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Hurricane debris removal: A full scale waste issue

by MAURA KELLER

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The recent hurricanes that devastated dozens of U.S. communities have left a path of destruction for hundreds of miles. In fact, one of the most common images shown in the media are those depicting neighborhood streets with piles of trash, construction debris, and environmental storm waste overflowing from destroyed neighborhoods. But how is this debris handled and what are the biggest issues facing waste collection companies handling this level of waste?

According to Maricha Ellis, vice president of marketing and sales operations at Stericycle Environmental Solutions, the biggest issue right now is the sheer volume of debris following the aftermath of three major hurricanes.

"It can be challenging when local municipalities communicate with the public regarding what to do with their waste. It is also challenging to determine where we can set up waste collection consolidation points," Ellis said.

In Houston, Stericycle Environmental Services is currently performing neighborhood curbside pickups of hazardous waste, as well as performing soil sampling at temporary collection sites to prevent ground water contamination. Stericycle works to minimize or prevent the chances of toxic or other hazardous material entering into the environment.



Hurricane Harvey debris piles up on the streets in Spring, Texas.

It is not surprising that adaptations must be made on the part of waste companies with regard to waste handling and recycling of hurricane debris.

Most importantly, waste companies need to be able to ramp up personnel in short order when it comes to handling hurricane waste.

"Our biggest challenge in this area is finding good, reliable general laborers who are willing to complete the curbside pickups," Ellis said. "We reallocate our personnel, as well as add personnel to curbside services and doorto-door hazardous waste pickups. We have to bring more people, equipment and storage into the area to support the additional work."

Larry Kemp, chief operating officer for Kemp and Sons General Services, an environmental cleaning company in Fort Worth, Texas, believes the best course of action is to incinerate as much as possible to mitigate future problems.

"You simply don't know what you have. When you have contaminated water touching all aspects of life, that's a recipe for disaster," Kemp said. "I know cities are trying to clean up as quickly as possible; however, I would encourage them to slowly conduct safe and efficient collections throughout the affected areas."

Kemp and Sons has acted as a consultant, giving advice, counsel and training on the handling of hazardous materials, contaminated debris and bodily fluids. They've also educated personnel on the risk of human exposure to germs, blood borne pathogens and diseases related to disaster areas and the possibly dangerous outcomes to all involved.

For Kemp and other environmental and waste management companies, the sheer size and vastness of hurricane debris is another challenge facing the affected areas. Most cities and locales simply aren't equipped to address natural catastrophic events.

See HARVEY, Page 4

lls to cut food waste California approves

The California state legislature passed two bills that offer solutions to some of the leading causes of wasted food.

AB 1219, the California Good Samaritan Food Donation Act authored by Assemblymember Susan Talamantes Eggman (D- Stockton), strengthens and expands a 1977 law that protects food donors from legal liability, in order to encourage food donations.

AB 954, authored by Assemblymember David Chiu (D- San Francisco), promotes the use of uniform phrases for food expiration dates. This bill will help narrow the number of confusing phrases used (including "best by," "best before," "sell by," "enjoy by", "expires," and others) down to two terms: a peak freshness date which is when food is likely to taste best, and a safety date, when food may be unsafe to eat.

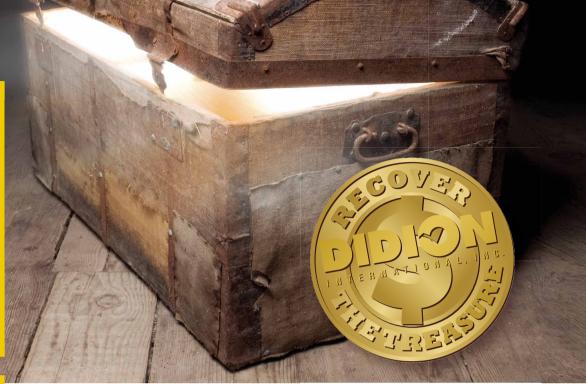


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of NY recycling laws

New York's policies have removed 320 million tons of recyclables from waste stream

Conservation (DEC) Commissioner Basil Seggos shared that September 1, 2017, marked the 25th anniversary of New York's statewide adoption of local recycling laws. Since 1992, local source separation programs have captured and diverted more than 320 million tons of recyclable materials from disposal resulting in an estimated net emission reduction of 1 billion metric tons of CO2, the equivalent of taking 211 million cars off the road for one year.

The New York State Solid Waste Management Act of 1988, signed into law by Governor Mario M. Cuomo, required municipalities to adopt local laws or ordinances requiring the separation and segregation of recyclable or reusable materials from solid waste by no later than September 1, 1992.

In addition, since its inception in 1994, New York's Environmental Protection Fund (EPF) has invested more than \$155 million in funding to municipalities to support recycling infrastructure, recycling coordinators, and household hazardous waste management programs. Under Governor Andrew M. Cuomo's leadership, the state has increased the EPF to \$300 million and partnered with local governments, business, and environmental organizations to maintain, expand, and promote waste reduction, reuse, recycling, organics diversion and product stewardship programs that encourage more sustainable practices and conserve our natural

At the Governor's direction, State agencies have also achieved significant waste reduction, recycling, and organics diversion efforts through state procurement and sustainability efforts. Agencies have reduced the amount of solid waste generated by more than half (51 percent) over the past seven years and agencies currently report recycling rates of 70

Each year, the New York State Returnable Container Act, or "Bottle Bill," recycles more than 4.5 billion plastic, glass and aluminum beverage containers, totaling over 300,000 tons of recyclables, and eliminating approximately 200,000 metric tons of CO2, the

State Department of Environmental equivalent of taking 9,000 garbage trucks off the road for one year.

> Additionally, DEC is strengthening the state's solid waste regulations (Part 360). New York has adopted product stewardship laws using an extended producer responsibility model that require the take-back and reuse or recycling of electronic waste, rechargeable batteries, and mercury-containing thermostats.

> Innovative initiatives the state has implemented to further reduce waste include:

> •Organics management program with organics recycling facilities to reduce and divert food waste from the waste stream and reduce emissions.

> •New York State Electronic Equipment Recycling and Reuse Act of 2010, a comprehensive electronic waste (ewaste) law that requires manufacturers who sell or offer for sale covered electronic equipment such as computers, computer peripherals, televisions, small scale servers, and small electronic equipment, to establish a convenient acceptance program for the collection. handling, and recycling or reuse of ewaste free of charge to most consumers. Since its implementation, more than 520 million pounds of electronic waste from New York consumers has been recycled or reused instead of being sent to landfills, waste combustion facilities, or other improper disposal methods.

> •New York State Rechargeable Battery Recycling Act, requires manufacturers of covered rechargeable batteries to collect and recycle the batteries in a manufacturer-funded program at no cost to consumers. Consumers across the state have safely returned more than one million rechargeable batteries from 2013 - 2016.

> •The New York State Mercury Thermostat Collection Act, requires thermostat manufacturers to establish and maintain a program for the collection, transportation, recycling, and proper management of out-of-service mercury thermostats at no cost to New York State or consumers participating in the program. A total of 21,099 thermostats were collected from New York State consumers on behalf of manufacturers during calendar years 2013 through 2016.

Doosan Bobcat donates over \$325,000 of equipment to aid in hurricane efforts

\$325,000 worth of Bobcat® equipment and Doosan Portable Power light towers and generators to assist with Hurricane Harvey and Hurricane Irma relief efforts. The company is also providing financial assistance to affected Doosan Bobcat North America dealership employees and their families, and Doosan Bobcat North America employees will direct annual charitable drives

Doosan Bobcat is donating over toward assisting those impacted by Hurricanes Harvey and Irma.

> In the days before Hurricane Harvey made landfall in Texas, Doosan Bobcat expedited equipment and attachment deliveries to impacted areas in an effort to be immediately prepared for clean-up efforts. Doosan Bobcat also took steps to expedite equipment deliveries to southern Florida in preparation for Hurricane Irma.

DEC celebrates 25 years NWRA issues position on China's proposed recyclables ban

The National Waste & Recycling Association (NWRA) announced its position on China's proposed ban on recyclables. The positions states:

On July 18, 2017, the Chinese government notified the World Trade Organization of their plans to ban 24 "solid waste" materials by the end of 2017. These materials include various types of plastic and unsorted paper. According to the Chinese, the ban is being enacted to protect its environment and reduce pollution resulting from managing these materials.

The National Waste and Recycling Association (NWRA) supports the efforts of the Chinese Government to improve environmental protection and standards within its recycling infrastructure. However, the decision to ban the import of recyclable materials would have a significant impact on the waste and recycling industry. Not only will the ban impact the recycling industry in the U.S., but also the Chinese manufacturing industry that relies on those materials.

Amount of materials exported to China

Although the ban has identified a number of different materials, there is still confusion about which products

will be impacted. At this point, mixed paper and post-consumer plastics appear to be included in the ban. In the U.S., a significant amount of those materials are exported to China.

In 2016, approximately 41 percent of paper recovered in the North Americas was exported with about a quarter of recyclable paper exported to Chinese mills. Similarly, over 20 percent of post-consumer bottles and 33 percent of non-bottle rigid plastics from the U.S. were exported in 2015.

Impact from this ban

With the amount of recyclables currently transported to China, the ability of the American markets to absorb the banned materials would be strained. At a minimum, this is anticipated to affect the costs of these materials. However, it could result in the lack of markets for some of the materials altogether forcing material to be landfilled.

The U.S. recycling industry relies on the mostly volunteer efforts of the public to separate their recyclables from their waste. Should banned materials end up landfilled, the public confidence could be shaken creating long term consequences in material quality and segregation efforts.

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American Recycler

Three cities add food service packaging to curbside recycling programs

Washington, D.C., Chattanooga, Tennessee and Louisville, Kentucky are part of a growing number of cities recycling food service packaging at the curb. A combined 460,000 households in these three cities can recycle take-out packaging like paper and plastic cups, containers, pizza and sandwich boxes, and paper bags in their curbside carts and bins, thanks in part to the Foodservice Packaging Institute (FPI).

"We were thrilled to help these communities add foodservice packaging to their curbside programs," said Lynn Dyer, president of FPI. "Our approach relies on strong end markets partnering with recycling processors, and communities educating their residents to ensure these materials are recycled properly."

FPI spent five years on extensive research to understand the real and perceived barriers to getting more food service packaging recycled. The organization then facilitated discussions with

Washington, D.C., Chattanooga, end markets, material recovery facilities and communities to pinpoint opportunities to recycle paper and plastic foodservice packaging at the curb. combined 460,000 households in

Washington, D.C. developed its new list of recyclables, including paper and plastic food service packaging, based on research conducted with material recovery facilities in the area. The district's expanded recycling program and FPI-supported communications campaign, Zero Waste DC, was launched on October 5. The inclusion of paper cups specifically in its recycling program makes DC one of the largest cities in the U.S. to accept these items, and a leader in the growing global movement to recycle paper cups.

