but report to DEQ under the Oregon E-Cycles umbrella. They are Dell Inc., the Individual Producers Responsibility Group, and the Manufacturers Recycling Management Company LLC.

## New Jersey company fined for illegal exports

As part of a national effort to crack down on the illegal export of electronic waste, the United States Environmental Protection Agency (EPA) has fined a Lakewood, New Jersey company that unlawfully shipped thousands of computer monitors to Hong Kong. EPA fined Supreme Asset Management and Recovery of Lakewood, New Jersey \$199,900 for illegally exporting non-working computer monitors to Hong Kong in 2007 and 2008, and for failing to promptly respond to EPA's requests for information.

Computer monitors contain cathode ray tubes (CRTs), which are the video display components of televisions and computer monitors. The glass in CRTs typically contains enough toxic lead to require managing it as hazardous waste under certain circumstances. Color computer monitors contain an average of four pounds of lead. CRTs may also contain mercury, cadmium and arsenic.

EPA issued the fine under the federal Solid Waste Disposal Act, a part of the Resource Conservation and Recovery Act, which forbids the export of certain CRTs unless the exporters notify and receive consent from EPA.

## Panasonic develops high efficiency CRT recycling technology using lasers

Panasonic Corporation and Panasonic Eco Technology Center Co., Ltd. (PETEC) have developed a recycling technology using laser beams to separate the front panel and back part (funnel) of a cathode ray tube (CRT) used in TV sets.

This laser-cut technology, which is implemented at PETEC's plant in Hyogo Prefecture, Japan allows for separating CRTs quicker and cleaner than before. With this highly-efficient technology, Panasonic is poised to respond to the increasing demand for recycling used CRT TVs, tons of which are expected to be thrown away as the shift to digital terrestrial broadcasting is scheduled for completion in 2011 in Japan.

As different types of glass are used in the front panel and funnel, it is essential to separate them without mixing for recycling. The conventional method uses an electrically heated wire around the joint area of the front and funnel to separate them. However, this method not only requires time for the heating process but causes thermal stress fractures by the local heating, requiring manual corrections to clean the cut surfaces.

Panasonic's CRT recycling technology utilizes laser radiation to drastically reduce the processing time with much less manual work, allowing one tube to be processed in 50 seconds, three times faster than the previous method. The laser head of the innovative system has a "surface profiling" function to maintain a constant distance between the focal point and surface of the glass. Coupled with the "radiation energy" control adjusting laser beam light intensity to the circumferential velocity, the system achieves a high quality cut with no mixing between the front and funnel glass.

Moreover, Panasonic's laser cutter is fully automated to measure the size (from 14 to 36 inches) and types (normal and wide) of CRT TVs and process with the laser conditions (38 different sets of conditions) suited to the size and type of each CRT.

Panasonic will continue to study possibilities in applying such laser-based recycling technologies to flat-panel TVs, and further raise the efficiency of the whole TV recycling process, including the new recycling lines for flat-panel TVs established in April this year.

## AT&T estimates 14 million wireless devices will be recycled by 2011

AT&T is extending its commitment to environmental sustainability – with new initiatives in all 2,000-plus AT&T stores, community locations, online, and through continued advocacy programs with wireless users nationwide. AT&T estimates it will collect roughly 14 million wireless devices for recycling by the end of 2011.

AT&T is expanding its efforts to fight e-waste through the following initiatives:

- AT&T continues to provide recycling drop-off spots via all 2,000-plus retail locations nationwide, and it offers free prepaid shipping labels online at [www.att.com/recycle](http://www.att.com/recycle).

- AT&T has added two more ways to help make recycling easy for wireless users: free, prepaid mailing envelopes in stores and online.

## NYC electronics recycling program sees opposition

New York City's electronics recycling law was challenged by two electronics manufacturing trade associations. The Consumer Electronics Association and Information Technology Industry Council filed a lawsuit in opposition of the recently-approved program.

The lawsuit seeks to prevent the city from implementing its new law, which requires electronics manufacturers to develop convenient plans for the collection and recycling of discarded electronic waste, according to the Natural Resources Defense Council.

According to the EPA, at least 40 percent of the lead in landfills comes from discarded electronics. The new law directs manufacturers to implement a convenient system for New York City residents to return their used electronics that would otherwise be landfilled or incinerated to the companies for safe disposal.

## Energy-saving initiatives to save Dell \$5.8 million per year

Dell expects to save an estimated \$5.8 million a year as a result of power-saving initiatives and building upgrades in its facilities worldwide. The company, which sources more than 25 percent of its global energy needs from renewable sources, is also piloting solar projects on select campuses as well.

By the end of 2009, Dell expects to cut its global power use by around 48 million kilowatt hours per year, enough energy to power more than 4,000 average American homes for one year.

It will accomplish this through a combination of building upgrades, power management strategies and IT solutions, including:

**PC power-down:** Dell installed 1E NightWatchman® and SMSWakeUp™ software on 50,000 of its desktop and notebook computers to reduce energy waste by turning off computers overnight.

**Lighting:** Dell has replaced three-bulb T8 fluorescent lights and incandescent bulbs with two-bulb T5 fluorescents. They're also piloting the use of energy-efficient light-emitting diode LED lights in the elevators.

**Building automation:** Dell expects to achieve around \$1.5 million in annual energy savings by automatically turning off lighting and air conditioning systems during non-peak operational hours.



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## PAPER

### RISI's 15-year paper outlook shows shrinking demand

RISI, an information provider for the global forest products industry, released the first of its annual set of 15-year forecasts. Reports provide key data and analysis on end-use market growth, supply/demand balance, price forecasts, capacity removals, competitive costs and trade throughout both newsprint and printing and writing paper markets for Europe, North America, Asia and Latin America.

#### North America

According to John Maine, vice president of RISI Graphic Papers, "Aggregate paper demand is the lowest seen since the mid 1980s. The current recession represents an acceleration of a predominately structural decline that started post 2001. In the case of printing and writing papers, 24 years of growth have been wiped out in less than 2 years. The market will average 2 percent declines through 2024, at which point we predict the market will have contracted an additional 18 percent from today's levels."

Maine continued, "Newsprint will decline at least 5 percent per year, as major publishers continue the loss of circulation and advertising dollars while reshaping, reformatting and redefining the daily newspaper to be less than daily."

#### Europe

Sampo Timonen, director of RISI European Graphic Papers said, "We forecast that in every paper and newsprint grade and in every major end use, the West European demand in 2024 will be less than that in 2009. Western European graphic paper in 2024 is expected to be 20 percent less than 2009 levels, thus representing 6.6 million metric tonnes of loss. Eastern European markets will be increasing, but will not reach the per capita usage levels of Western Europe until after 2024."

"Additionally, the low cost producers in Asia have been increasing their exports when their domestic demand has fallen, thus displacing further European producers. This trend is questionable in the future, but certainly Europe will be losing its role as an export producer."

#### Asia

"China is the dominant paper growth story in the world," said Sandy Lu, economist for RISI Asia Graphic Papers.

She continued, "Having eclipsed the United States as the world's largest producer of paper in 2008, the trend looks to continue. However, we predict that within the forecast period consumers and advertisers will focus more on the Internet and the growth story will moderate. This represents a significant development that is not currently occurring in China, but we believe will start to develop shortly."

### Covanta Holding Corporation reports on second quarter

Covanta Holding Corporation reported financial results for the three months ended June 30, 2009. Diluted earnings per share were \$0.21 in the second quarter of 2009 compared to \$0.27 in the second quarter of 2008.

For the three months ended June 30, 2009, operating revenues were \$376 million, an 11 percent decline from \$423 million in the prior year comparable period.

Domestic revenues declined by \$21 million due to lower recycled metal revenue of \$13 million and a \$7 million decline in other revenue primarily related to timing of construction activity. The remaining domestic business revenue was essentially flat with new business revenue of \$6 million offsetting a \$4 million decline in revenue earned explicitly to service project debt. Domestic operating expenses were reduced by \$8 million during the quarter, reflecting \$20 million in expense reductions at existing businesses and from reduced construction activity this year, offset by \$13 million in added expense from new businesses and the effects of insurance recoveries.

International segment revenue decreased \$28 million in the quarter while plant operating expenses declined by \$27 million. These declines relate primarily to the Company's Indian facilities, where falling fuel prices reduced the pass through component of our revenues and also lowered our expenses.

Adjusted EBITDA was \$140 million, down \$22 million from last year's second quarter. 2008 results included \$5 million of insurance recovery benefits at the Semass facility. The remaining \$17 million was due to lower recycled metal revenue and higher G&A spending to pursue growth. Strong operating performance and cost reductions entirely offset lower energy prices and merchant tip fees.

For the six months ended June 30, 2009, total Company operating revenues were down 10 percent to \$735 million. Operating Cash Flow was \$137 million for the year-to-date period. Adjusted EBITDA was \$222 million.

### Waste Services has strong second quarter

Waste Services, Inc. announced financial results for the second quarter ended June 30, 2009. On an adjusted basis, fully diluted earnings per share were \$0.100 for the quarter as compared to \$0.125 in the second quarter of 2008. Revenue for the quarter was \$107.5 million compared to \$128.3 million for the same quarter in 2008. Reported income from continuing operations before taxes for the quarter was \$6.0 million as compared to income in the comparative period of \$9.0 million.

For the six month period ended June 30, 2009, fully diluted adjusted earnings per share were \$0.131 as compared to \$0.152 in the corresponding period of 2008. Revenue was \$203.3 million compared to \$244.9 million in 2008.

## WASTE

### VA Hospitals in Kansas pays penalty and implements better waste practices

The United States Department of Veterans Affairs Eastern Kansas Health Care System (DVA) has agreed to pay a \$51,501 civil penalty and spend nearly a half-million dollars on a plan to manage pharmaceutical and chemical wastes, all in an agreement to settle alleged violations of hazardous waste laws at its hospitals in Leavenworth and Topeka, Kansas.

The agreement, filed in Kansas City, Kansas, resolves a series of violations noted during inspections of the Dwight D. Eisenhower Veterans Medical Center in Leavenworth in January 2006, and the Colmery O'Neil Veterans Medical Center in Topeka in April 2006.

A three-count complaint accused DVA of one count of failure to perform hazardous waste determinations; one count of operation of a hazardous waste treatment, storage or disposal facility without a permit; and one count of offering hazardous waste for shipment to a transporter without a manifest and offering hazardous waste to an unregistered transporter.

The complaint alleged that the 2006 inspections by EPA Region 7 staff found multiple violations of the Resource Conservation and Recovery Act, including:

- Failure to perform proper hazardous waste determinations at Leavenworth and Topeka.