Chattanooga partnered with its local recycling facility to expand its recyclables to include paper and plastic cups, containers, pizza and sandwich boxes and paper bags. With help from FPI, the city launched an outreach campaign on September 22 to inform residents of the new acceptable materials and how to properly recycle these items.

Louisville Mayor Greg Fischer, along with the city's recycling processor and FPI, announced the addition of food service packaging to Louisville's residential recycling program during a press conference in October. As with DC and Chattanooga, there is a strong communications component in Louisville's program to ensure that residents only recycle empty cups and take-out containers.

"We will continue working with communities that are motivated to divert more materials from their waste stream," said Dyer. "If your community has a strong recycling program with viable end-markets nearby, we want to hear from you. It's a win all around – for communities and their residents as well as for local recyclers, mills and plastics reclaimers."

Harvey

■Continued from Page 1

This is the reason that such incidents are classified as federal disaster areas – to secure assistance from the government and have access to finances, personnel, equipment and unlimited resources. Of course, the challenge is that not everyone assisting with this process is properly trained.

"Determining what to do with all the debris, trash and contaminated items, and the proper disposal of such items is greatly challenging," Kemp said. "That's why it's important to implement a debris management plan that sets forth guidelines for managing and disposing of disaster-related debris and have an organized, environmentally friendly plan for its placement or disposal."

As a result of Hurricane Irma, debris has been overwhelming waste handlers and municipalities who are trying to handle the collecting and handling process. However, the collection process has been painstakingly slow and so many residents of Central Florida are taking the process into their own hands. Rather than depending on governmentfunded storm debris cleanup options, residents are hiring crews with trailers, landscapers with empty truck beds, or others with the appropriate vehicles to get the debris to the free drop-off locations dotting the region. However, the safety and wellbeing of novices handling contaminated debris is of great concern.

According to the Orlando Sentinel, more than 35,000 people have taken debris to the sites since the first one opened on September 13. They've dumped more than 75,000 cubic yards. In order to qualify for FEMA reimbursement, in Sarasota County, only loose and bulky vegetative debris is being collected by the debris contractor.

In storm ravaged Houston, where in August, Hurricane Harvey resulted in miles of flooded neighborhoods throughout the metropolitan area, neigh-

borhoods are still grappling with storm debris littering their curbs, sidewalks, driveways, and causing the narrowing of streets. As debris invades the streets, large waste handling trucks aren't able to get down those streets to collect the waste. This is problematic as officials estimate that Harvey could produce 200 to 300 million cubic yards of debris in Texas. As a result, the Texas Commission on Environmental Quality (TCEQ) has established more than 100 sites across the region where Harvey hit as Temporary Debris Management Sites. Some of these locations are already landfills; others are industrial areas that can accommodate large commercial trucks. All locations are managed by local authorities.

Kemp stressed that there's no separation of contaminated goods at this point. Collectors are dealing with a mixture of bodily fluids, contaminated water, household trash, batteries, waste, refrigerators and much more. According to reports, various hazard sites in the Houston area were underwater, which is also something collectors may have to deal with.

In fact, according to Kemp, all rules and regulations related to the separation of trash, recyclables and other items are out the window.

"It's nearly impossible to be done correctly," Kemp said. "I think it would take nearly five years to sort all the items being collected throughout the region. Cities are trying to get back to normal and, as I mentioned, incinerating everything collected would ensure that workers, residents and the environment are as safe as possible."

"Once gathered, there needs to be a designated hazardous waste area – one that's been identified to accommodate the waste loads," Kemp said. "The goal is to dispose of it in a manner that protects human lives, and preserves our environment and air quality.

And while not a lot of hurricane debris can be recycled, due to cross con-

tamination and exposure of debris to various elements that can be harmful to public health, safety and welfare. Ellis says it is possible to recycle some of the paints, metals and electronics.

The cleanup process, in an area designated a federal disaster area, is a long and lengthy process and at the very minimum it takes months, but in most cases it takes many years and possibly a decade. It depends on the damage of property, negative impact on infrastructure, and the severity of the storm in its length.

"The scope of this cleanup is unprecedented," Ellis said. "But we cleaned up Galveston for almost a year following Hurricane Ike."

Events Calendar

November 1st-4th

Automotive Recyclers Association Annual Convention & Expo. Hyatt Regency, Dallas, Texas, 615-223-6656, www.a-r-a.org

November 5th-8th

TAPPI - IBBC 2017 (International Bioenergy & Bioproducts Conference).Hilton Norfolk the Main, Norfolk, Virginia.
770-209-7313 • www.tappi-ibbc.org

November 13th-14th

Northeast Recycling Council Fall Conference. Lord Jeffery Inn, Amherst, Massachusetts.

802-254-3636 • www.nerc.org

December 5th-7th

Power-Gen. Las Vegas Convention Center, Las Vegas, Nevada. 888-299-8016 • www.power-gen.com

January 22nd-25th

COMPOST 2018 Conference & Tradeshow. Westin Peachtree Plaza Hotel, Atlanta, Georgia.

301-897-2715 • www.compostingcouncil.org

February 11th-13th

C&D World Exhibition & Conference.Downtown Hilton, Nashville, Tennessee.

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American Recycler is published 12 times per year, postage paid at Columbia, Missouri.

SUBSCRIPTIONS: Call our offices at 877-777-0043 or visit www.AmericanRecycler.com. US 1 year \$48; 2 years \$72.

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Businesses in Mobile join recycling program efforts

Nineteen downtown businesses are now participating in the City of Mobile, Alabama's, curbside recycling program including Mobile Downtown Alliance, Urban Emporium, Odaly's Irish Pub, Serda's Coffee, Metlife, Five, Chuck's Fish, Wintzell's Oyster House, Delta Bike Project, Merry Widow, Pro Legal Copies, Mobile Arts Council, Buck's Pizza, Haberdaser, Kazoola Eatery & Entertainment, Moe's Original Bar B Que, The Steeple, Dauphin Street Blues Company and Draft Picks Tap Room.

All participating businesses receive a blue recycling cart at no cost during the pilot program. City crews will transport the material daily to a transfer station where it will be collected with other recyclables and moved to the recycling facility.

Last April, the city transitioned to single stream recycling opening two new recycling locations near the Mobile

in one container at each location and sorting of recyclable material will no longer be required. Accepted recyclable materials include glass, newspaper and inserts, cardboard, magazines and catalogs, junk mail and envelopes, paper bags and phone books, colored papers, aluminum cans and lids, tin/steel cans and lids, metal pots and pans, pet food cans, plastic produce clamshells, plastic milk jugs, cereal boxes, foil baking pans, cardboard egg cartons, dry pet food bags, pizza boxes, tin foil,

Pepsico Recycling increases active sustainability funding

sustainability.

second year of the Zero Impact Fund, which offers eligible colleges and universities an opportunity to bring campus ecoinnovations to life. Through the Zero Impact Fund, schools can submit ideas to accomplish their environmental goals, with winning applications receiving up to \$10,000 each from PepsiCo Recycling. In its first year, the Zero Impact Fund received applications from more than 40 different campuses and awarded grants to eight schools.

For the 2017-2018 school year, colleges and universities interested in submitting project proposals for PepsiCo Recycling's Zero Impact Fund should complete an application at PepsiCoRecycling.com on or before December 19. Schools selected to receive funding will be notified during the week of January 29, and funding will be provided to initiate projects as early as February 2018. A PepsiCo Recycling committee will evaluate each school's proposal based on the following criteria:

- •Environmental Impact How the proposed project creates a more sustainable campus.
- •Economic Impact The environmentally related cost savings.
- •Social Impact How the campus community is engaged and positive behavioral change is fostered.
- Desirability, Feasibility, Longevity The demonstrated support of campus leadership and the extent to which the initiative is scalable.
- •Ingenuity How positive sustainability impact will be achieved in a new or innovative way.

Last year's winning project proposals included compost infrastructure development, student education and engagement campaigns, renewable energy to reduce greenhouse gas emissions, zero-waste programs, a bike-share program, and landfill diversion programs.

Since 2010, as part of PepsiCo's Performance with Purpose agenda, PepsiCo Recycling has partnered with more than 100 colleges' and universities' on-campus Museum of Art. All recyclable material can be placed

plastic bottles and plastics No. 1-7.

PepsiCo Recycling is expanding its recycling programs, and has awarded more than \$100,000 to support campus recycling efforts and increase student engagement. In addition to the Zero Impact Fund, PepsiCo Recycling offers resources for colleges and universities to reduce waste produced during collegiate athletic events and engage the campus community around

Survey: Millennials less likely to recycle, but more likely to buy from green companies

Millennials (commonly known as those born between 1980 to 2000) are less likely to recycle than other generations, but more likely to buy from companies making a positive impact on the world, a new survey found.

The reason, according to the new survey and report from The Shelton Group: Millennials believe corporations have more power to solve global problems than individuals.

"Millennials are pushing companies to make a positive impact on the world because they believe global problems are too big for individuals to solve," said Suzanne Shelton, president and chief executive officer of The Shelton Group, a marketing and research firm focused on energy and the environment.

Asked, "Which, if any, of the following habits would you be embarrassed about if people found you had or didn't have them?

- •41 percent said tossing trash out the car window
 - •39 percent said wasting food
 - •28 percent said wasting water
- •25 percent said not recycling things Shelton Group's 2016 EcoPulse study found that millennials fall behind

others when it comes to the easier green

activities: Only 33 percent of Millennials say they adjust the thermostat to save energy (vs. 48 percent of all Americans) and just 34 percent recycled paper and aluminum cans (vs. 46 percent overall).

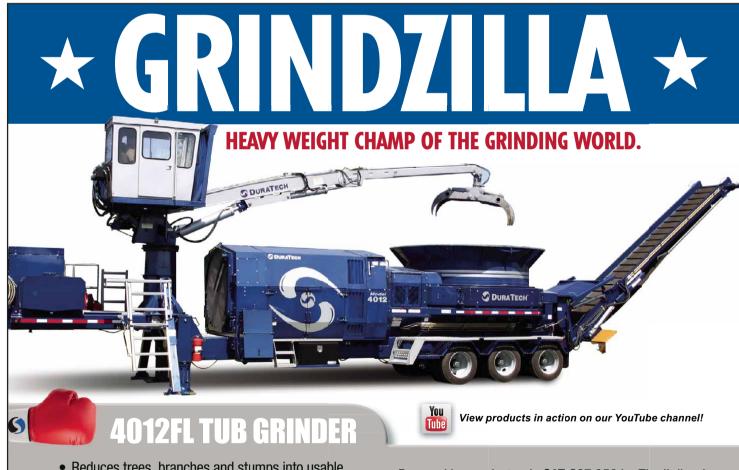
Millennials worry more about climate change than other Americans.

The survey found 76 percent of millennials say they are "somewhat to extremely concerned about the impact climate change will have on their quality of life during their lifetimes." And 82 percent say they're worried about the impact of climate change on their children's quality of life.