- Failure to properly manage hazardous waste satellite accumulation containers in the Histology Lab and Lab Storage Room at Leavenworth.

- Failure to properly mark hazardous waste containers in the Histology Lab storage room, a paint waste storage room and one other room at Leavenworth.

- Failure to document all weekly inspections of hazardous waste storage areas at Leavenworth.

- Failure to conduct weekly inspections of an area storing large quantities of acute hazardous waste at Topeka.

- Failure to store incompatible wastes without proper segregation at Leavenworth.

- Unpermitted on-site incineration of some hazardous wastes at both facilities.

- Unlawful shipping of hazardous waste between the two facilities without proper manifests, including the transportation of hazardous waste by an unauthorized waste transporter.

Besides paying a \$51,501 civil penalty, the Department of Veterans Affairs Eastern Kansas Health System must spend at least \$482,069 on a supplemental environmental project to develop and implement a program to properly identify, segregate and manage its pharmaceutical and chemical wastes at the Leavenworth and Topeka hospitals.

The supplemental environmental project will have at least three phases, including analysis of waste streams present at the facilities, development of current reference material including the implementation of pharmaceutical waste software, and risk assessment to define processes and identify needs.

DVA plans to develop software and hire additional personnel to track all chemicals and pharmaceuticals at both hospitals. This in turn will identify areas where product substitution, employee training and recycling can be implemented, potentially eliminating the disposal of hundreds of pounds of hazardous waste annually at each facility.

### Oakleaf president assumes role of CEO

Oakleaf announced that Steve Preston has been named chief executive officer and will take over day-to-day business operations of the company immediately. As part of a planned transition, Oakleaf founder Jim Barnes has

assumed his new role as Oakleaf's chairman of the board of directors.

As chairman, Barnes will remain active in the business, focusing on strategic and business development initiatives.

■ More coverage of WASTE INDUSTRY news, Focus Section, Page B1

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## INTERNATIONAL

## BASF and Masdar form partnership for world's first waste-free city

Masdar and BASF announced a strategic partnership agreement for collaboration on the construction of Masdar City, the world's first carbon-neutral and zero-waste city. BASF is named as a "preferred supplier" of construction materials and system solutions for the city's construction. The chemical company will also open an office in Masdar City once it is completed.

In order to reduce the energy demand in Masdar City, BASF will play a role in the city's construction by offering its solutions for sustainable and energy-efficient construction.

Masdar City, currently in its first phase of construction, is approximately 30 kilometers from downtown Abu

Dhabi, the capital of the United Arab Emirates. As a cleantech cluster and hub for technology innovation, research and development, the city is attracting industry leaders and researchers. Masdar is partnering with the world's most prominent companies, investment firms and educational institutions to develop and deploy leading technologies, systems and sustainable solutions in Masdar City and in the wider Abu Dhabi and Gulf region. One such example is the International Renewable Agency (IRENA) which recently decided to locate its new global headquarters in Masdar City.

BASF develops and markets numerous products that help to save

energy and resources as well as avoid greenhouse gas emissions. These include products made from polystyrene and polyurethane which will be used for the manufacture of insulating foams for thermal insulation of buildings. Phase-change materials that are integrated into plaster or gypsum wall boards can be used as an alternative to air conditioning, in this way saving electricity and maintenance costs. In addition, black pigments in roof coatings which absorb very little infrared solar radiation prevent dark surfaces from heating up. The use of special concrete admixtures in the concrete manufacturing process can lower carbon emissions by up to 60 percent.

## China Armco to build scrap metal facility in China

China Armco Metals, Inc., a distributor of imported metal ore, plans to launch a new state of the art scrap metal recycling facility in China. The Company announced that Armet Renewable Resources Co, Ltd., the Company's wholly-owned subsidiary, received a \$13 million line of credit from the Bank of China in August.

Management anticipates it will commence operations at its 1 million ton recycling facility in the fourth quarter of 2009. It is anticipated that the metal recycled by Armet will be sold for use in the production of steel within China. China is currently the largest producer and consumer of steel in the world.

## Call2Recycle expands program into Ontario households

Responding to the Ontario Ministry of the Environment's efforts to implement the province's Waste Diversion Act, the Rechargeable Battery Recycling Corporation of Canada (RBRCC) has proposed to expand its decade-long, free recycling program, Call2Recycle, by becoming an official industry program for all household batteries.

The Minister's directive will result in the first mandated all-battery collection and recycling program in North America, serving as a model for future industry stewardship programs in the province and beyond.

"We echo and applaud the Ministry of the Environment's goal of attaining 'zero waste' in Ontario. In addition to lessening the negative environmental impacts of waste, this movement reinforces the benefits – and responsibility – of reusing what we produce and consume," said Carl Smith, chairman, RBRCC. "More than 685,000 kilograms of rechargeable batteries have been recycled in Ontario over the past decade through Call2Recycle. By recovering resources from used batteries, we are taking one small step in helping the Minister achieve this goal."

By expanding the Call2Recycle program, the battery industry would be the first industry in Ontario to be recognized as meeting Ontario's emerging waste management and resource recovery plans. Call2Recycle's industry stewardship plan (ISP) was submitted on behalf of battery stewards that sell into Ontario and responds to the provincial call-to-action by proposing to assume responsibility for all battery collections. Expansion would be seamless and would continue to be free to consumers and collection locations, as Call2Recycle's infrastructure – existing collection sites, service chain providers

and relationships in the marketplace – can be leveraged to swiftly and efficiently accommodate the collection of all household batteries.

The expanded program could begin as early as January 1, 2010. The ISP documents strategies to collect and recycle more than 10 million kilograms of batteries in the province over five years.

An advisory committee will be established to guide the ISP toward its expansion objectives and ensure continued success. Toronto-based RBRCC will employ local partners to handle its sorting and processing needs.

# FINANCING

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## INTERNATIONAL

### New waste tire recycling plant to open in Kazakhstan

The first recycling plant for old tires in Kazakhstan was recently put into operation. Germany-based MeWa Recycling Maschinen und Anlagenbau GmbH supplied the Central Asian country with the entire processing line ready for operation. Kazakhstan Rubber Recycling will in future be producing a clean rubber granulate and an active fine powder for use in road construction.

Long roads and great differences in temperature between the winter and summer months pose a special challenge for road construction in Kazakhstan. The active fine powder produced by the new plant can in future be added to the bitumen and thus substantially

increase the quality and lifetime of the asphalt.

The plant was inaugurated in early July in the national capital of Astana with participation from government representatives. The privately-owned plant will process around 11,000 of used HGV and car tires per year using technology from MeWa.

Tires with a diameter of up to 1.5 meters will be fed into a MeWa UC 150 rotary shear. The machine breaks the tires into approximately palm-sized shreds with patented and low-wear cutting system. Throughputs of up to seven tons per hour are possible. A granulation line from MeWa then gradually breaks these shreds into a granular size of around eight millimeters. After each work step, different separation techniques then separate the textiles, stones and steel cord that the tires contain.

Granulators that are integrated into a sophisticated final cleaning process grind the granulate further into grain sizes of between 0 to 4 millimeters. MeWa has optimized this process step in the last few years and now offers granulates in previously unmatched purities. 99.95 percent by weight of the secondary raw material is free of steel and textile lint at the end of the processing chain. This granulate is used for the production of floors in sports facilities and playgrounds, rubber mats for housing and agriculture, and for molded part products in road and garden.

The plant will also include a special fine grinding process, also developed by MeWa, that processes the granulate further into the ActiMeWa. The resulting flexible fine rubber powder can be used in road construction. It will not only compensate for differences in temperature, but the active powder will also considerably reduce the noise level of the road surface and offer substantially more grip for vehicles, even in the rain.

The first section of the plant was transported by rail to Kazakhstan in the autumn of 2008. This was followed by the granulate cleaning unit in the spring of 2009.

In order to be able to guarantee smooth and efficient delivery and construction in Kazakhstan the complete plant was built in a one of MeWa's warehouses in Gechingen and then disassembled and put into standard freight containers for onward delivery. The modules could then be reassembled on site piece by piece – similar to a construction kit.

*"I pulled you over because your taillight is out," said the policeman.*

*The motorist stepped out, looked in back of the car, and stood quivering and speechless.*

*"Oh, it's not that bad," said the policeman.*

*The man mumbled, "But it's not the taillight I am worried about! Where are my wife and trailer?"*

### Campaign launched by European plastics industry

#### Survey reports 'high risk' of raised tax if government targets missed

A ground-breaking campaign was launched by the plastics industry to challenge itself, government and consumers to step up recycling and to stop sending plastic to landfill.

The Plastics 2020 Challenge is the first time plastics manufacturers and processors themselves have called for a widespread and open debate and set their own targets for helping make the country greener.

The plastics industry is pledging several commitments on the "four R's" – reduce, reuse, recycle and recover, including doubling the recycling rate of plastic packaging by the year 2020.

The campaign also challenges the government, environmental groups and consumers to join forces with the industry to get more out of the resources we all use.

The campaign launched a website, [www.plastics2020challenge.com](http://www.plastics2020challenge.com), urging members of the public and interest groups to join the debate on the benefits, use and disposal of plastic products and packaging.

In a radical move other environmental campaigners, such as Friends of the Earth, will be encouraged to take

part in regular web debates – on subjects such as marine littering and bio plastics. The sponsors of the Plastics 2020 Challenge believe that only an honest, open and rational debate on controversial issues will lead to a consensus about how to move forward.

The Plastics 2020 Challenge has been welcomed by WRAP, the government-sponsored waste reduction and recycling agency, and the Local Government Association.

Underpinning the scale of the Challenge are the findings of research by ComRes which showed that almost a third of councillors do not expect to meet the government's targets for recycling, composting and energy recovery next year while a third did not know if they would meet the targets for 2015 and 2020.

Almost a fifth of councilors reported a high or very high risk of council tax bills having to rise in 2020 because the target would not be met. Asked about the scale of potential council tax increases if the target was missed, 18 percent said it would be above 5 percent, with half of those respondents saying it would be over 10 percent.

## Events Calendar

### September 16th-18th

**14th International Congress for Battery Recycling - ICBR 2009.** Hotel InterContinental, Geneva, Switzerland. +41 62 785 10 00 • [www.icm.ch](http://www.icm.ch)

### September 23rd-25th

**19th Annual Arkansas Recycling Coalition Conference & Trade Show.** Inn of the Ozarks Hotel & Convention Center, Eureka Springs, Arkansas. 866-290-1429

### September 28th-30th

**Biopolymers Symposium 2009.** Embassy Suites Downtown Lakefront, Chicago, Illinois. 202-309-7296 • [www.biopolymersummit.com](http://www.biopolymersummit.com)

### September 29th-October 1st

**The Green Expo 2009.** World Trade Center, Mexico City, Mexico. [info@greenexpo.ca](mailto:info@greenexpo.ca)

### October 19-20th

**Aluminum Association 2009 Annual Meeting.** Waterview Conference Center, Arlington, Virginia. 703-358-2967 • [www.aluminum.org](http://www.aluminum.org)

### October 27th-28th

**NERC Fall Conference.** Hotel Northhampton, Northhampton, Massachusetts. 802-254-3636 • [www.nerc.org](http://www.nerc.org)

### October 27th-28th

**CARE Entrepreneur Meeting.** Atlanta Airport Marriott, Atlanta, Georgia. 706-428-2127 • [www.carpetrecovery.org](http://www.carpetrecovery.org)

### October 27th-29th

**Solar Power International 2009.** Anaheim Convention Center, Anaheim, California. 202-559-2032 • [www.solarpowerinternational.com](http://www.solarpowerinternational.com)

### October 28th-29th

**Canadian Waste & Recycling Expo.** Vancouver Convention & Exhibition Centre, Vancouver, British Columbia. 877-534-7285 • [www.cwre.ca](http://www.cwre.ca)

### November 5th-6th

**4th Asphalt Shingle Recycling Forum by CMRA.** Doubletree Hotel Chicago, Chicago, Illinois. [www.shinglerecycling.org](http://www.shinglerecycling.org)

### January 24th-27th, 2010

**US Composting Council's 18th Annual Conference & Tradeshow.** Wyndham Orlando Resort, Orlando, Florida. 631-737-4931 • [compostingcouncil.org](http://compostingcouncil.org)

## NEW DSB500 BALER

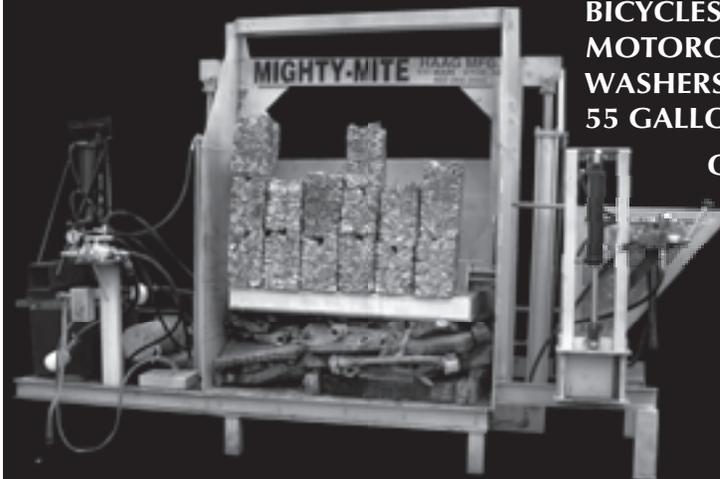
The DSB500 Will Bale Radiators, Condensers, Aluminum Breakage, Copper Tubing & Wiring.

MAKE ALUMINUM CAN BALES IN 18-30 LB BALES OR 125 LB BALES.

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# BUSINESS BRIEFS

## Wolok now consulting for waste industry

■ Bill Wolok, founder of Benlee, Inc. and currently a consultant for the business, has expanded his services by creating a new business – WBW Sales, LLC.

WBW Sales, located in Bloomfield Hills, Michigan, will provide consulting services and equipment for the waste industry.

## Randy LeClair joins sales force at SC Environmental

■ Randy LeClair has joined the sales department at SC Environmental, LLC.

LeClair is based in Wisconsin and will be selling waste and recycling equipment and systems. SC Environmental sells and services electronic waste, wire, cable and radiator processing systems, balers, shredders, conveyors, and scrap processing equipment to many industries. LeClair has 32 years experience in the scrap metal processing industry.

## Patrick Industries sells extrusion operations

■ Patrick Industries, Inc., a manufacturer and distributor of building and component products for the recreational vehicle, manufactured housing and industrial markets, announced that it has completed the sale of certain assets of its aluminum extrusion operation located in Mishawaka, Indiana to Patrick Aluminum, Inc.

Net proceeds from the sale were \$7.4 million and are subject to final transaction costs and certain closing adjustments.

Approximately \$4.4 million of the net proceeds were used to pay down principal on the company's term loan and pay off its Economic Development Revenue Bonds related to this facility, and the remaining funds were used to reduce borrowings on the company's revolving line of credit.

## Hedge fund manager joins ThermoEnergy board

■ ThermoEnergy Corporation an integrated technologies company engaged in the worldwide commercialization of patented and proprietary municipal and industrial wastewater treatment and power generation technologies, announced that J. Winder Hughes, III, has joined the company's board of directors.

Hughes is the managing director of the private equity firm of Hughes Capital Investors, LLC. In 2000, Hughes formed the Focus Fund, LP, a Florida-based, highly concentrated equity partnership that focuses on publicly-traded emerging growth companies. Over the past two years, the Focus Fund has become one of the largest investors in ThermoEnergy Corporation. Prior to the formation of Hughes Capital and the Focus Fund, Hughes held positions with Prudential Securities, Kidder, Peabody & Co., and Barnett Banks of Florida.

## Veolia acquires certain assets from Republic

■ Veolia ES Solid Waste, Inc. announced it has acquired certain assets in Kentucky from Republic Services, Inc. being divested as a result of Republic's recent merger with Allied Waste Industries, Inc. These newly acquired assets will provide additional incremental volumes at existing Veolia ES Solid Waste landfills in Kentucky and are expected to generate approximately \$2.2 million in annual revenue.

The assets consist of five commercial collection routes in and around Lexington, Kentucky. The waste collected will be internalized at the Veolia ES Morehead Landfill in Rowan County.

Details of the transaction were not disclosed.

## Nick Narsavidze appointed CEO of USST Holdings

■ USST Holdings announced the promotion of Nick Narsavidze, former senior vice president of business development of U.S. Science & Technology Corporation, to the position of chief operating officer of USST Holdings, Inc.

USST Holdings also announced the formation of the holding company's initial operating subsidiary, U.S. Science & Technology Corporation, which will lead engineering and science aspects of the company's waste-to-energy and renewable energy projects.

As chief operating officer, Narsavidze will serve as the primary liaison between USST Holdings and the leadership of U.S. Science & Technology Corporation, whose leadership appointments will be announced in the coming weeks.

In 1999, Narsavidze launched TNN International Inc., a firm focused on finding, researching, marketing and deploying new technologies, products and services between the United States and Eastern Europe. He also worked closely with the Ministry of the Environment and Protection Agency of Ukraine on developing technologies and technology transfers from the United States to solve environmental and ecological issues such as emissions and exhaust gases from metallurgical plants and other factories.

## Smurfit-Stone names Cutter vice president of R&D

■ Smurfit-Stone Container Corporation announced the promotion of Jim Cutter to vice president of its research and development (R&D) group.

Cutter will oversee all R&D related activities, including management of Smurfit-Stone's packaging testing lab in Carol Stream, Illinois. He will also oversee the integration of Smurfit-Stone's Packaging Consultant/Value Proposition Proposal (VPP) team, which helps customers identify ways to improve productivity and efficiency in their packaging operations.

Cutter joined Smurfit-Stone in 2007 as senior director of their Packaging Consultant/VPP team.

# MONTHLY CROSSWORD

BY Myles Mellor

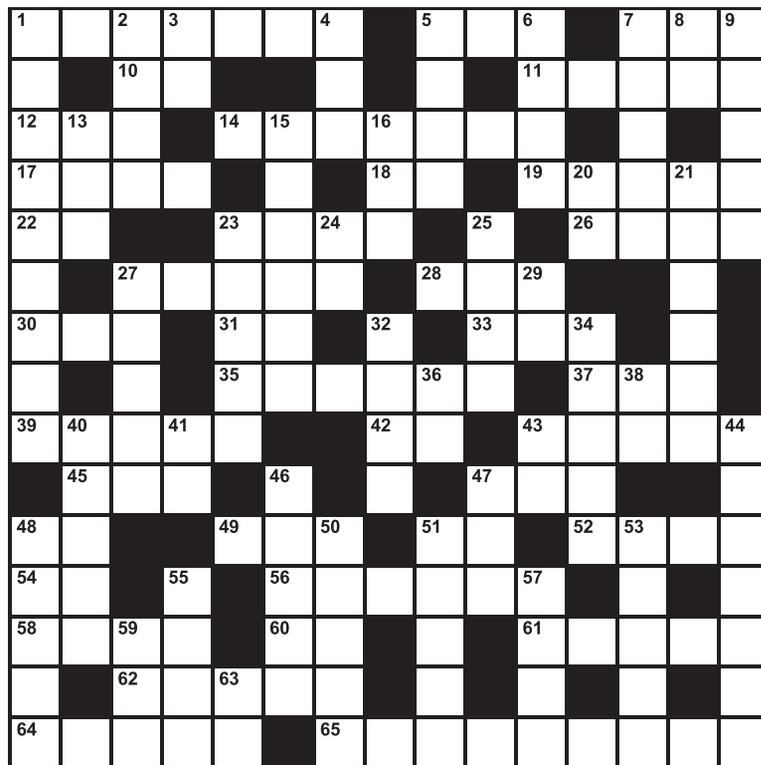
SOLUTION FOUND ON PG A26

### ACROSS

1. Non\_\_\_ metals, metals which contain little or no iron
5. Recycled content papers with a minimum of 30% PCW
7. Trash from homes and businesses
10. Used before a vowel
11. Hawaiian hello
12. Star Wars Jedi
14. Recyclable material made from petroleum
17. Recyclable cans
18. Wide shoe fitting
19. Vote into office
22. Italian river
23. Turmoil
26. Highland hillside
27. All living organisms in a given area
28. Recycling container
30. Not well
31. Lincoln location?
33. \_\_\_ de plume
35. \_\_\_ water, water found below the surface of the land, usually in porous rock formations
37. Flying saucer
39. Adds on
42. Boston locale
43. Oxygen provider
45. Market, for short
47. Rainbow shape
48. \_\_\_, senior!
49. After-school social
51. France and Germany's economic bloc, abbr.
52. Plastics, cardboard, newspapers, magazines, and junk mail
54. Light switch option
56. Waste to \_\_\_, burning of industrial waste to provide steam, heat or electricity
58. Close the \_\_\_, a term used to describe the last and most important step in the recycling process
60. Agricultural, abbr.
61. Photograph holder
62. Heats up
64. Dishwasher cycle
65. Cardio machine