Millennials' concerns about the environment play a major part in their purchasing decisions. Asked, "How much impact, if any, does the following have on your decision to purchase its products?" Seventy percent of millennials selected a company's environmental practices.

'Clearly, millennials are concerned about the environment, but many feel the problems are too big for them to tackle as individuals," Shelton said. "So they're looking to corporations to take action.

'That gives companies a real opportunity," Shelton added. "Help the planet, help your business."



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Republic Services earns award for excellence in composting systems

The Solid Waste Association of North America (SWANA) has named Republic's Pacific Region Compost Facility (PRC) the winner of the Silver Excellence Award in the composting systems category. The award was presented at SWANA's annual conference, WASTECON, in Baltimore.

As one of the largest composting facilities in Oregon, the PRC processes more than 120,000 tons of residential yard waste, residential organics and commercial food waste each year, producing a nutrient rich compost used for area agricultural, landscaping and gardening purposes. In 2010, the PRC became the first Oregon compost facility to be approved for special types of organics composting (known as Type 3), including proteins, dairy and all food scraps.

"We are honored to receive this recognition," said Shawn Edmonds, general manager of Republic's western Oregon operations. "Organics are a fast growing part of an evolving waste stream and represent nearly 30 percent of what Americans discard daily. Running a composting facility of this magnitude and caliber is a major undertaking, and this recognition could not have happened without the support of our team members and many local leaders and community partners."

SWANA's Excellence Awards Program recognizes outstanding solid waste programs and facilities that advance the practice of environmentally and economically sound solid waste management through their commitment to utilizing effective technologies and processes in system design and operations, advancing worker and community health and safety, and implementing successful public education and outreach programs. Programs must also demonstrate that they are fiscally and environmentally responsible through their compliance with all applicable federal, state and local regulations.



(LtoR) Republic Services Leadership-Richard Coupland, Jenifer Stuber. Dan Jameson accepting the award.



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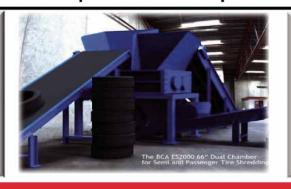
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Britain rewards for recycling bottles

The British government invited comments on how reward and return schemes for drinks containers could work in England by issuing a call for evidence.

More than eight million tons of plastic are discarded into the world's oceans each year, putting marine wildlife under serious threat.

Up to 80 percent of this is estimated to have been originally lost or discarded on land before washing out to sea, and plastic bottles are a particular concern - with figures showing just 57 percent of those sold in the UK in 2016 collected for recycling.

This compares to a record 90 percent of deposit-marked cans and bottles that were returned to dedicated recycling facilities in Denmark, and a return rate of almost 80 percent of beverage containers in South Australia, both of which have a form of deposit return

To improve these numbers and increase recycling, environment secretary Michael Gove has asked organizations and individuals to share their views with the government on the advantages and disadvantages of different types of reward and return schemes for plastic, metal and glass drinks containers that could help reduce the number of bottles entering our waterways.

The call for evidence is open for four weeks and ministers have asked the Voluntary and Economic Incentives Working Group, set up as part of the Litter Strategy, to accelerate its work and report back early in the New Year.

Environment secretary Michael Gove said:

"Today we are launching a call for evidence to help us understand how reward and return schemes for plastic bottles and other drinks containers could work in England.

This approach has already seen great success in other countries such as Denmark in curbing plastic pollution and we want to hear people's ideas on how we could make it work in England.

This adds to the progress we have already made in cleaning up our oceans by significantly reducing plastic bag use and drawing up one of the world's toughest bans on plastic microbeads."

The evidence submitted will be examined by the government's working group which includes brand and retail giants such as Coca Cola and Tesco.

This builds on successful waste initiatives already launched by the government, including the 5p plastic bag charge which has seen enormous success in changing consumer behavior by reducing use by 83 percent.

Some nine billion fewer carrier bags have been distributed since the charge was introduced, with more than £95 million raised and donated to environmental, educational and other good causes.

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ArcelorMittal Weirton resolves hazardous waste violations at West Virginia facility

The U.S. Environmental Protection Agency (EPA) disclosed a settlement with ArcelorMittal Weirton LLC, under which the company has corrected alleged violations of hazardous waste regulations at its manufacturing facility along the Ohio River in Weirton, West Virginia, and has certified the facility's compliance with federal hazardous waste laws.

EPA cited ArcelorMittal for violating the Resource Conservation and Recovery Act (RCRA), the federal law governing the treatment, storage, and disposal of hazardous waste. RCRA is designed to protect public health and the environment, and avoid long and extensive cleanups, by requiring the safe, environmentally sound storage and disposal of hazardous waste.

Among the concerns noted during an EPA inspection of the electroplating facility were uncontained toxic hazardous waste, such as lead, cyanide and chromium on equipment, the facility floor and outside the building. The settlement reflects the company's compliance efforts and its cooperation with EPA's investigation. As part of the settlement, ArcelorMittal Weirton has not admitted liability. Under the settlement, ArcelorMittal Weirton will pay a \$93,288 penalty.

By failing to properly manage hazardous waste, there is the potential for employees to be exposed to hazardous constituents or result in the release of hazardous constituents into the environment via soil or groundwater. The inspection did not identify any releases into the environment.

EPA cited ArcelorMittal Weirton LLC for violations including:

•Failure to ship a variety of hazardous wastes off-site in a timely manner.

•Failure to minimize the risk of release of hazardous waste;

•Failure to make a hazardous waste determination; and

•Failure to properly label and date spent batteries.

Sale of Peejay Landfill imminent

Ernst & Young Inc., in its capacity as court-appointed receiver and manager (receiver) of Petrowest Corporation and its affiliates (collectively, "Petrowest"), is seeking parties interested in acquiring the Peejay Landfill (Peejay) and the Doig Gravel Pit license.

The Peejay Landfill is a fully permitted hazardous and industrial waste landfill located in northeastern British Columbia and has historically served upstream oil and gas companies in the region. The landfill is geographically positioned to serve the future remediation requirements of customers operating in proximity to the site. The landfill has a total licenced volume of over 1.6

million m3 and has utilized less than 5 percent of its licenced storage capacity. The Doig Gravel Pit is located approximately 10 km from the Landfill.

The deadline for delivery of binding bids is 12:00 pm noon (Mountain Time) on November 16, 2017.

Interested parties are invited to contact the receiver by phone or email or to go to the receiver's website at www.ey.com/ca/petrowest for further information on the Petrowest sales process.

Ernst & Young Inc. is the courtappointed receiver and manager of Petrowest Corporation and its affiliates 2200, 215 2nd Street SW, Calgary, Alberta T2P 1M4.

Komptech Americas sends equipment for debris removal

Komptech Americas was well prepared to send its inventory of high-torque shredders for debris clean up after massive storms ravaged much of Texas and Florida. In total, approximately six machines, a combination of Komptech Terminators as well as Komptech Crambos, have been sent to help cleanup efforts.

"We knew these states would need all available machines," said Todd Dunderdale, of Komptech Americas, "We began prepping our inventory to send out immediately. Though both states were hit by hurricanes, the damage each state faced was drastically different. The flooding in Texas required processing household debris, so we sent the Komptech Terminator, our high torque, single shaft shredder designed specifically for this task. In Florida, we were dealing with wind damage, and processing a large amount of green waste and trees. In this case, the dual shaft Crambo was the best shredder for the job, especially with the high degree of palm shredding required."

Komptech has been a manufacturer in the industry since 1992. Their product range includes over 30 different machines, for waste handling, including these high torque shredders, windrow turners, star screens, trommel screens, wind-sifters and separation technology.

Planet Recycling wins Arrow Award for product stewardship

CARE grantee and valued recycling partner Planet Recycling (Chula Vista) has been awarded the 2017 Bow & Arrow Award for Coalition Building, presented by the California Product Stewardship Council (CPSC). The award, made of recycled materials by Bay Area artist Ellen Blakeley, was presented at CPSC's Arrow Awards ceremony at the California Resource Recovery Association Annual Conference and Tradeshow in San Diego. The annual Arrow Awards recognize innovative product stewardship programs and outstanding partnerships in product stewardship, and serve to inspire organizations to integrate principles of product stewardship in their operations.

After 18 years in the carpet recycling business (in Arizona and California), Planet Recycling, Inc.'s motto is "Recycling Your World, Saving Our Planet, One Yard at a Time!" The award went to Planet Recycling in recognition of:

•Their partnership with two San Diego landfills to promote carpet reuse and recycling by directing it to manufacturers or remanufacturers.

•Their work with Habitat for Humanity's ReStore, to which they supply carpet for reuse in support of the non-profit's mission.

•Their extensive stakeholder education efforts, informing consumers, retailers, installers, homeowners, city agencies and contractors about the



Rachel Palopoli with Manuel Medrano, Sr. recycling specialist with the City of Chula Vista, at Planet Recycling.

opportunities and benefits of carpet recycling.

Planet Recycling has been an active participant with CARE since its inception. Owner Rachel Palopoli serves on the California Council on Carpet Recycling. The company received a Micro-Grant this year to purchase four 40 yard roll-off containers to increase localized collection of post-consumer carpet at retail sites in San Diego.

Once my dog ate all the Scrabble tiles from our board game. For days, he was leaving little messages all around the house.



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WASTE

SWANA provides update to states on Chinese recycling issue

North America (SWANA) has issued an update to state officials concerning the July 18, 2017 notification to the World Trade Organization from China on their intent to ban certain waste imports.

The update provides background to states on the Chinese waste ban, details how the ban could impact state and local recycling programs, and suggests action items states should consider to respond to increased market uncertainty.

"I feel very strongly that state agencies and others need to be made aware of the current status of the China recycling situation. Over the past few weeks, we've seen some significant volatility in pricing, discussions at a WTO committee meeting, and conversations between U.S. and Chinese officials," said David chief executive officer. "It is important that those responsible for regulating recycling operations at the state level are aware of the current disruption in the global recycling market and remind local governments and industry partners to produce high quality material.'

In addition to providing education on the potential impacts of the Chinese waste ban, this update will help coordinate and streamline efforts made by state agencies in responding to changes in accepted materials, adjustments in export quality, and overall volatility in the global marketplace.

'SWANA members continue to be proud that the association is taking leadership positions on issues that support our mission of treating waste as a

The Solid Waste Association of Biderman, SWANA executive director & resource," said Tim Flanagan, general manager of Monterey Regional Waste Management District and SWANA Sustainable Materials Management Technical Division International Board Representative. "In a global economy, decisions made in Beijing can have an impact on local recycling programs throughout the U.S. and Canada, making it so important for all stakeholders to be up-to-date on how their programs could be impacted."

> SWANA submitted comments on the Chinese waste ban in late August, and Biderman has recently met with U.S. Environmental Protection Agency officials, while communicating regularly with federal agencies and other key stakeholders to ensure SWANA is abreast of this rapidly evolving situation.