### DOWN

1. Carbon indentation?
2. Natural water source



3. Nurse qualification
4. Oil spill area, often
5. Clear plastic used in some household cleaning product bottles
6. Confront
7. Grass clipper
8. Be quiet!
9. \_\_\_ stream, the flow of material from generation to disposal
13. Degradable and logical preceder
15. Ground trash
16. Make by hand
20. Weight measurement
21. Dioxide starter
23. Campfire melodies
24. Each, for short
25. \_\_\_ power, alternative energy source
27. \_\_\_water, wastewater generated by toilets
29. Disapproval
32. Junk pile
34. Mixed up yard trimmings used to nourish soil
36. Sodium symbol
38. Scale note
40. Basic organic molecules that combine to form proteins
41. Diamond amount, abbr.
43. Press person
44. Geo\_\_\_ energy, heat that comes from the earth
46. Sauna emission
47. Summer month, abbr.
48. Energy from the sun, description
50. Feeling of dread
51. Rain action, perhaps
53. Persian Gulf port
55. Relaxation centers
57. \_\_\_ waste, material for the green trash can, perhaps
59. Possess
63. Memo starter

# BUSINESS BRIEFS

## Cherry opens stabilized material plant

■ Cherry's Stabilized Materials Division has opened another stabilized material plant, giving the company a total of four stabilized facilities in the greater Houston Area. This newest plant produces stabilized road base material for companies located primarily in north-west Houston.

The new stabilized materials (pug mill) plant has a production capacity of 750 tons per hour of stabilized road base material. A state-of-the-art facility, the new pug mill plant has one of the largest production capacities in the Houston area and is situated on a 10-acre site where Cherry operates a large concrete recycling facility.

## MPI signs agreement with Eclipse Magnetics

■ Magnetic Products, Inc. (MPI), a worldwide provider of both magnetic and non-magnetic material handling solutions, announced that it has recently been named master agent of Eclipse products in the United States.

Eclipse Magnetics, Ltd., based in Sheffield, United Kingdom, manufactures over 20,000 different products, including magnets, magnet assemblies, magnet sub-assemblies, magnetic tools, magnetic chucks, magnetic separators, magnetic filters, magnetic accessories and custom engineered magnetic handling units.

## EnergySolutions adds two new directors to board

■ EnergySolutions, Inc. announced changes to the EnergySolutions board of directors. Lance Hirt, who has served as a board member since 2005, is stepping down after serving as chairman from 2005-07 and currently as a board director.

New appointments to the board of directors are Clare Spottiswoode from the United Kingdom and Dr. Pascal Colombani from France. Clare Spottiswoode has served in several capacities in the United Kingdom including director general of Ofgas, the regulator of the gas industry. During her career she has also acted as an economist at HM Treasury, lectured at London Business School and set up and managed private business interests. She has also held a number of non-executive directorships including deputy chairman of British Energy.

Dr. Colombani is a member of the French Academy of Technology and has been a senior advisor for high technology and energy at AT Kearney Paris since 2003. Dr. Colombani has held a number of positions in the nuclear energy sector, including chairman and CEO of the French Atomic Energy Commission (CEA), chairman of the Supervisory Board of Areva. Dr. Colombani holds a doctorate in science from the University of Paris Sud.

## O-I announces managing director of China

■ Owens-Illinois, Inc. has selected Paul Wang to serve as the company's managing director in China.

Wang joins O-I from International Paper, where he held a number of senior level positions in sales and marketing, business development, government relations and general management.

In his new role at O-I, Wang will be located in Shanghai and will assume responsibility for all of the company's operations in China. As part of his role, Wang will also support global operations through low cost strategic sourcing from China through O-I's China Trading Company and Tianjin Mould Company. A top priority will be accelerating O-I's growth strategy in China, including organic growth and merger and acquisition activity.

## Perma-Fix announces departure of COO

■ Perma-Fix Environmental Services, Inc. announced that the company has accepted the resignation of Larry McNamara, as vice president and chief operating officer of the Company.

The resignation was effective September 1, 2009. McNamara's duties as chief operating officer will be temporarily assumed by Dr. Louis F. Centofanti, the Company's chairman of the board, president and chief executive officer, while the Company commences a search for a new chief operating officer.

## Oakleaf hires LaMancuso as chief sales officer

■ Oakleaf, a provider of sustainable waste logistics and recycling solutions, has announced the hiring of John LaMancuso as chief sales officer.

LaMancuso brings with him a wealth of executive sales and management experience including a successful tenure with Automatic Data Processing, Inc. (ADP). Throughout his 25 years with ADP, LaMancuso held management roles with increasing levels of responsibility. Most recently he served as senior vice president of sales for the major accounts division in Parsippany, New Jersey.

In his role as chief sales officer, LaMancuso will position Oakleaf as a total solution that encompasses the four smaller divisions, and implement strategies to effectively cross market those services. Leading a sales force of 60, LaMancuso will be responsible for all sales efforts and initiatives for the waste logistics and recycling division, Oakleaf's largest business unit, which currently generates over \$525 million in revenue. LaMancuso will push pipeline development, and evaluate best practices to facilitate a best-in-class sales infrastructure.

*Old is when... You are cautioned to slow down by the doctor instead of by the police.*

*Old is when... "Getting lucky" means you find your car in the parking lot.*

*Old is when... An "all nighter" means not getting up to go to the bathroom.*

## Round2 announces expanded executive team

■ Round2, Inc. announced the expansion of its executive leadership team with the addition of Mark Chazanow as chief operating officer and Tanya Putnam as chief financial officer.

Chazanow brings more than 16 years of experience in the industrial recycling industry. Chazanow founded his prior company, Metallic Incorporated, in 1999 and led the organization through a successful sale to a major metals management company. Chazanow will be responsible for the daily management of Round2's operations for the company.

Putnam, a prior controller at Dell, Inc., complements the Round2 executive team with nearly 20 years of experience directing finance, accounting and human resource teams. Putnam's specialty is building and consolidating divisions during periods of corporate growth and leading them to higher levels of performance. Putnam's will be responsible for managing Round2's financial health throughout its important growth period.

## BP and Verenium partner in ethanol production

■ BP and Verenium Corporation announced that its 50-50 joint venture company will operate under the name Vercipia Biofuels and plan to relocate its corporate headquarters to Florida.

Vercipia will focus on the development of one of the nation's first commercial-scale cellulosic ethanol facilities, located in Highlands County, Florida.

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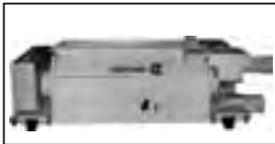
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The Colortronic Thermoforming MT1200 Series offers versatility and accessibility. A casted base provides a low profile making the MT1200 Series ideal for under or in front of the press applications.

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810-720-7300  
www.colortronicna.com



## CUMBERLAND ADDS CLS 600+ SHREDDER SERIES

The new CLS 600+ shredder series reduces startup purge and flash to less than 4" particles that can be granulated. Standard hardened rotors with replaceable cutters and seats are designed for processing thicker sections of startup purge and blow molding flash.

The CLS 600+ offers a low-speed rotor that transmits high-cutting torque for tough applications and reduced noise levels.

With a feed opening of 21.7" x 19.3" the CLS also features a 12" diameter drum-style rotor for cutting various scrap. Reversible cutters with replaceable knife seats provide easy maintenance.

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## ECONOMIZER OFFERS SINGLE SHAFT SHREDDER IN 3 MODELS

The EXS Extreme Duty Single Shaft Shredder from Economizer, available in 3 models, offers rugged construction with heavy-duty bearings.

Serrated ram plates hold materials in the rotor, and a sturdy swing-style ram allows product to fall into the rotor. A 29.5" diameter rotor allows for positive ingestion. Bolted in cutter seat allows easy maintenance. Low rotor speed transmits high cutting torque.

Square cutters reversible for quick changes, an abrasion resistant rotor and dual motor driven for even horsepower displacement on both ends are standard features.

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800-229-2919  
www.theeconomizer.com



## MACK TRUCKS BRINGS NATURAL GAS POWER TO REFUSE TRUCKS

In response to the growing need for low-emission alternative fuel vehicles, Mack Trucks announced that the new MACK® TerraPro Low Entry model is available with heavy-duty natural gas engines supplied by Cummins Westport.

The 9-liter Cummins Westport ISL G is rated at 320 h.p., can use compressed or liquefied natural gas and has a three-way catalytic converter to meet EPA emissions standards.

Mack officials have seen a growing number of municipalities mandate alternative fuel vehicles as a condition of contracts with refuse haulers.

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Peterson's 5900 chipper and 5000H model delimeter, debarker and chipper can be readily adapted to produce uniform chips as short as .25" and .08" thick.

Wood chips need to be a consistent thickness for uniform process control in a digester or dryer. Short fiber length is especially important if the chips will be further reduced in a hammermill.

The Peterson 5000H can achieve less than 1 percent bark content in many conditions. The Peterson 4800 flail debarker can also be paired with the 5900 disc chipper for low bark applications.

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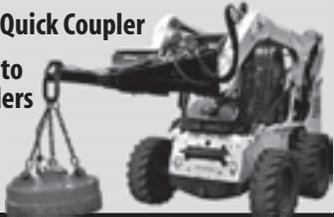
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1997 CAT M318 (RUBBER TIRED) with 2003 Genesis GMS 300R rotating shear.  
1990 CAT 235 with CAT S340 rotating shear.  
2003 KOMATSU PC220LC-7 with LaBounty MSD 2000R rotating shear.  
2004 VOLVO EC330B CRAWLER with Genesis GXP 660R rotating shear (low hours).  
2003 VOLVO EC240B with Genesis GMS400R rotating shear.  
1999 VOLVO EC340 Material Handler and material handling stick with CAT rotating shear.  
2000 KOMATSU PC300 LC-6 with Genesis GXP660R rotating shear.  
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- '95 Liebherr 932 scrap handler with grapple.
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- '04 Daewoo 255 excavator w/LaBounty 2000 sabre shear.
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1996, 2001 RHL350 (crawlers), 50' reach, hydraulic cab, gen-sets and grapples.  
2004 & 2005 MHL 350 (rubber), 50' reach, hydraulic cab, gen-set and grapple.  
2002 & 1998 MHL 331 REBUILT (rubber), 35' reach, hydraulic cab, gen-set and grapple.  
2001 MHL340 REBUILT (rubber) 41' reach, hydraulic cab, gen-set and grapple.  
1995 MHL350 REBUILT (rubber) 50' reach, hydraulic cab, gen-set and grapple.

**LIEBHERR**

2005 R934BEW (crawler), 50' reach, 4' cab riser, gen-set and rotating grapple.  
2005 A934HD (rubber), 50' reach, hydraulic cab, gen-set and grapple.  
2001 A934 REBUILT (rubber), 51' reach, hydraulic cab, gen-set and grapple.  
2002 A904 REBUILT (rubber), 38' reach, hydraulic cab, gen-set and grapple.  
2001 A924 REBUILT (rubber), 40' reach, hydraulic cab, gen-set and grapple.  
2001 A316 (rubber), 30' reach, hydraulic cab, gen-set and grapple.  
2000 R914 REBUILT (crawler), 38' reach, 4' cab riser, gen-set and grapple.  
2000 A904 REBUILT (rubber), 35' reach, 4' cab riser, gen-set and grapple.  
1998 A922 REBUILT (rubber), gen-set, grapple and magnet, no riser.

**CATERPILLAR**

2005 M325C REBUILT (rubber) with 50' reach, hydraulic cab, A/C, gen-set and grapple.  
2003 M322C (rubber), 42' reach, hydraulic cab, gen-set and grapple.  
2003 M318 (rubber), 35' reach, hydraulic cab, A/C, gen-set and grapple.  
2002 M320 REBUILT (rubber), 39' reach, hydraulic cab, gen-set and grapple.  
2000 830M REBUILT (rubber), 50' reach, hydraulic cab, gen-set and grapple.

**COLMAR**

2004 5260 AUTO LOGGER/BALER with 16.5' chamber, crane and grapple.

**OTHERS**

2006 & 1997 MAC portable car crushers.  
2003 NEW HOLLAND MH (rubber), 46' reach, cab riser, gen-set and grapple.  
1995 NORTSHORE 2100 SE REBUILT (stationary electric-75HP) MH, 27' reach, cab, A/C and grapple.  
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## PV turns old dumps into solar assets

by MIKE BRESLIN

*mbreslin@americanrecycler.com*

Aside from harvesting landfill gas, closed landfill acreage is largely wasteland. And where are these vast tracks of vacant land located? They are usually close to the metropolitan centers that filled them up or close to cities where large utilities are scrambling to meet renewable energy portfolio targets. This relative geography opens up large potential for the installation of plastic geomembrane caps covered with thin-film photovoltaics (PV). Very importantly, and unlike many solar or wind farms, this largely unproductive wasteland is usually sited next to power lines standing ready to deliver electricity into urban areas, which avoids building costly transmission infrastructure.

Traditional ground-mounted PV does not work for landfills because of prohibitions against drilling into soil caps to build the foundations necessary for steel racks to support conventional PV arrays, and the land is far too unstable to support other heavy structures like wind towers. After long term settlement these lands may serve as green space, golf courses or parklands, but usage is often problematic because of the underlying decomposition.

Exposed geomembrane caps are well established for closing landfills. A main advantage is that durable plastic covering is an environmentally safe and economical alternative that circumvents the high expense of buying, carting and spreading the required clay-content capping soils. Geomembranes are highly efficient in preventing rainwater from percolating through the waste and



Workers install the inverter unit that converts solar DC current into AC. The white strips dividing the black solar panels are wire chases that carry DC from the thin film panels to the inverter for conversion.

becoming troublesome leachate. And better than soil caps, they contain landfill gas for recovery while masking unpleasant odor.

Take the inherent benefits of modern geomembrane durability and combine it with the latest developments in thin-film solar technology, and many people are convinced that this is a hybrid solution with great potential.

Combine a solar-geomembrane with gas recovery, and suddenly, what were once wastelands can become productive energy farms. At least, that's the theory.

And the theory is being deployed in a few large-scale commercial applications with early indications of success. United Solar Ovonic (known as Uni-Solar), a wholly owned subsidiary of

Energy Conversion Devices, has been the pioneer in developing its amorphous silicon thin-film technology for landfill geomembranes. Energy Conversion Devices has been manufacturing thin-film panels for over 20 years and has approximately 250 megawatts in operation worldwide, primarily mounted on roofs.

See SOLAR DUMPS, Page 7

## WM acquires stake in China's waste-to-energy market

Waste Management (WM) and Shanghai Chengtou Holding (SC Holding) announced the signing of an agreement for WM to purchase 40 percent of Shanghai Environment Group (SEG), a provider of environmental services in China, from SC Holding.

Earlier this year SC Holding announced its intent to seek a foreign joint

venture partner in SEG. After a formal selection process, WM was awarded the bid and together both companies will manage and operate SEG to pursue waste-to-energy opportunities and offer other waste services throughout China.

"SC Holding and SEG are great partners for us as we venture into the growing Chinese market," said David Steiner, CEO

of Waste Management. "We see waste as a resource, and we see international expansion of our waste-to-energy business through our subsidiary, Wheelabrator Technologies Inc, as a growth engine for us in the future.

Through this joint venture, SEG can bring increased operating and technical efficiencies and solutions to the

rapidly growing Chinese waste-to-energy market."

Together with Waste Management's other renewable energy initiatives, this growth will move the company more quickly toward meeting its sustainability goal of doubling its renewable energy production to provide enough power for the equivalent of two million homes by 2020.

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## A Letter from the Editor

Dear Readers,

It appears that some of the cash that governments have been throwing at failing global economies has begun to stick. I don't know if anyone has felt it (though I hope you have), but from what I've seen in the news and heard from our readers, businesses are finally starting to pick back up.

Metals markets and pricing are recovering. Our Scrap Metals MarketWatch numbers have been nudging upwards, and it seems as if people are finally getting comfortable enough to once again subscribe to the 'you have to spend money to make money' mentality. And I think everyone will agree that that mentality is preferable to the pervasive climate of fear and unwillingness to invest that has been typical of the past couple of months.

In short, I hope that the recovering markets and economy will provide some long-overdue relief for you and yours. And if relief hasn't come yet, sit tight just a little longer.

On another happy note, welcome to the September issue of American Recycler. This month we once again focus our attention on the wide world of waste – both the generation and disposal of it.

Some of the hotter topics today are alternative energy and going green. And while some people may think that cutting edge green technology and old school waste management are mutually exclusive, in this issue I hope that you'll find that that is no longer the case.

From thin film photovoltaics gracing the caps of closed landfills to alternative fuel-powered waste handling trucks, the green movement has infiltrated even the not-so-green practice of throwing things away. With landfills now generating electricity from methane, the old gym socks you threw away last week may be powering your home as they decompose.

We think that the changes are for the better in the sense that, in most cases, going green makes good business sense. So read on, and I hope that everyone can glean some new ideas or sparks of inspiration from the information contained herein.

Enjoy the paper. As always, please direct your questions and comments my way, but if I don't hear from you, I'll see you next month.



Dave Fournier  
david@americanrecycler.com

## Veolia names new CEO to solid waste division

Veolia ES Solid Waste, Inc. has appointed Jim Long to the position of president and CEO of that organization. He replaces former CEO Richard Burke, who was recently promoted to president and CEO of Veolia Environmental Services North America Corp. (VESNA).

In his new position, Long will continue to focus on environmental stewardship, growth and stability. "Growth in today's business climate needs to be strategic and selective," commented Long. "We believe there are certain opportunities that will present themselves because of the current economic conditions and we plan to be ready to take advantage of these where appropriate."

As president and CEO of Veolia ES Solid Waste, Inc., Long is responsible for the management of one of the largest waste services companies in North America. Long was president and CEO of ATC Transportation, which was sold to Veolia Transportation North America in 2005. He also served in various finance and operational leadership roles during his 13 years with Waste Management in Europe and the United States. Most recently he was a partner with Pebble Creek Partners, focused on improving client's business results across all industries.

As CEO of VESNA, Burke now has oversight for all of the company's operating divisions in North America, encompassing solid waste collection and recycling, hazardous waste processing and disposal, industrial and marine services, and waste-to-energy operations.



### Upcoming Section B editorial focus topics:

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## Landfill closures highlight need for trash conversion

by IRWIN RAPOPORT

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The 2013 planned closure of the Puente Hills Landfill, the primary landfill in Los Angeles County (LAC), has created the catalyst for county officials to deal with the 80,000 tons of waste that is generated on a daily basis.

While 50 percent of the material is diverted through recycling and other programs, the majority of the remainder (called residual waste) is sent to be landfilled.

The problem of how to partially deal with that waste was given to the Alternative Technology Advisory Subcommittee (ATAS), which falls within the jurisdiction of the County Integrated Waste Management Task Force.

The result of this process has been the selection of four conversion technologies to process the solid waste to generate electricity, gases, chemicals and other products that have a market value. The processes mainly involve pyrolysis, gasification and methane generation.

The plan is to establish demonstration projects at up to three recycling centers; with the likelihood that more than one project will be recommended.

This month the LAC Board of Supervisors (five voting members) is expected to vote on a resolution that will likely contain two major clauses that will move the project forward.

"The first is a recommendation regarding the specific proposals – agreements that are now being finalized with each of the partners – to establish the demonstration projects," said Coby Skye, a civil engineer with the County Department of Public Works, who is lead staff for ATAS. "The second recommendation will be to approve a contract with an environmental consultant. That item would provide us with additional resources to provide support needed to make these projects successful."

"If the board approves both recommendations, the next step would be in developing the projects, beginning with the permitting and design process," he added, noting that "a lot of design work has already begun just developing the proposals themselves. Therefore the approval would be for the final design permitting and construction so that we could begin to operate."

Public Works has already vetted the recycling centers and all four technologies can be located at any of the centers.

"They are very different technologies and there is not one silver bullet technology that works in all situations," said Skye. "The intent is to prove the systems in a scale that is close to commercial. It will then be an easy jump to prove the financial viability of the projects as well. Landfill tipping fees are still relatively inexpensive and at the same time, the incentives are not really there – it is very difficult to develop these projects because there is a lot of regulatory uncertainty."

The process to develop the projects, he added, requires that they are:

- Environmentally feasible and meet all of the most extensive environmental standards as outlined by the state and the South Coast Air Quality Management District.

- Technically feasible, while meeting diversion targets and operating on a continuous basis at a near commercial scale using local waste.

- Financially viable by being able to turn a profit, which will hopefully send a signal to investors in LAC and southern California that investing in these projects is sound.