EPA awards \$23 million to California to manage waste

The U.S. Environmental Protection Agency (EPA) has awarded \$22.94 million to the California Department of Toxic Substances Control to support their hazardous waste management and reduction activities.

The three year grant provides funding under the Resource Conservation and Recovery Act, which regulates solid and hazardous waste. The money will support DTSC's program activities, such as cleaning contaminated sites, reducing hazardous waste generation, encouraging the manufacture of chemically safer products, and enforcing hazardous waste laws.

Since 1995, EPA's RCRA program has awarded California more than \$180 million to support hazardous waste management.

Los Angeles receives two all-electric garbage trucks

Coming off a recent announcement on California's first all-electric refuse vehicle (ERV) heading to Sacramento, Motiv Power Systems' is deploying two zero emission refuse trucks to the City of Los Angeles. As a continuation of a demonstration project funded by the California Energy Commission, these Class-8 ERVs use the Motiv All-Electric Powertrain to drive a Crane Carrier

chassis, with an automated side-loader body built by Amrep, Inc.. The trucks will be built by Amrep, Inc. in Los Angeles and are projected to be delivered in the first quarter of 2018. The City of Los Angeles Sanitation plans to run the ERVs on residential and recvcling routes and expects to save as much as 6,000 gallons of fuel per year. Upon delivery, the Los Angeles ERVs

bring the all-electric refuse trucks powered by Motiv to a total of three in California and four within North America.

"Fossil fueled garbage trucks emit about 20 times the carbon of the average U.S. home. They achieve just two to three miles per gallon, and stick to standard routes, making them ideal electrification targets for LA's sustainability program," said Motiv chief executive officer Jim Castelaz.

As the City of Los Angeles develops pathways to meet an 80 percent greenhouse gas (GHG) reduction by 2050, reducing air pollution from mobile sources plays a key role. Motiv's scalable all-electric powertrain is uniquely suited for helping public works and city service vehicles contribute to GHG reductions by dramatically reducing diesel emissions from a wide variety of vehicles, from refuse and work trucks, to school and shuttle buses.

Rather than having customized vehicles provided by a variety of vendors, Motiv's modular design allows the same all-electric powertrain to be used across the full range of a city's work trucks, from Class 4 through

Class 8. The use of a single electric powertrain system for all the city's electric work trucks simplifies the maintenance and operation of a growing municipal electric vehicle fleet. reducing the cost of spare parts and training. This enables cities like Los Angeles to expand their carbon reduction efforts through electrification of work trucks, transit buses and other diesel vehicles without placing a heavy maintenance burden on their public works departments.

Similar to Motiv powered electric refuse trucks on the road in Sacramento, the Los Angeles trucks will have a payload capacity of 9 tons and 1,000 pounds per cubic yard of compaction. All Motiv ERVs are equipped with 10 battery packs, expandable to 12 packs if needed for future route expansion. With up to 212 kWh of power, the Motiv powered ERVs supply enough electricity to efficiently move the truck and power the electric hydraulics throughout the day. Using the Motiv universal high power charger, the ERV batteries will easily reach full charge overnight.



Lakeshore Recycling utilizes digester

Lakeshore Recycling Systems (LRS), an independent recycling and waste diversion services provider, disclosed it is the first privately held company in the U.S. to introduce the use of an aerobic digester to process collected organic waste into a fertilizer byproduct. Launched in collaboration with Morton Grove, Illinois based EcoloCap Solutions, a pioneer in organic waste recycling, the digester will divert organic waste (food scraps) from landfills, lowering the risk of water pollution and the emission of methane gas and odor into the environment.

When deposited in landfills, organic waste runs the risk of contaminating water, and emits odorous hydrogen sulfide gas and methane gas (a greenhouse gas). LRS' organic recycling operations will convert organic waste into a highgrade compost and organic fertilizer that is ready to ship to local companies for mixing and distribution. The process delivers an end-product that is reduced in weight and volume by 70 percent. The technology is ideal for urban env ironments as it can operate on a smaller footprint, needs little labor/overhead and its process and output are odorless.

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WASTE

Solid waste plan approved in Fort Worth

Gershman, Brickner & Bratton, Inc. (GBB) disclosed that the Fort Worth City Council unanimously approved a 20 year comprehensive solid waste management plan developed with the assistance of a GBB Project Team that included three Fort Worth, Texas based firms: Risa Weinberger & Associates, Inc., Arredondo, Zepeda & Brunz, LLC (AZ&B) and OCG+.

"This is a balanced, strategic, and effective long term solid waste management plan that will serve as a blueprint to make Fort Worth greener, and further position the city as a sustainability leader in the local community and throughout the country," stated Brandon Bennett, code compliance director at the City of Fort Worth.

Key initiatives and goals of the plan include preserving the city's Southeast Landfill through diversion and recycling programs; establishing a material management program to assist commercial businesses, industry and institutions with their efforts to increase recycling and decrease waste generation; furthering the city's overall efforts toward increasing total diversion and expanding recycling programs; improving litter prevention and abatement programs and expanding the use of public containers; evaluating and implementing a pilot organics composting program; increasing educational programs and outreach efforts; improving and expending residential services; evaluating future developmental standards that expand diversion and recycling; and developing new programs with incentives that foster increased diversion or recovery of building construction and demolition materials.

New York strengthens state's solid waste regulations with revisions

New York State Department of Environmental Conservation (DEC) Commissioner Basil Seggos announced that the state has finalized revisions to the state's Solid Waste Management Regulations, commonly referred to as Part 360. In the first major overhaul of the program in 20 years, these regulations set design standards and operational criteria for all solid waste management facilities and go into effect on November 4, 2017.

"Ensuring every community has access to clean water supplies is critical, and illegal dumping and inappropriate waste management are a growing threat to our precious groundwater resources. Under Governor Cuomo, New York is setting a national standard for solid waste management and waste recycling," said DEC Commissioner Seggos.

DEC's comprehensive revisions include the addition of solid waste management facilities, activities, and waste streams that are not currently addressed within existing Part 360, to institute a level of control necessary to ensure protection of human health and the environment. In addition, these amendments relax or eliminate existing requirements that have proven to be burdensome to the regulated community with little or no environmental benefit.

The Part 360 series rulemaking process formally began in February 2016. Following extensive public outreach that included two public comment periods, five public hearings, and more than 25 workshops and technical meetings with stakeholders, and careful consideration of thousands of comments, the revised Part 360 series regulations are now final.

The final regulations contain comprehensive revisions to the State's existing solid waste management regulations, including:

Enhanced Regulatory Controls on Wastes from Oil and Gas Production

The final regulations enhance the regulatory controls on drilling wastes and high-volume hydraulic fracturing (HVHF) wastes. These regulations strengthen existing prohibitions on the disposal of flowback water and production brine from oil and gas production, increase testing requirements and conditions for the reuse of brines for dust and ice control on roads while prohibiting the reuse of flowback water and Marcellus Shale production brines, and require waste-tracking documents for the transport of most drilling and production wastes. In addition, the regulations require the installation and operation of radiation detectors at solid waste management facilities that receive drilling and production wastes or municipal solid wastes.

Improved Construction and Demolition Debris and Fill Material Man-

The final regulations combat the emerging threat posed by the illegal dumping of construction and demolition debris (C&D) and fill material. The regulations require enhanced tracking for C&D debris and fill material generated in New York City, as well as for certain fill material generated anywhere in the state. The regulations also limit the exempt disposal of C&D debris, and provide expanded allowance for the reuse of fill materials in environmentally protective situations.

Improved Management of Compost and Mulch

The final regulations strengthen oversight of previously unregulated mulch-processing facilities to address potential threats to water quality and the environment across the state. New criteria have also been added to govern facilities that produce and store mulch to reduce environmental impacts from larger mulch facilities, including odors, dust, groundwater, and fires. Enhanced criteria for composting facilities to address potential groundwater impacts have also been added.

Enhanced Support for Recycling

The final regulations make it easier to site facilities that process organic wastes while providing appropriate environmental protections. The regulations also change how grants to municipalities are provided to ensure that timely funding is available for both priority infrastructure projects and operational assistance such as support for recycling coordinators.

Enevo secures funding to accelerate expansion into waste services

Enevo formally announced the tive officer of Enevo. company's expansion into waste and recycling services. Building upon its dumpster sensor technology and waste analytics business, Enevo now offers full management of waste services for new and current restaurant, retail and commercial property customers.

Enevo received \$12M in its latest funding round, led by Lifeline Ventures and existing international investors, accelerating the introduction of waste services in North America and key European regions earlier this year.

"Enevo started as a sensor company providing data from dumpsters. We soon learned that was only half of our story," said Fredrik Kekalainen, founder and chief execu-

Using proprietary analytics software, Enevo account managers monitor around-the-clock sensor data to manage alerts, compare dumpster pickups against collection schedules and work with haulers to adjust service levels to meet actual needs. Most customers see significant waste management cost savings within the first month after starting

In onboarding new customers, Enevo found that about 9 percent of scheduled waste collections are missed without their knowledge, and 21 percent of sites need service levels adjusted. Within the first 90 days of working with Enevo, these numbers improve.



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WASTE

EPA directing San Jacinto River Superfund site data

The U.S. EPA is directing the potentially responsible parties of the San Jacinto River Waste Pits Superfund site in Texas to take immediate action to address damage to the protective cap and high levels of underlying waste material found at one of the samples on site. EPA received preliminary data from sediment samples collected by EPA's dive team from fourteen areas at the San Jacinto River Waste Pits Superfund site.

Samples from one of the 14 areas confirmed the protective cap had been damaged and the underlying waste material was exposed. The sample showed dioxins at 70,000 ng/kg. EPA recommend clean up level for the site is 30 ng/kg.

EPA has directed both International Paper and Industrial Maintenance Corporation, the potentially responsible parties (PRPs) for the San Jacinto Waste Pits Superfund site in Harris County, to conduct supplemental sampling to ensure that the exposed waste material is isolated. The dioxin in the waste material does not dissolve easily in water but it can migrate further out into the surrounding sediments. The supplemental sampling will determine the extent, if any, of this migration.

Initial repairs have already been taken at the damaged area where the protective rock was missing. If necessary, EPA will direct additional visual dive operations to check for displacement in the stone cover of the protective cap and more fully evaluate the cap for damage by Hurricane Har-

The PRPs developed an Operations, Monitoring, and Maintenance Plan under Federal Order by the EPA and completed work to prevent wastes from continuing to migrate to adjacent areas including the San Jacinto River in July 2011. The order allows the EPA to require additional measures and investigations deemed necessary by the agency from its periodic inspection of the protective cap. EPA is exercising that authority now. EPA divers determined that additional measures were necessary.

The PRP conducted similar repairs in December 2015. EPA proposed long-term remedy for the site has 150,000 cubic yards of waste removed and disposed of

EPA will continue to provide updates about the status of the superfund site, and continue to work with the PRPs to ensure that risk to human health and the environment is managed as best as possible.

Organix receives bag patent

Organix Solutions, an organics recovery and municipal solid waste company based in Minnesota, has received a full patent for its organics co-collection program. The utility patent US 9,669,431 B2 encompasses the compostable organic waste collection method and materials, establishing its patent portfolio that includes a proprietary product line of compostable bags. The first of its kind program, the patent covers the method of collecting and processing of compostable organic waste material.

Now a single waste collection vehicle can collect both organic waste and municipal solid waste in a single trip. Eliminating the need for multiple trucks, on even a relatively small scale, has a significant environmental impact.

The Minnesota Pollution Control Agency evaluated the co-collection method as a separate waste stream and the independent third-party laboratory Aspen Research Corporation conducted its own research on the performance of the bag as it traveled through the waste stream. Both confirmed they were strong enough to withstand compaction in a waste collection vehicle while preserving the organic waste for further processing.

These traits distinguish Organix's compostable bags from other marketed liners. "The absence of a compostable bag that could withstand compaction forces in a solid waste truck spurred our efforts to develop our own compostable bags," said Jim Wollschlager, Organix Solutions' chief executive officer.

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PAPER

AF&PA releases updated paper reports for August

ciation released its August U.S. paper reports.

Containerboard

Containerboard production was 2.0 percent higher compared to August 2016. The month-over-month average daily production compared to July 2017 was 1.0 percent lower.

The containerboard operating rate for August decreased from 97.9 percent to 96.9 percent, which was 0.8 percentage points higher compared to August of last year. Year-to-date production of containerboard for export is up 4.4 percent.

Printing-Writing Paper Report

According to the August 2017 Printing-Writing Monthly report from the American Forest & Paper Association, total printing-writing paper shipments decreased four percent in August compared to August 2016. Uncoated free sheet paper shipments increased in August while the other three printingwriting grades posted year-over-year shipment declines. U.S. purchases of printing-writing papers also decreased, down seven percent in August. Total printing-writing paper inventory levels decreased three percent from July 2017.

•August uncoated free sheet (UFS) paper shipments increased year-overyear for the first time since August 2016. The August shipments of UFS also hit the highest monthly total since March 2016. Imports of UFS decreased by 28 percent year-over-year in July – the second consecutive decrease of 20 percent or more. Meanwhile, exports of UFS papers increased 30 percent year-overyear in July, which is the third consecutive increase of 20 percent or more.

•August shipments of coated free sheet (CFS) papers declined. And while shipments of coated two-sides #1-#2 also decreased year-over-year in August, they still reached the highest monthly total thus far in 2017. U.S. imports of CFS papers decreased 13 percent yearover-year in July; it is the first year-over-

The American Forest & Paper Asso- year decline in 2017. Exports of CFS papers increased 11 percent year-overyear in July, the fifth increase in the past seven months.

> •Coated mechanical (CM) paper shipments declined year-over-year in August, but reach third highest level in 2017. Imports of CM increased in July, up 11 percent compared to July 2016, while exports of CM decreased 20 percent in July.

> •While shipments of uncoated mechanical (UM) papers declined yearover-year in August, the export data registered a year-over-year increase in July. Imports of UM decreased 3 percent year-over-year in July while exports of UM increased 10 percent year-over-year in July - the fourth year-over-year increase in the first seven months of 2017.

Boxboard Report

production Total boxboard increased 2.9 percent when compared to August 2016, and increased 0.7 percent from July.

Unbleached Kraft Boxboard production increased over the same month as last year and increased compared to July.

Total Solid Bleached Boxboard & Liner production increased when compared to August 2016, but decreased compared to July.

The production of Recycled Boxboard decreased compared to August 2016, but increased when compared to July.

U.S. Packaging Papers & Specialty Packaging

Total Packaging Papers shipments were 235,900 tons, 1.7 percent lower than August 2016. Bag & Sack shipments were up 5.5 percent year-to-date, while Food Wrapping shipments were down 8.5 percent over the same period. The operating rate for August 2017 was 90.3 percent, while the year-to-date rate was 88.8 percent. Inventories were 168,600 tons, down slightly since July.

Green products grow end markets

In response to growing demand for its green building products, the ReWall Company is doubling its manufacturing capacity of roofing products and other materials made from recycled cartons.

Founded in 2008, ReWall converts cartons into sustainable building materials through its low energy, eco-friendly recycling technology. In July, ReWall installed new equipment to expand the capacity of its manufacturing facility in Des Moines, Iowa. This increases its need for recycled cartons from about 200 tons per month to approximately 600 tons per month.

Sharing a joint interest to increase carton recycling, the Carton Council of North America has been a longtime supporter of ReWall with the goal to expand carton recycling nationwide by growing infrastructure for recycling aseptic and gable-top cartons. The Carton Council has worked with ReWall to provide financial and technical support to help expand this innovative end market for cartons used for many common food and beverage products.

Through technology developed specifically for ReWall's needs, the process uses no water, formaldehyde glues or hazardous chemicals. No waste is generated, and every part of the carton is incorporated into the finished products, which include roof cover board, exterior sheathing, wallboard and floor underlayment. The life cycle of the cartons will continue as the building materials can also be recycled.

There are 800 half-pint cartons in each 4 x 8 x .5" roof cover board.

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ALTERNATIVE ENERGY

Enerkem makes commercial ethanol from garbage

Enerkem Inc., a biofuels and renewable chemicals producer, has started the commercial production of cellulosic ethanol. Enerkem's game-changing facility in Edmonton, AB, Canada, is the first commercial scale plant in the world to produce cellulosic ethanol made from nonrecyclable, non-compostable mixed municipal solid waste.

The company has been producing and selling biomethanol since 2016, prior to expanding to include cellulosic ethanol with the installation of its methanol-toethanol conversion unit earlier this year.

"The commercial production of cellulosic ethanol at our facility in Edmonton marks a landmark moment for our company as well as our customers in the waste management and petrochemical sectors, and confirms our leadership in the advanced biofuels market," said Vincent Chornet, president and chief executive officer of Enerkem.

This growing global market is expected to reach 124 billion liters per year by 2030 according to the International Renewable Energy Agency. "We will now progressively increase production in Edmonton, while preparing to build the next Enerkem facilities locally and around the world," added Chornet.

Republic Services unveils Northeast Texas landfill renewable energy facility

Republic Services unveiled their latest landfill gasto-energy facility at the Pinehill Landfill in Northeast Texas. The renewable energy facility is set to generate 404.7 million cubic feet of renewable natural gas per year, reducing carbon emissions equal to that of 19.8 million gallons of gasoline consumed. The Pinehill Landfill serves customers and communities across more than 40 counties and 62 cities throughout Northeast Texas.

"We believe in leading by example in everything we do," said James Murphy, general manager of Republic Services. "The modern landfill presents new opportunity to harness energy from yesterday's waste and convert it to meet tomorrow's fuel and energy needs. We are proud to generate a renewable energy source that makes a meaningful and lasting environmental difference in our communities."

Responsible landfill management involves the proper handling of landfill gas and liquids, which are byproducts of the normal decomposition of waste. It requires considerable science, engineering and technology to manage an evolving waste stream in a manner that is protective of the air, land and water for generations to

Landfill gas-to-energy projects like these involve capturing methane as organic waste breaks down. The gas can be processed to meet natural gas pipeline quality specifications, converting organic waste into a clean fuel and energy source for future generations.

Known as the Blue PlanetTM sustainability initiative, Republic is defining its approach to environmental responsibility through decreased vehicle emissions, innovative landfill technologies, use of renewable energy, community engagement and employee growth opportunities.



The renewable energy facility is set to generate 404.7 million cubic feet of renewable natural aas per vear.



One shaft shredder models ranging from 40 to 400 HP are designed to achieve even the most demanding stand-alone or secondary processing requirements. Output size is controlled by a removable screen, 1/2in to 4in holes are typical.

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REBUILT 2010 GENESIS GXP400R SHEAR Newly refurbished. New blades. 360° rotation.



KOMATSU PC300 HDIncludes scrap grapple and gen-set. Norris front, runs well. Call



ACTION SCREEN 4' x 27'
Single screen deck. 2" cut.

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2005 SIERRA RB5000 PORTABLE BALER Good condition, call for a demo. \$150,000



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\$52,000



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METALS

Steel imports up 21 percent year to date

Based on preliminary Census Bureau data, the American Iron and Steel Institute (AISI) reported that the U.S. imported a total of 3,349,000 net tons (NT) of steel in August 2017, including 2,422,000 NT of finished steel (down 4.8 percent and 16.8 percent, respectively, vs. July final data). Year-todate (YTD) through 8 months of 2017, total and finished steel imports are 26,561,000 and 20,401,000 net tons (NT), up 20.6 percent and 15.5 percent, respectively, vs. the same period in 2016.

Key finished steel products with significant import increases in August compared to July include wire drawn (up 8 percent). Major products with significant YTD increases vs. the same period in 2016 include oil country goods (up 250 percent), standard pipe (up 47 percent), line pipe (up 42 percent), sheets and strip all other metallic coatings (up 33 percent), mechanical tubing (up 32 percent), cold rolled sheets (up 31 percent), sheets and strip hot dipped

U.S. IMPORTS OF FINISHED STEEL MILL PRODUCTS								
BY CO	UNTRY OF	ORIGIN	(Thousand	s of Net Tor	ns)			
	AUG 2017	JUL 2017	2016 Full Year	2017 Annualized	% Change 201 Annual vs. 201			
SUITH KUDEV	351	3/11	3 812	3 030	3 10/			

	2017	2017	Full Year	Annualized	% Change 2017 Annual vs. 2016
SOUTH KOREA	351	341	3,812	3,930	3.1%
TURKEY	101	255	2,416	2,741	13.4%
JAPAN	128	137	1,798	1,598	-11-1%
TAIWAN	121	120	1,083	1,359	25.4%
GERMANY	99	148	1,192	1,274	6.9%
BRAZIL	81	79	823	883	7.3%
CHINA	68	90	862	868	0.7%
RUSSIA	93	87	310	868	179.9%
All Others	1,379	1,652	14,043	17,082	21.6%
TOTAL	2,422	2,909	26,338	30,602	16.2%

rolled bars (up 19 percent).

In August, the largest volumes of finished steel imports from offshore were from South Korea (351,000 NT, up 3 percent from July final), Japan (128,000 NT, down 7 percent), Taiwan (121,000 NT, up 1 percent), Turkey (101,000 NT, down 61 percent) and Ger-

galvanized (up 25 percent) and hot many (99,000 NT, down 33 percent). For the first eight months of 2017, the largest offshore suppliers were South Korea (2,620,000 NT, down 3 percent vs. the same period in 2016), Turkey (1,827,000 NT, up 8 percent), Japan (1,065,000 NT, down 17 percent), Taiwan (906,000 NT, up 39 percent) and Germany (849,000 NT, up 2 percent).