Skye notes that conversion technologies are being successfully utilized in Europe and around the world.

Paul Alva, chair of the ATAS and a senior civil engineer with Public Works, noted that due to the ongoing economic crisis, the amount of residual solid waste that has to be disposed of has dropped to about 32,000 tons per day.

"But that is very much a temporary issue," he said. "When the economy turns around and as the population continues to increase, we are going to see that number go up again. At the same time, we are hoping to have some of the alternatives developed and start to maintain that number at a lower level."

"If we are successful," he added, "we will see conversion technologies starting to start making a significant dent in that number within a decade."

"Landfills should be the last resort," said Skye. "They are very important right now because they are critical to protect the public's health and safety. We look at places like Naples, Italy where they haven't had effective waste management for a number of years, and see how important sanitation is. This is a real issue, but at the same time, if there are great opportunities to do something better with our waste and generate significant environmental and economic benefits, we want to do that to the extent we can."

The closure of Puente Hills is being recognized by cities large and small, within and outside of LAC. This has led to many municipalities from San Diego to Sacramento taking an interest in conversion technologies, with some beginning the process of determining which technologies are available and others seeking proposals for full-scale processing plants.

The information garnered by ATAS has been the source for many of these municipalities.

"We're excited about that because our hope and intent was to develop conversion technologies that can address this issue regionally, while serving as a model for other municipalities," said Skye.

"A regional solution is essential because disposing of trash is becoming harder and will be so in the future."

"LAC's Sanitation district is developing a waste-by-rail project just to handle some of the capacity that we would be lost with the closing of Puente Hills. Their projections show disposal tonnages going from \$30 per ton right now all the way to \$70 to \$75 per ton in less than a

See CONVERSION TECH, Page 5

# California landfills now required to capture methane

by Brian R. Hook

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The Altamont landfill near San Francisco started generating electricity from the methane in the landfill 20 years ago. With two gas turbine engines and two internal combustion engines, the Waste Management, Inc. facility produces approximately 8 megawatts of electricity – enough to power the equivalent of more than 6,000 homes.

Even though all 12 methane producing landfills in California owned by the Houston-based waste management company already have active gas collection systems installed, the company may have to make some changes to its landfill operations thanks to new regulations adopted by the California Air Resources Board (CARB) in June.

The new rules require all landfills throughout the state to capture methane gas. New gas collection and control systems will need to be installed at 14 uncontrolled municipal solid waste landfills by 2012, according to CARB. The regulations are also designed to reduce emissions at landfills with existing collection and control systems.

“Based on extensive monitoring at three of our California landfills, we believe that our landfills can meet and possibly exceed the state’s goal of achieving a methane capture efficiency of 85 percent,” said Chuck White, Waste Management’s director of regulatory affairs. “Waste Management is committed to operating in full compliance.”

CARB estimates that 218 of the state’s 367 landfills may be subjected to the new regulations. Once implemented, however, the regulations are estimated to reduce 1.5 million metric tons of greenhouse gas emissions in the state, according to CARB.

California often leads the way when it comes to new regulations. But White said he is not aware of any other states planning to adopt similar standards for landfills. “Waste Management is committed to working with individual states to ensure that our landfills are controlling the methane emissions to the fullest possible extent,” White said.

Waste Management currently operates 273 active landfills across North America. Plus, the company already operates 16 waste-to-energy plants across the country, producing enough electricity from waste to power the equivalent of 1 million homes. “We are committed to doubling this energy output by the year 2020,” White said.

Dan Jameson, vice president of marketing and municipal services at Republic Services, Inc., said that he expects other states may follow California’s lead and adopt tougher standards for landfills as a way to try and control greenhouse-gas emissions.

Republic Services, based in Phoenix, is the second-largest solid waste company in the United States. It currently owns and operates 213 landfills around the country.

“We hope that the implementation of these regulations in California will allow us to gain experience with these standards to determine if they produce actual emission reductions, are safe and cost effective,” Jameson said, noting that the new regulations may also assist other states to develop similar greenhouse-gas reduction strategies.



Even though the Altamont landfill has been generating electricity from methane for the past 20 years, even it may need to make some changes in order to comply with new California Air Resources Board regulations.

“These new regulations, while we will support them, will require a significant increase in the cost of solid waste management in California,” Jameson said. “The proposed regulations will impose a stringent and costly new monitoring and reporting requirements to control greenhouse gas emissions for most landfills in California.”

The greenhouse gas emission regulations will also require owners and operators of smaller landfills in the state that do not have gas collection and control systems to install new systems. “Republic will support and follow the new regulations, but it’s important to know that there is a cost of environmental compliance,” Jameson said.

Emission controls on landfills may not be the only new regulations to impact landfill operations in the future. Cap-and-trade legislation may also eventually force the owners of landfills to change their operations in California and around the country.

In the early rounds of negotiations, though, California landfills are not being considered for cap-and-trade, Jameson said. “CARB has instead opted to use command-and-control measures rather than market mechanisms to limit emissions,” he said.

While it is still unclear how the United States Congress or the Environmental Protection Agency (EPA) might view landfills in an eventual cap-and-trade system, Jameson said he is hopeful that federal regulators will not take California’s approach.

Bruce Parker, president and chief executive officer of the Washington D.C. trade group, the National Solid Wastes Management Association, said members are pleased that under the current House of Representatives bill, landfills are not included under the emissions cap and that landfill gas recovery will be eligible for renewable energy credits.

“An important purpose of offsets is to provide cost-containment and price moderation to capped sources so that they can phase in new technology for reducing greenhouse gas emissions without impos-

ing avoidable economic hardship,” Parker said.

Until the cap-and-trade issue is settled on a national level, Parker said that he does not expect any other states to follow California’s lead and impose new emission standards for landfills. “My sense is that whatever the EPA develops as a performance standard under the cap-and-trade legislation will be adopted by other states,” Parker said.

The solid waste industry was generally supportive of the rulemaking effort in California, said Patrick Sullivan, senior vice president at SCS Engineers, a consulting firm headquartered in Long Beach, California with offices located around the country.

“We understood early in the process that CARB wanted to see additional reductions from landfills, and we, from the beginning, worked with CARB staff on the rules in a constructive manner,” he said. “Now, that does not necessarily mean that everyone in the industry is completely happy with the rules. The rules reflect some degree of compromise between CARB, the landfill industry and other stakeholders.”

Since California already has an extensive landfill gas system due to other regulations, Sullivan said, the new reductions will be more difficult and costly.

“What is left uncontrolled represents only a small percentage of the refuse in place in California landfills. Because the regulations will affect smaller landfills, there will be no economies of scale, and the rule is likely to have a greater relative impact and cost for small, rural landfills, many of which are owned by municipalities,” he said.

The regulations also come at a terrible time in terms of the economy, Sullivan said. Every regulated site in the state will have to spend more money on collection and control, at a minimum, including additional monitoring. In the worst case scenario, landfill owners will need to install and operate a completely new landfill gas system.

“We hope it is ultimately worth it when we see the additional methane reductions that are created. CARB and the solid waste industry are going into this with a huge amount of uncertainty of how successful the rules will ultimately be,” Sullivan said.

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# EQUIPMENT SPOTLIGHT

## Alternative energy refuse trucks

by **MARK HENRICKS**

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Propelled by new emissions regulations and higher prices for diesel fuel, customers of refuse collection trucks are flocking to vehicles equipped with engines that burn alternative fuels such as compressed natural gas (CNG).



Heil Environmental

At Heil Environmental in Chattanooga, Tennessee, Chris Dutton, marketing communications manager, said environmental regulation is the primary factor pushing the market. Specifically, the United States Environmental Protection Agency has emission standards for nitrogen oxides and particulate matter coming into play in 2010. "Municipalities in particular are looking for alternatives to diesel fuel," Dutton said. "CNG is one of those alternatives."

Another important factor is the availability of government financial assistance to purchasers. Municipalities working with non-profits are able to apply for funds covering up to 25 percent of the cost of the CNG chassis. "That's what seems to be driving CNG at the moment," Dutton said.

The manufacturer's interest in CNG ramped up in 2009. "When we saw fuel prices spike last year, CNG became a very cost-effective alternative for our customers," Dutton said. Some had already moved to CNG, and were reaping significant monetary benefits as a result. "We're also seeing the efficiency gains

when it comes to the amount of soot released and the noise pollution."

Heil does not manufacture truck chassis for its CNG vehicles. Instead, they purchase them from Peterbilt, Mack or other makers. The company does, however, install complete CNG packages on chassis. "Previously people had to work with chassis manufacturers and ship the chassis off to a fabricator for a tank," Dutton said. "It would come to Heil and then often have to go back to the fabricator and possibly back to us before going to the customer."

Now, as vehicles move down the production line, customers can elect for either CNG or conventional diesel-fuel chassis. The installation is completed without the vehicle having to leave Heil's plant. "This makes it easier and more efficient," Dutton said. "The other ways involved a lot of delay and expense."

While many of Heil's chassis are suitable for CNG, Dutton said their most popular product for customers interested in CNG-fueled vehicles is the Rapid Rail. This model features an eight foot reach, fast cycle times, continuous packing and is popular with many users looking for a faster, more efficient vehicle they can run with one operator, Dutton said. CNG customers like the Rapid Rail particularly because the tank conveniently mounts on the roof.



Mack Trucks, Inc.

In the future, Dutton expects a growing trend toward CNG-fueled refuse collection vehicles. That does-

n't mean that CNG is the last word in alternative fuels, however. "You almost have to wonder if an entirely new technology might step in," Dutton said.

"CNG is a nice stable option that comes largely from North America," he noted. "It's not just the air quality benefit, but also some really holistic community interest and benefits that can be gained. We don't think it's going away. We're not sure we can say it's going to be dominant any time soon. But it's certainly an interesting fuel to look at."

At McNeilus in Dodge Center, Wisconsin, Jeffry Swertfeger, director of marketing and communications, said the company's emphasis of late has been to offer factory installation of required items such as CNG tanks on its vehicles. "One of the things McNeilus has worked hard on this last year is putting all the resources in-house so when the CNG chassis arrives from Peterbilt or Kenworth or whoever, we don't have to ship that truck out. We can install the tank here." The tank switch reduces the time and expense that customers must put up with in order to get refuse vehicles that can burn CNG. McNeilus also has a CNG fueling station at its plant.

CNG-fueled vehicles represent one of the elements of McNeilus' engine initiative involving alternative fuels. The company expects CNG to continue its popularity, due in part to forecasts for higher diesel fuel prices at some point. "CNG is going to be around for a long time," Swertfeger said. "CNG is also a stepping off point for some of the other technology that's around the corner, such as fuel cells using hydrogen power."