FirstEnergy's Ohio utilities boost recycling incentive to \$75

Customers of FirstEnergy's Ohio utilities can now get even more money back for recycling their old refrigerators and freezers. The incentive has been increased from \$50 to \$75 for each appliance recvcled this fall. Customers who also recycle a working room air conditioner or dehumidifier along with a refrigerator or freezer will receive an additional \$25.

Customers can participate by visiting www.energysaveOhio.com to arrange a home pickup. The \$75 incentive applies to pick up requests before November 30th.

"The appliance recycling program is an effective way for customers to save energy and money," said Wade Williams, manager of residential energy efficiency programs for FirstEnergy's utilities. "Removing an outdated refrigerator can save up to \$150 a year in energy costs."

Units will be picked up by Recleim, a national appliance recycler. Recleim will then remove and dispose of hazardous materials. About 95 percent of the materials are kept out of landfills and recycled for reuse in a variety of products.

New Day approved for acquisition

New Day Aluminum Holdings LLC disclosed that the European Commission has given its approval to New Day's acquisition of all the share capital of ARC Fused Alumina from Mircal SA, a subsidiary of Imerys SA fully and directly owned by it. Mircal was required by the EC to divest this business as a condition to its 2016 acquisition of certain assets from Alteo Holding. The New Day transaction, which is expected to close in Q4 2017, is still subject to certain closing conditions.

ARC Fused Alumina, located in La Bâthie, France, employs over 150 workers and operates a facility producing white fused alumina, bubble alumina, Abral® and silicon nitrates. The company's products have multi-application uses in the ceramics, flooring, abrasives and refractory industries.

David D'Addario, chief executive officer of New Day, commented, "We are excited at the opportunity to acquire this asset, which we expect will position New Day for more acquisition activity and integration on a global scale. The acquisition will help diversify New Day's portfolio both geographically and in product mix. La Bâthie fits well into New Day's business model, as it will serve not only as an entré to a new market sector, but as a potential customer of our U.S. refinery operations as well."



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METALS

Metso implements operating model and organizational plan

decided on the group's new operating model and organization, effective from January 1, 2018.

During recent years, Metso has successfully maintained a strong financial position. Its next value creation opportunities will come from profitable growth, backed up by positive market develop-

The new organization is designed to accelerate Metso's strategy implementation by strengthening its service and product businesses in the minerals and flow control markets. Growth will primarily be sought organically, but also through acquisitions.

"The fundamentals of Metso's strategy and business portfolio remain the same, and our vision is valid. I strongly believe that for our customers and other stakeholders, Metso will be the best choice

Metso's board of directors has for the sustainable processing and flow of natural resources. We will implement an organizational structure, where businesses are built around similar customer, competitive and business dynamics. This will enable a more focused and agile organization," says Nico Delvaux, president and chief executive officer of Metso.

Metso's new business areas will be:

- •Mining Equipment
- •Aggregates Equipment
- Minerals Services
- Minerals Consumables
- Recycling
- Valves
- Pumps

The heads of the business areas will report to Metso's president and chief executive officer Nico Delvaux.

The group's current reporting segments, minerals and flow control, remain unchanged.

Appliance recycling plant opens

Recleim celebrated the grand opening of its new recycling facility in Lima, Ohio. The landscape of Lima's business community is growing, with AEP Ohio and Recleim helping to bring more than a hundred new jobs to a city welcoming its first new manufacturing plant in several years.

AEP Ohio's Economic and Business Development team spent the last year working on the move with Recleim, Allen County Economic Development Group, the Regional Growth Partnership, JobsOhio and the city of Lima. The new facility is a celebration of Ohio's commitment to energy efficiency, green jobs and reducing our carbon footprint.

The facility is made possible by various Midwest clients of Recleim's, including major appliance manufacturers and retailers, as well as utility programs across the region including those offered by AEP Ohio and other Ohio utilities.

Recleim terms itself a "de-manufacturer," recovering approximately 95 percent of commodity components in the old appliances it recycles, while disposing of hazardous chemicals and minimizing waste. Recleim is the only recycling company in North America with the rights to use this state-of- the-art technology, making Recleim the new standard in the recycling industry.



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

per pound

Stainless Steel

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.62

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Thyssenkrupp and Tata Steel to merge steel operations

Thyssenkrupp and Tata Steel have signed a memorandum of understanding to combine their European steel activities in a 50/50 joint venture. Their aim is to create a leading European flat steel player to be positioned as quality and technology leader. The new entity is set to have pro-forma sales of about 15 billion and a workforce of about 48,000, currently at 34 locations. Shipments are envisioned to be about 21 million tons a

To be named Thyssenkrupp Tata Steel, the planned joint venture will be managed through a lean holding company based in the Netherlands. It is to have a two tier management structure comprising a management board and a supervisory board. Both boards are to equal representation from Thyssenkrupp and Tata. The codetermination structures in Germany, the Netherlands and Great Britain will be retained.

Thyssenkrupp intends to contribute its Steel Europe business to the planned joint venture. There are also plans for the joint venture to include Thyssenkrupp Mill Services & Systems GmbH, a steel mill services provider that is part of the materials services business. Tata would add all of their flat steel activities in Europe.

The memorandum of understanding paves the way for Thyssenkrupp to involve employee representatives at Thyssenkrupp AG and in the steel business in the process ahead on an ongoing basis. All employee participation rights will continue to be respected as before.

In the months ahead, due diligence will be conducted. In the process, the negotiating parties will give each other access to confidential business documents to the extent permissible between competitors. Based on this as well as on discussions with the entire Supervisory Board, it is envisaged to sign a contract in early 2018. Closing - the effective start of the joint venture - could take place in late 2018 following antitrust approval by the relevant authorities.

The two joint venture partners expect that leveraging the cost synergies across the entire entity will require a reduction in workforce over the years ahead by up to 2,000 jobs in administration and potentially up to 2,000 jobs in production. This burden is expected to be shared roughly evenly between the two parties, which means a total of about 2,000 jobs at Thyssenkrupp.

The planned joint venture marks another key milestone on Thyssenkrupp's strategic way forward. In its evolution into a strong industrial group, Thyssenkrupp has two priority aims: reducing dependency on the highly volatile steel business and enabling optimum development of all business areas.

Novelis completes joint venture

Novelis has completed the transaction for its joint venture with Kobe Steel, Ltd., a producer of aluminum rolled products in Japan. The joint venture, Ulsan Aluminum, Ltd., was formed by Novelis selling Kobe Steel its ownership interest in its Ulsan, South Korea facility for \$315 million. Novelis and Kobe Steel together own the Ulsan Aluminum, Ltd. facility, with each company remaining responsible for its own metal supply and commercial relationships.

The Ulsan Aluminum plant is strategically located in the industrial hub of Ulsan, South Korea to support the increasing demand for high-strength and lightweight aluminum for automotive and specialty products including electronics and building materials in Asia. The plant recently completed a major expansion, adding a new three-stand hot finishing mill, as well as a pusher furnace and annealing furnaces. All 600 employees at the plant are now employed by Ulsan Aluminum. In addition, the transaction will generate cash proceeds to enhance Novelis' strategic flexibility and reduce its net debt.



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Salvaging Millions

by Ron Sturgeon Autosalvageconsultant.com

Think big to do big

was the advice I gave to a friend of mine who has graduated from college and been pursuing his career as a professional musician for a few years. He has moved to Nashville and has steady work as a session drummer and a touring musician.

Not long ago, he came to me and asked for some guidance about being more successful as a self-employed musician. We talked a little about where he is earning most of his money (performing and studio work) and his ambition for his musical career. His true love is to perform, to play gigs, to tour.

He is a talented musician. He has already been on a national tour and performed on Late Night with Seth Myers. I respect him because he dreams big. When I asked his dreams, he said, "To be recognized as one of the best drummers in the world, to become famous as a drummer, and to be paid well for performing and touring.'

When we talked about how he was spending his time, however, I learned he spent a chunk of most weeks teaching drumming. He was charging \$40 per hour. I asked how he arrived at that figure. He told me that was what most other drum teachers in Nashville charged.

I asked him if he wanted to teach drumming and he said that his first love was really performing. "So, you're not a drum teacher; you're a rising touring musician," I said.

I asked him what he thought it would cost him to get a great drummer who was busy touring and performing to come to his house to give him lessons. You know—a drummer with a four-year degree from a leading commercial percussion program—one who has toured nationally and performed on late night TV.

He got my point. The truly excellent touring musician on his way to being recognized as the best in his field probably wouldn't even respond to the request for lessons. I asked him to consider what he was really making when he factored in the time to find students, to set appointments,

"Teach less. Charge more." That and the commute to and from their homes.

> When you have a dream as big as becoming a world famous drummer, you have to give up some small things to get there. You can't do little. You have to focus your energy on big, on what you really want.

> You may or may not have big dreams for your business. Maybe you want to make enough money to be comfortable. Maybe you want to be the best in your city or state.

> If you have a big dream, you can't do little stuff, but you also have to be willing to devote consistent attention to marketing. When I started doing small business consulting, I charged \$1,000 a day. I liked sharing with others and helping them build their businesses.

> I spoke at industry events. I wrote a monthly column for industry publications. I wrote several books to help small business owners be more successful. I created a website and regularly added content designed to attract people who needed consulting help. I sent press releases, did interviews, and had stories written about my auto-salvage consulting practice. I marketed my consulting.

> You know what happened, right? My book got full. It got so full that I doubled my daily price to \$2,000 and still had more work than I could do. Then, I doubled it again and still regularly turn people away at \$4,000 per day because I have more consulting work than I want.

> Once my drummer friend thought about what he really wanted, he understood why he needed to raise his lesson rate to \$100 an hour and to work on marketing himself as a performer. The higher price will help him reinforce the quality of his musicianship because he charges more than twice what others charge for les-

> Whatever you want to achieve from your business, get clarity on the goal. If it involves working less and charging more, make certain you market yourself. Do it right and will be get to the goal you set.

Remember, only you can make BUSINESS GREAT!

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METALS

2017 T. C. Graham Prize awarded to researchers at University of Rochester

Rochester's Institute of Optics have been named winners of the Association for Iron & Steel Technology's (AIST) 2017 T.C. Graham Prize, an international award meant to encourage development of new and innovative uses for steel.

Chunlei Guo, professor, and Anatoliy Vorobyev, senior scientist and a team member of Guo's lab in the Institute of Optics at the University of Rochester, will share in the \$20,000 prize for their innovative laser surfaceetching techniques that can imbue new properties to steel. Through the techniques that have been developed, steel surfaces can be made to either repel water, absorb water or absorb heat. These properties have a wide variety of consumer and industrial applications. Among them: easier flowing pipelines, ice-free rail tracks, reduced drag hull plates on ships and enhanced energy storage opportunities.

Guo first began his research about 10 years ago when it was unimaginable that a metal surface would turn black without the use of paint. His research

Two researchers at the University of team originally asked themselves, "How much heat would deposit into a metal when a laser pulse zaps the metal surface?" While complicated, Guo and his team found that they could alter metal surfaces in a dramatic way, which eventually led to the creation of black metal, colored metal, water-wicking and waterrepellent surfaces.