CNG-fueled refuse collection vehicles offer some special benefits, such as operating without the familiar clattering sounds of heavy-duty diesel engines. "CNG trucks run dramatically quieter than a diesel powered unit," Swertfeger noted. "So there's the noise pollution aspect. That has encouraged many municipalities and refuse collection services to implement the quiet-running vehicles."

McNeilus has sold CNG vehicles to the city of Long Beach, California, as well as to refuse collection companies including Allied Waste, Republic and Waste Management. To help customers evaluate the financial impact of switching to the technology, they



McNeilus Truck and Manufacturing

have a CNG calculator on the company's website. "We allow customers to go out there and put in their own numbers to see what they can save by migrating to a CNG vehicle," he said. "With all the government grants and fuel savings, it becomes pretty clear. In those states where there are government grants, and more are added all the time, it becomes pretty beneficial."

### Manufacturer List

**Amrep Inc.**  
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909-923-0430  
www.amrepinc.com

**Heil Environmental**  
Neal Williams  
866-367-4345  
www.heil.com

**Mack Trucks, Inc.**  
Steve Ginter  
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## SAIC acquires R.W. Beck Group

Science Applications International Corporation (SAIC) announced that it has completed the acquisition of R.W. Beck Group, Inc., a provider of business and technical consulting services in engineering, energy and infrastructure.

The acquisition includes Beck Disaster Recovery (BDR), Inc., an emergency management consultancy that provides hazard mitigation, preparedness/planning, risk management and mitigation and other services.

R.W. Beck's 670 employees will join SAIC's Infrastructure, Logistics and Product Solutions Group led by group president Joe Craver. The group provides integrated solutions for a variety of customers across energy, envi-

ronment, homeland security and logistics markets.

R.W. Beck's core consulting and engineering organization will join the group's Energy, Environment, and Infrastructure business unit led by J.T. Grumski to create synergies in energy management and grid technology; infrastructure planning and design-build; capital program management; and environmental services, including water, wastewater, and solid waste management. BDR will join the group's Homeland Protection and Preparedness business unit led by John Ferriter to create a comprehensive offering of preparedness, emergency response, training and disaster recovery for federal and municipal customers.

## Conversion Tech

■Continued from Page 2

decade. It is going to have a dramatic impact on the rates charged by other area landfills.

According to Alva, "Most likely, transportation costs for disposal are going to increase again, and energy costs are also likely to increase, so we definitely see that conversion technologies are going to be cost competitive in the next 5 to 10 years. This is not accounting for climate change legislation that may create additional incentives for conversion technologies, which would significantly reduce greenhouse gas emissions."

LAC would like to see a situation where most of the solid waste does not leave the county and that instead of paying to ship it away, it is sent to local conversion centers, where it can generate tax revenue or host fees via partnerships with the companies involved.

Several municipalities in LAC have passed unanimous resolutions supporting the conversion technology project.

Alva said that once the demonstration projects are up and running successfully, establishing regional conversion centers in the county should be an easier

task, as should the matching of collection routes to these centers.

"There has been a lot of discussion about large wind and solar projects to generate renewable energy from remote locations using hundreds or thousands of acres," he said. "We can, in a 5 to 10 acre site, build a full-scale commercial project that can generate 30 to 40 megawatts of energy net to the grid and do that locally without needing large transmission lines to do it, in a way that also solves other environmental issues and manages the waste stream."

Skye is pleased with legislation – both at the state (AB 222, California) and Federal (HR 2454, climate change and others) levels – that advances biorefineries and waste to energy production.

"These bills finally acknowledge that its best to recover energy from our waste materials, rather than landfilling them," he said. "The bills will create a platform to generate renewable energy and provide that regulatory certainty. Even without a financial incentive, it provides a signal to the market place to invest. You may also see a premium for the electricity that is generated from these projects. This would help to make them more financially viable in the short-term rather than in the long-term, when we really run out of landfill space."

AB 222, he explains, "has advanced further than any previous attempts. It would essentially provide a level playing field and regulatory certainty for conversion technologies."

The State Assembly passed the bill, as did the Senate Energy, Utilities and Communications Committee, and it is now before the Senate Environmental Quality Committee.

"It is critical legislation and it creates a strong incentive for 'recycling first' before any waste stream is sent to a conversion facility," said Skye. "It requires that all recyclables are pulled out and processed prior to conversion. That is a philosophy that we strongly agree with."

"We have invested a lot in our recycling infrastructure and we want to maintain and enhance that," he added. "In countries that have conversion technologies they actually see an increase in recycling. I urge people to write a letter supporting passage of AB 222. It diversifies our solid waste infrastructure, conserves our natural resources, and creates highly paid green collar jobs."

## PA DEP fines Koppers for hazardous waste violations

The Department of Environmental Protection (DEP) has fined Koppers, Inc. \$23,213 for hazardous waste violations in 2008 at its wood preserving plant.

"The company did not notify DEP in a timely manner that hazardous creosote wastewater was leaking, and did not correct all the violations until five months later," said DEP Northcentral regional director Robert Yowell.

Koppers notified DEP on September 29, 2008, that cracks in the Company's containment area had allowed about 500 gallons of creosote-contaminated wastewater to leak to the soil. The notification occurred three days after the release instead of immediately, as required by state environmental regulations.

In addition to the cracks in the containment area, the collection system

responsible for removal of waste was not being operated properly, which contributed to the release.

DEP conducted a follow-up inspection in November 2008 and discovered that three hazardous waste storage tanks were not properly labeled, and the hazardous waste storage tanks that accepted runoff were not being managed to maintain design and operating standards.

In early December 2008, Koppers personnel pumped 80,407 gallons of hazardous waste from the storage tanks for shipment by rail. The department did not document that all the violations were corrected until March.

The fine was paid to the Solid Waste Abatement Fund that pays for cleanups across Pennsylvania.

## Ohio EPA increases landfill fees in new budget

The Ohio Environmental Protection Agency (EPA) solid waste disposal fees increased by \$1.25 per ton effective August 1, 2009, bringing the total per-ton state solid waste disposal fee to \$4.75.

This is a state mandated fee and constitutes a pass through fee that will be collected by waste haulers from their customers and forwarded to the Ohio EPA.

The \$1.25 per ton increase from the Ohio EPA is part of the new state

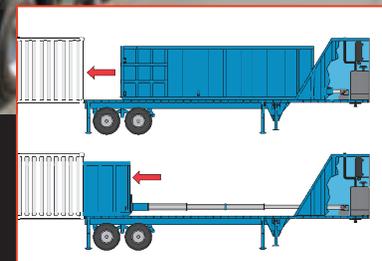
budget passed by the Ohio General Assembly and signed into law by Governor Ted Strickland. Of the \$1.25 increase, \$1.00 will be directed to the Ohio EPA Environmental Protection Fund, and \$.25 will go toward the Ohio Department of Natural Resources Soil and Water Conservation District fund.

In larger cities such as Columbus, the increase could lead to additional tipping expenditures of up to \$300,000 per year.



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# Europe is largest waste-to-energy market, but economy heralds change

Europe is the largest waste-to-energy plants market in the world with a very well developed infrastructure and over 429 installed plants in 2008. New analysis from Frost & Sullivan, European Waste to Energy Plants Market, finds that the market earned revenues of \$4.4 billion in 2008.

The stress from the European Union to shift away from landfills towards better alternatives has indi-

rectly helped the waste-to-energy business. This diversion of waste from landfills has resulted in the planning and commissioning of many waste to energy plants in the last five years.

"The most important driver for the waste to energy plants market in Europe has been the Landfill Directive and its waste diversion targets," confirmed Frost & Sullivan research associate Karthikeyan Ravikumar. "This

has resulted in the diversion of waste from landfills to waste-to-energy plants."

Countries such as France and Germany have the largest number of waste to energy plants. Such plants have facilitated the effective treatment of waste diverted from landfills, enabling these countries to reach successfully their landfill diversion targets.

In addition to the Landfill Directive, the growing demand for power, paralleled by volatile oil prices, has made waste to energy plants a viable alternative for the disposal of waste.

However, the delay in obtaining environmental and other permits has restrained the growth of this market considerably.

"The process of obtaining an environmental permit for the construction of a waste-to-energy plant is quite tedious and a substantial amount of time is spent on it," cautioned Ravikumar. "The delay affects the price of raw materials and, thereby, the overall revenues."

Furthermore, the current economic slowdown will influence the prospects for market expansion. The slowdown will restrict the amount of investment flowing into the waste-to-energy plants business.

The drop in investments will undoubtedly affect plants that are in the planning stage and that are on the lookout for finance. This could result in projects getting delayed or postponed by a year or two.

## Vectren begins generating electricity from Indiana landfill

Vectren recently received regulatory approval to take ownership of a Pike County facility, which generates electricity by capturing landfill gas emitted from decomposing trash and using it as a fuel source to power two generators. The renewable energy project, which was developed by Veolia Environmental Services Solid Waste and Energy Systems Group (ESG), will generate 3.2 MW or enough energy to power approximately 2,000 homes.

Vectren, together with ESG and Veolia, expects to generate electricity from the landfill site for the next 20 to 25 years. By capturing these landfill gases, the sustainable project is helping provide environmental benefits equivalent to the removal of emissions from more than 22,000 cars per year or the planting of about 27,000 acres of forest annually.

For Vectren, this is the third renewable energy project in the last two years. In December 2007, the utility signed a 20-year power purchase agreement with a Benton County, Indiana wind farm for 30 MW and recently received regulatory approval to buy an additional 50 MW of wind power from Phase II of the Fowler Ridge wind farm, which is under construction in Benton County. Together, these three initiatives create enough renewable energy to power 25,000 homes and allow Vectren to meet nearly 5 percent of its customers' needs with renewable energy.

## A Closer Look

by Donna Currie

### Castaway Trash Haulers

Jay Gardner • 775-342-2444

Jay Gardner, sales manager for Castaway Trash Haulers in Nevada, explained that "most everybody here" used to work together at another waste hauler. That local company was bought out by a national waste hauler, and some of the employees didn't like the new corporate culture.

Spike Duke wasn't one of the people working for the waste company, but his wife was. He saw the opportunity, started a new, smaller company, and started making calls to people who could staff his new business. Gardner was one of those people who got the call and who was with the company "since before the beginning" in March of 2003.

Gardner said that the business started with just two trucks, but that for each of the first four years, the company grew by 100 percent before it settled into a more moderate rate. Now, after over six years in business, the company has a dozen collection trucks, and about 25 employees.

Even so, he said "it hasn't changed a lot." The business is bigger, but the business philosophy is the same – to be "faster, better, cleaner, cheaper" than the competition. Gardner said that for the customers, "They know that when they call us, we'll be there." Most pickups are done within two to three hours of the call, but that it's "absolutely guaranteed same day. We do what we say we're going to do."

As far as being better, Gardner said that about two years ago, "Spike took on two more partners" adding to the services that the company can provide. The partners are involved in portable toilets, fencing and site services, which are often the first services contracted for at a construction or demolition site. When it's time to look for a waste hauler, the customers don't need to contract with a different company.

Castaway is serious about being cleaner than you'd expect a waste hauler to be. All the trucks are purchased new instead of used, and each truck is washed every Saturday by an outside service. Drivers are expected to clean inside the cab of the truck every day, and are given all the cleaning products they need to get the job done. The cleaning is done during working hours, so there is no excuse for having a dirty truck.

Besides the regular washing, the trucks get a thorough detailing every 12 weeks. All of the aluminum is polished and the paint is touched up as needed. Gardner said that he knows people notice – he's had people notice the name on his work shirt and comment that they've seen how good the trucks look.

Besides keeping the trucks themselves clean, the company has spent money on automatic hydraulic tarpers for the roll-offs, so that the drivers don't have to get up on the trucks to tarp the loads. It keeps the drivers safer, and keeps the loads contained on the road.

As far as being cheaper, Gardner said that it's not always possible, and that it takes some expertise to manage the waste in the most efficient manner. "The solid waste business is pretty technical," he said. "Sort, recycle, re-use." So, besides hauling trash, the company also handles recycling for customers, including a local school district. The recyclables go to a nearby recycler. "We're just the haulers," Gardner explained. "If you focus on one aspect of a business, you can get good at it."

Gardner said that although a lot of the business's market share was tied to the construction business, "we're still expanding." Besides handling standard waste and recyclables, the company is a licensed asbestos hauler. He explained that in Nevada, asbestos is classified as a special waste, but in California, it is considered a hazardous waste, so if it's generated in California, it has to stay there, and Castaway can make it happen.

The company also contracts for special events, and Gardner said that Nevada has a lot of them, some of them more interesting than others. For example, he said, "We've signed up to do the Burning Man event." The Burning Man event has a zero-trace policy for its attendees, who strive to avoid polluting.



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# Solar dumps

■Continued from Page 1

No other solar manufacturer is doing geomembranes at this time, although others are interested because of the potential size of the global market.

Different than the heavy crystalline-silicon solar panels with aluminum frames and glass surfaces that must be bolted down, these thin-film panels are less than a quarter-inch thick and adhesive-applied to geomembranes. Built on a flexible, stainless steel substrate, the layers of photovoltaics are encapsulated in polymers.

While having lower energy output per square foot than conventional panels, thin films cost less to manufacture and are much lighter weight. Despite requiring a larger footprint than conventional panels for equivalent electric production, Uni-Solar claims that the payback time on investment is better than conventional panels.

In late 2007, the Malagrotta landfill outside of Rome, Italy became the world's first to use thin-film solar to cover a landfill, but the panels were not affixed to a geomembrane. Rather, a 226,000 square foot sloping area of a closed portion was graded and covered with a thin concrete cap. On top, a two-foot high metal roof was built and covered with solar panels – essentially a roofed-over landfill. Installed by Solar-Integrated and using Uni-Solar panels, the nearly one megawatt system produces approximately 1,421,000 kWh per year.

The next evolution in the technology happened last spring when Republic Services became the first in the world to inaugurate a solar-geomembrane cap at the Tessman Road Landfill in San Antonio, Texas. This 134.4 kW DC system also uses Uni-Solar collection strips, but they are glued directly to a geomembrane made by Firestone and cover 5.6 acres of the 680 acre site.

"The system has been working great. But keep in mind it's only been online since April. We're averaging about 750 kWh per day. It's not a big system, but very reliable and low maintenance. We have done no maintenance since we installed it. We get quite a bit of rain so it washes down the panels for us," said Tony Walker, Republic's project manager, who also pioneered the concept.

This geomembrane was installed by the traditional method of anchor-trenching the perimeter edges, and Tessman Road was specified to withstand winds up to 90 mph. The Firestone material was selected for its durability. It's a 60-mil polyolefin thermoplastic that has been used in roofing, is warranted for 20 years and green to look like a lawn from a distance.

Large sections of 60'x60' geomembrane were used to mount the flexible solar panels. Trench depressions

between sections were used to carry wires in weather resistant chases to inverters that convert solar DC to AC, at which point the power goes to CPS Energy.

Each solar panel affixed to the geomembrane measures 18' long, 15" wide and has a power output rating of 128 watts. 1,050 panels were installed on graded slopes for a total of 134.4 kW DC output. "It's interesting that the modules start producing early in the morning and go to late evening. They work in very low light and we will probably be over our estimate in projected kilowatt hours by the one year anniversary date," Walker said. Like other types of solar panels, Republic's are performance warranted – 92 percent of minimum power output for 10 years, 84 percent for 20 years and 80 percent for 25 years.

Republic reported only one outage of less than 24 hours since the system became operational. That was caused by a major electrical storm. Lightning struck the inverter unit, but as the unit was designed to handle lightning, it only required changing a blown fuse.

Walker, who is based in Phoenix, is able to remotely monitor the Tessman Road system on a web-based monitoring system by Fat Spaniel, a provider of monitoring and control systems to the solar industry. In addition to monitoring real-time energy production, the system archives daily, monthly and annual production.

Republic's monitoring is for company tracking only, but many solar generators publish information on websites to show the public how much renewable energy is being generated and the amount of emissions being prevented by the system.

"We've had several world experts on geomembranes visit our site, people who advise the EPA. All endorsed it highly. We've had other solid waste companies visit us that are interested in the concept. We also have a lot of solar manufacturers calling and touting that they have the same type of product, but don't have the manufacturing capability that we need. It will be interesting to see how the competition develops," Walker noted.

Meanwhile, solar geomembrane capping has been capturing the interest of landfill operators across the country and from several foreign countries. Republic was recently awarded a permit to construct a solar geomembrane project in Illinois of 140 kW that will generate approximately 180,000 kWh per year. "There's not as much sun as in Texas, but we want to test this system there because it's a different climate, colder with ice and snow. We want to see how the geomembranes and solar cells perform under those conditions," said Walker. "The State of Illinois has voiced interest in this type of solar for the redevelopment of brownfields."

Republic is also applying for a permit for a one megawatt system for a 48-acre closed landfill just outside downtown Atlanta. "That will be a good project because of the magnitude. When you fly over, it will bring wide public exposure to the technology," said Walker. "Municipal landfills and project developers around the country, particularly in Florida, New York, New Jersey, Massachusetts and California have inquired. The market potential is huge."

The flexible solar landfill cover approach is just that: flexible. By helping prevent erosion, sediment buildup and the growth of vegetation, it makes inspections easier and more thorough. To accommodate settling, sections of

the solar-geomembrane can be removed, the ground remediated and then retrenched.

There is a lot of government and media hype about the "new green economy" and how it will create millions of new green jobs. However, many people do not know that the vast majority of conventional solar panels and wind turbines installed in the United States are manufactured overseas. Uni-Solar's thin-film panels are manufactured domestically at four factories in Michigan, and they have broken ground on a fifth factory there. It's just one more reason why flexible solar systems make sense.

## An expert appraisal of solar-geomembrane technology

Dr. Jean-Pierre Giroud has been a pioneer in the field of geosynthetics for 40 years and is recognized throughout the world as a leading expert in geosynthetics engineering. In 1977, he coined the words "geotextile" and "geomembrane" and was instrumental in the formation of the International Geosynthetics Society. In 2009, he was elected to the National Academy of Engineering. Following are his thoughts on solar-geomembrane technology, collected via interview by American Recycler writer Mike Breslin:

### What is the significance solar-geomembrane technology for landfill operators?

Of course, solar-geomembrane technology can generate revenue for landfill operators. However, I would like to point out an additional benefit. Landfills are sometimes said to have bad reputation, which is undeserved in my opinion, because modern landfills built with state-of-the-art technology protect the environment very effectively. Nevertheless, we have to recognize that, in many circumstances, landfills are not well accepted by the public. The fact that, thanks to solar-geomembrane technology, landfills can generate clean energy can only contribute to improving landfill acceptance by the public.

### Is there interest outside of the States for this technology?

I do not know if, at the present time, there is interest outside the United States in solar-geomembrane technology. However, I can say that, historically, the United States has been at the forefront of the use of geomembranes in landfills, and the domestic state of practice regarding geomembranes in landfills has inspired landfill owners, designers and regulators in many countries. Therefore, it can be expected that the United States solar-geomembrane technology will generate a lot of inter-

est when it becomes better known abroad. Accordingly, it is important to describe the State's solar-geomembrane technology in articles published in highly respected journals and magazines.

### If you were advising a government agency, would you recommend they consider this technology?

Yes, I would. And I would recommend that research is encouraged by government agencies to develop the solar-geomembrane technology.

### Are you optimistic about the widespread deployment?

The landfill industry is highly competitive. Therefore, I think that the growth of the solar-geomembrane technology will depend on economic considerations. Costs associated with the solar-geomembrane technology can be reduced if appropriate research and development effort is undertaken.

We should recognize that the technology is currently in its infancy. Progress can be made in at least two areas. First, the method used to attach the photovoltaic cells to the geomembrane and the method used to collect the electric power generated by the cells could probably be simplified. Second, inexpensive ways to secure the geomembrane against the risk of uplift by wind should be developed. Clearly, research and development work should be done by both the scientists who develop the photovoltaic cells and the civil engineers who design landfills. These are the conditions for the widespread deployment of the solar-geomembrane technology in the future.

### Where do you think this technology will be in 10 years?

Predictions of this kind are generally incorrect. I can only say that the solar-geomembrane technology should be very successful in less than ten years if appropriate means are devoted to research and development.

*A police cruiser attempted to stop a car for speeding, but had to give chase when the accelerated to 100 mph. After awhile, the driver realized that he wasn't going to escape, and pulled the car to the side of the road. The cop approached and said, "Look, it's been a long day, and my tour is almost over so if you can give me a good excuse for your behavior, I'll cut you a break." The driver paused a moment before saying, "My wife ran away with a cop about a week ago. I was afraid that you were him, and that you were trying to give her back."*

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