> These properties are relevant to everyday life in the following capacities:

> •Black steel will transform steel to become a solar energy absorber and expand its applications in energy.

•By diffusing liquid across it surface, water-wicking steel speeds up evaporation, which is useful in cooling applications such as process water cooling and air conditioning.

•Water-repellent steel is resistant to corrosion, icing and the buildup of mineral deposits or biological growths, such as algae. Furthermore, water-repellent steel will potentially reduce friction with liquids. These surfaces are also selfcleaning as contaminants, dirt, dust and debris are readily swept away.

Novelis achieves 55 percent recycled inputs in 2017

Novelis Inc. published its fiscal year 2017 Sustainability Report, detailing continued progress against the company's ongoing sustainability commitments and goals. In fiscal year 2017, Novelis achieved key sustainability milestones 2 years ahead of target, including increasing the use of high recycled metal content inputs to 55 percent, and reducing its water usage to the fiscal year 2020 target of 2.7 cubic meter/metric tons. These sustainable gains were achieved during a record year of financial performance and are a result of increased operational efficiencies and technical innovation throughout the company's 24 facilities around the

Safety remains a top priority for the company, with fiscal year 2017 representing another record low in recordable safety incidents as 11 of the company's 24 facilities saw no recordable injuries. Process improvements and new safety measures continue to be evaluated to enable Novelis to reach its goal of zero injuries. The waste to landfill and energy intensity rates both increased over the last year and are key areas of focus for fiscal year 2018.

Given the infinitely-recyclable properties of aluminum, recycling aluminum produces 95 percent fewer GHG emissions and requires 95 percent less energy than primary aluminum production. These properties enable Novelis to achieve lower GHG emissions and drive

sustainable value across its business segments of beverage can, automotive and high-end specialties. For example, in the beverage can industry, Novelis recycles approximately 65 billion used beverage cans a year, returning them to store shelves in approximately 60 days. In the automotive space, Novelis helps customers achieve their sustainability goals through scrap metal collection and recycling. In partnership with Ford Motor Company, 90 percent of its scrap was collected and recycled - enough to produce an additional 30,000 F-150 truck bodies per month.

Other important achievements from fiscal 2017 include:

•In partnership with Jaguar Land Rover, Novelis reclaimed 50,000 tons of aluminum scrap, which is equivalent to 200,000 Jaguar XE body shells - preventing 500,000 tons of CO2 from entering the atmosphere.

•The global Novelis workforce supported 317 community projects and committed more than \$4 million in support of global and local causes aligned with Novelis' long-term focus areas of recycling, safety, and science, technology, engineering and mathematics (STEM) education.

•The company pledged \$1 million to Habitat for Humanity International over the next five years, a 100 percent increase over Novelis' financial contribution during the previous five years.

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AUTOMOTIVE

Toyota headquarters achieves certification



2017 Toyota Headquarters Plano Front Landscape Exterior landscaping features drought-tolerant, North Texas indigenous plants like savannah, oaklands and wildflower meadows.

Toyota Motor North America's (TMNA) headquarters campus in Plano, Texas has officially achieved LEED Platinum from the U.S. Green Building Council (USGBC).

The state-of-the-art, 100 acre campus boasts a platinum sized list of sustainability aspects, from renewable energy to drought resistant landscaping.

- •Largest on-site corporate solar installation among non-utility companies in Texas
- •8.79-Megawatt solar power system, designed and installed by Sun-Power Corp.
- •Produces up to 33 percent of daily electric needs for headquarters campus
- •Installation of high efficiency lighting and building envelopes to reduce energy usage on campus

•Specialized rooftop design teeming with plant life to manage rainwater, reduce heat and further insulate the buildings

•Grid energy offset by Texas wind farm renewable energy credits

•State-of-the-art rainwater capture system will provide up to three months of water supply for irrigation use

•Cistern water storage with a capacity to hold 400,000 gallons of harvested rain water

•Excess drain water will be collected and repurposed for sanitary facility use

•More than 99 percent of the construction waste was recycled

•Construction waste was sorted at North Texas' first Construction and Demolition waste processing facility

New U-Pull-&-Pay opens in Penn Hills, Pennsylvania

U-Pull-And-Pay (UPAP) celebrated the grand opening for its newest retail self-service used auto parts store at 250 Eastgate Drive in Penn Hills, Pennsylvania. Located near the intersection of Robinson Blvd and Frankstown Road at the former site of the East Hills Mall, the site spans nearly 22 acres. UPAP employs 25 teammates.

The Penn Hills site has the capacity to stock over 1,600 used cars and trucks displayed on stands, arranged in rows, and separated by manufacturer. Customers bring their own tools to

remove high quality used parts, drive train components, or other auto accessories for purchase. UPAP sells used auto parts at a fraction of retail prices.

The Penn Hills site brings the UPAP operations to a total of 10 self-serve used auto part locations across seven states: Albuquerque; Aurora, Colorado; Cincinnati; Colorado Springs; Denver; Indianapolis; Orlando; Phoenix and West Palm Beach. U-Pull-&-Pay is wholly owned by The David J. Joseph Company (DJJ), a subsidiary of Nucor Corporation.

When a woman asks you to repeat yourself, it's not because she didn't hear you. the first time. It's because she's just giving you a chance to change what you said before it's too late!

Electric car sales in NY up 74 percent since start of Drive Clean Rebate

New York Governor Andrew M. Cuomo announced that New York has seen a 74 percent increase in electric car sales over the same time period last year, resulting from the Drive Clean Rebate initiative launched on March 21, 2017. The Drive Clean Rebate provides New York residents with a rebate of up to \$2,000 for the purchase of a new electric car from participating dealers. The initiative supports Governor Cuomo's aggressive goal to reduce greenhouse gas emissions 40 percent by 2030 by encouraging the growth of clean and non-polluting electric car use in New York.

For the first three full months following the implementation of the Drive Clean Rebate (April to June), New York State saw a significant increase in the total number of electric cars sold.

The New York State Energy Research and Development Authority, which administers the rebate program, approved more than 2,300 rebate applications in the first 5 full months rebates have been available (March to August). In total, more than \$3 million in rebates were provided to New Yorkers for the purchase or lease of 26 different types of cars. Leading car models sold include the Toyota Prius Prime, which accounted for more than 40 percent of the rebates,

the Chevrolet Bolt EV (12 percent), Chevrolet Volt (10 percent), and the Ford Fusion Energi (10 percent). Overall, most people received rebates of \$1,100 or more for their new electric cars.

Of the 2,332 Drive Clean Rebate applications submitted through August 31, 2017, approximately 33 percent were submitted by Long Island consumers (779 applications), followed by consumers in the Mid-Hudson region (404 applications - 17.3 percent), Capital District (276 applications - 12 percent), and Finger Lakes (251 applications - 11 percent).

The transportation sector is the largest contributor to greenhouse gas emissions in New York State. Compared to gasoline-powered cars, electric cars are more energy efficient and cost about 50 to 70 percent less to operate per mile. Carbon emission savings from cars receiving rebates under this initiative is expected to be 115,000 metric tons per year, the equivalent of taking 24,000 cars off the road.

The Drive Clean Rebate is a \$70 million electric car rebate and outreach initiative to encourage the growth of clean and non-polluting electric car use in New York and promote the reduction of carbon emissions in the transportation sector.

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Here's our version of simple scrap battery recycling: one phone call. Call us and we recycle your spent lead-acid batteries the right way. We give you our industry-leading procedures for stacking and packing. We pay you quickly and easily, and pick up batteries on time, every time.

That's what you get when you work with the industry-leading recycler of spent lead-acid batteries.



RECYCLING

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American Recycler

PLASTICS

Renewlogy joins alliance

ACC's Plastics-to-Fuel and Petrochemistry Alliance (PFPA) announced that Renewlogy, formerly PK Clean, will become its newest member. Renewlogy, based in Salt Lake City, joins technology providers Agilyx, RES Polyflow and Vadxx Energy in PFPA membership.

Adding Renewlogy to its membership is the latest milestone in PFPA's forward momentum. In May, the Florida State House and Senate unanimously passed legislation that will help Florida meet its recycling goal and create new manufacturing jobs. The legislation classifies specified post-use plastics as "recovered materials," so facilities which use technologies such as pyrolysis to convert those plastics into fuels, chemicals, and other feedstocks are classified as manufacturing and not as waste management facilities.

In April, Argonne National Laboratory, part of the U.S. Department of Energy, concluded that using pyrolysis to convert post-use non-recycled plastics into ultra-low sulfur diesel (ULSD) fuel results in significant energy and environmental benefits. The peer-reviewed analysis found that this process can reduce greenhouse gas emissions by up to 14 percent, water consumption by up to 58 percent, and traditional energy use by up to 96 percent when compared to ULSD produced from conventional crude oil.

Lawsuit filed over foam ban in NYC

The Restaurant Action Alliance of New York City and a coalition of restaurant owners joined foam manufacturers, recyclers and foodservice industry leaders to announce the filing of a lawsuit against the de Blasio Administration that seeks to block the city's second attempt to ban polystyrene foam.

The lawsuit debunks the city's false claims that polystyrene foam is not recyclable. In fact, post-consumer foam is being recycled in hundreds of cities and municipalities across the globe. The complaint further charges that the city cherry-picked critical information to suit their narrative in crafting the latest Department of Sanitation Determination issued May 12th, and flouted a previous directive from the New York State Supreme Court.

"Once again, Mayor de Blasio and his sanitation commissioner have ignored the facts confirmed by environmental scientists, food service manufacturers, recycling industry participants and independent experts that prove expanded polystyrene foam is recyclable – facts already found by a New York court but ignored by city officials," said Randy Mastro, the lead attorney for the coalition's lawsuit.

He added, "The de Blasio Administration should comply with the Court's directive, drop its latest misguided attempt to ban soft foam, and implement the comprehensive recycling program proposed and financially

supported by industry participants. Indeed, a comprehensive program recycling all polystyrene will be more environmentally effective and economically feasible than a limited soft foam ban alone, saving the City millions of dollars in landfill costs, and protecting the many smaller restaurant businesses that depend upon cost-effective soft foam food-service items to survive."

The lawsuit, which was also filed in State Supreme Court, urges the city to forego its plans to ban foam in early November, and instead establish a postconsumer recycling program that would be consistent with the Court's previous findings.

In September 2015, the Supreme Court ruled that foam is, indeed, recyclable, and halted the de Blasio Administration's previous attempt to ban foam products. The Court also directed the city to reissue a determination consistent with its findings.

According to a study by the independent Berkeley Research Group the cost of foam alternatives for businesses and consumers is over \$51 million annually. Foam alternatives have added environmental costs too: for example, popular foam cup alternatives emit double the amount of greenhouse gas and create almost five times the amount of solid waste as foam cups.

"Foam containers are essential to the operations of Caribbean, Asian and other ethnic restaurants. In fact, for many of us, 40 to 60 percent of our

DESIGN

business model relies on takeout orders. If the City moves forward with this ban, it will surely increase our costs of doing business – at a time when many small restaurant owners are fighting for survival. We urge the Mayor to reconsider his foam ban," said Akisha Freeman, president of the Restaurant Action Alliance NYC, which is a coalition of minority restaurant owners, managers and workers.

Alan Shaw, president of Plastics Recycling, Inc., said: "Once again, New York City is ignoring the facts that prove polystyrene foam can be recycled – a denial that is costing the city a significant economic windfall through a combination of recycling revenue and landfill avoidance. We urge Mayor de Blasio to consider the facts of foam recycling."

A proposed ban would adversely impact New York City's finances by \$11.2 million annually in added procurement costs for plastic foam substitutes while continuing the City's costs to landfill foam. The proposed ban only covers a little more than 20 percent of polystyrene waste, which means nearly 80 percent will continue to be shipped and landfilled.

Conversely, moving to a 100 percent recycling program such as the one proposed by Dart Container Corporation, would save millions of dollars in avoided landfill costs and generate millions of dollars in revenue, annually.

READERS





www.AmericanRecycler.com

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BUSINESS BRIEFS

ECO Green Equipment adds new sales reps

■ ECO Green Equipment, a global leader in the design and manufacturing of tire recycling systems, has added two new sales representatives to their team.

Keld Andersen, previously with Performance Management Pro, based in Ontario, Canada, has joined the ECO Green Equipment team as sales representative for Canada. Andersen has a diverse background in textiles, petrochemicals, and over eight years in the tire recycling industry.

Andersen was a recipient of an Environmental Excellence award from former vice president, Al Gore. He also holds a BSC degree in Chemical Engineering from Queen's University in Kingston Ontario and a SME in Predictive Maintenance.

Dr. Ziboneni Godongwana, formally of East Rand Water Care Company (PTY) LTD (ERWAT) and Kusaga Taka Consulting (PTY) LTD, has joined the ECO Green Equipment team as sales representative for South Africa.

Godongwana is a seasoned professional and senior manager with extensive industrial experience in wastewater treatment, solid waste management, and scientific research.

Professional roles included highlevel research initiatives to improve and maintain a competitive advantage in wastewater treatment and solid waste management. Responsibilities included all aspects of project development, execution, and finalization.

Godongwana holds several degrees in Chemistry and Biochemistry and a PhD in Chemistry. Other professional certifications include expertise in financial management and being associated with the Society for Asphalt Technologies (SOCSAT). His background includes heading a university research initiative to promote and develop tire recycling in South Africa.

ENGIE acquires Northeast energy service companies

ENGIE North America has acquired six mechanical services companies from the Talen Energy Group. The companies, B-G Mechanical Contractors, B-G Mechanical Services, Elmsford Sheet Metal Works, Inc., Fred Williams, Inc., H.T. Lyons, and TryState Mechanical are based in Pennsylvania, New York, and New England and together employ 750 people.

This acquisition provides ENGIE a platform to deliver mechanical contracting services to commercial and industrial and public sector customers in a dynamic region characterized by high energy intensity and seasonal demand, with a complementary commercial and regulatory framework that supports energy efficiency and carbon reduction. These companies have direct relationships with owners and operators of complex mechanical systems to provide them with a single point of contact for a range of services.

Sims Metal Management hits 100th anniversary

Sims Metal Management Limited, a metal and electronics recycler and services provider, celebrated 100 years in the recycling business. Since its inception in 1917, a company started by Albert Sims with a single small yard in Sydney, Australia has evolved into a global business. Over that time, the company has recycled more than 250 million tons of metal and generated revenue of over \$100 billion.

Sims Metal Management is a publicly-listed metals and electronics recycler, and an emerging player in the municipal recycling and renewable energy industry, backed by over 4,500 skilled employees across 200 facilities in over 20 countries.

ALLU opens new facility in New Jersey

■ In response to strong domestic demand for its unique ALLU Transformer material processing attachments, ALLU Inc. has opened a new facility in New Jersey.

Located in East Brunswick, New Jersey, the new location will create additional warehouse capacity for aftermarket parts and factory space to increase product inventory by local assembly.

The move will allow ALLU's North American subsidiary to offer remanufacture and re-certification of pre-owned buckets, providing customers and end users with more choices and flexibility. The new facility also provides expanded office and service training space.

Masaba hires new regional sales manager

Masaba, Inc., a manufacturer of aggregate material handling solutions, has hired Andrew Wells as their new regional sales manager for the southwest U.S.

With more than 12 years of experience in the conveying equipment and component industry, Wells is excited to further grow his knowledge with Masaba.

Wells has lived and worked in three different states across the U.S., and spent four years in Western Canada. He holds a Bachelor's Degree in business with a focus on marketing and economics from the University of Texas at Arlington.

Metso welcomes Holt Cat to Texas distributor network

Holt Cat® will offer Metso's crushing and screening products to contractors and recyclers covering 118 counties in Texas.

Holt Cat is the largest Caterpillar dealer in the U.S. Holt sells, services and rents Cat equipment, engines and generators for construction, mining and agricultural applications.

"To live is the rarest thing in the world. Most people exist, that is all."

—Oscar Wilde

NWRA adds new communications director

■ The National Waste and Recycling Association (NWRA) announced Brandon Wright as communications director.

Wright comes to the association from Maryland state government where he was most recently chief of staff at the Maryland Department of Planning and served in a senior leadership role at the Maryland Department of Health with oversight of communications and policy development for 20 health licensing boards.

Wright has also served as communications director at the Petroleum Marketers Association of America and led communications efforts on several successful advocacy initiatives in Annapolis, Maryland.

Caterpillar and Kennametal partner

Caterpillar Inc. has reached an agreement with Kennametal Inc. to provide Caterpillar customers globally with special order rotors and diamond and carbide earth cutting tools for mixing and road milling applications.

Kennametal products and support are available at Cat dealerships.

International Paper sells its food service business

International Paper has completed the sale of its food service business in China to Huhtamaki Group. The divested business has two plants and a workforce of approximately 200 employees. Terms were not disclosed.

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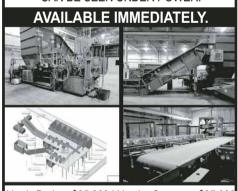
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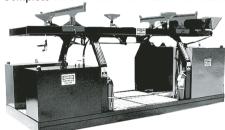
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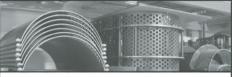
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Bandit Industries, Inc. 6750 Millbrook Road Remus, MI 49340 989-561-2270 www.banditchippers.com

BANDIT EXPANDS LINEUP OF SKID-STEER LOADER ATTACHMENTS

Bandit Industries, Inc., has expanded its line of skidsteer loader attachments to include the Model SA-25, a hydraulically powered stump grinder attachment that operates off a loader's existing high flow hydraulic systems. The SA-25 features a massive 24.5" diameter Revolution cutterwheel, the same size cutterwheel found on some of Bandit's largest self-propelled stump grinders.

Bandit's lineup of skid-steer loader attachments includes the Bandit Stump Gun vertical stump grinder and the Model 60FM and Model 72FM forestry mulchers. All Bandit attachments bring the power and productivity of a Bandit to the versatility of a skid-steer loader.



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SP Industries Inc. 2982 Jefferson Road Hopkins, MI 49328 www.sp-industries.com 269-793-3232

SP INDUSTRIES LAUNCHES THE CP-1501 STATIONARY COMPACTOR

SP Industries' CP-1501 features a single cylinder design and easily handles dry waste and packaging materials. By packing into a front or rear load container, this machine is serviceable by the haulers standard front/rear load route, which eliminates downtime and the need for a second container.

The CP-1501 lowers costs by creating high density, reduced volume material, which requires less space and fewer trips to the landfill. Compaction also keeps materials safely undercover and out of sight. The CP-1501 is ideal for business offices, retail outlets, hotels and universities.

BUSINESS BRIEFS

OnSSI promotes Barber to national account manager

■ OnSSI has promoted David Barber to the position of national account manager. Barber has been with OnSSI since 2013 as Mid Atlantic/Upper midwest regional manager, where he has successfully grown OnSSI's business opportunities.

As national account manager, Barber will be responsible for leading the company's efforts to cultivate, maintain, service and expand productive and professional relationships with national and strategic accounts. He will direct all solution and product development efforts to best address all customer needs, including working with the OnSSI field sales team to communicate the broad functionality, user-friendliness and other benefits of Ocularis.

Prior to joining OnSSI, Barber gained experience in providing physical security solutions to federal and state governments and prisons and in commercial, industrial, retail, automotive and other verticals.

Nucor board approves steel bar micro mill project

Nucor's board of directors approved a steel bar micro mill project and announced the company is considering five states in the Midwest and Southeast for the project. The states being considered include Nebraska, Kansas, Missouri, South Carolina and Florida. Nucor's board of directors also approved the expansion of its existing merchant bar operations in either Illinois or Ohio.

Nucor's bar mills are a cornerstone of the company; they have generated significant value in the past, and they are expected to generate significant value in the future. Both the micro mill project and the expansion of its merchant bar operations are part of Nucor's planned strategy for long term profitable growth.

C&M Conveyor names Sullivan as sales manager

■ C&M Conveyor has appointed industry veteran Richard Sullivan as its new regional sales manager for the Western Territory including California, Arizona, Nevada, Oregon, Utah, Idaho, Montana, Wyoming, Colorado, New Mexico and Washington.

Sullivan previously served as regional general manager at Smurfit Kappa in Chandler, Arizona. Before that he was West Coast operations manager at Pratt Industries in Salinas, California; operations engineer at Corrugated Synergies International in Renton, Washington; operations manager at Central California Sheets in Kingsburg, California; and plant manager Glendale, Arizona and regional manufacturing manager for Smurfit Stone/Rock-Tenn.

Sullivan is a veteran of the U.S. Navy where he served from 1979 to 1987 as a nuclear engineer in the nuclear ballistic submarines division/naval repair facilities and shipyards management.

Recleim purchases Pennsylvania facility

■ Recleim LLC (Recleim), based in Atlanta, Georgia, has entered into an asset purchase agreement with ARCA Advanced Processing (AAP) for the purchase of an appliance recycling facility located at 4301 N. Delaware Avenue in Philadelphia, Pennsylvania. The acquisition extends Recleim's reach to the Northeast and builds on its recent purchase of Nova Services, Inc. assets in Dundalk, Maryland.

The acquisition gives Recleim demanufacturing capability in Pennsylvania. De-manufacturing is distinct from recycling because it involves recovering more materials from appliances, HVAC systems and vending machines, benefitting the environment.

The Philadelphia plant is one of only three plants in the country that can capture and process ozone-depleting substances and greenhouse gases that are found in the foam lining of expired appliances.

Muncie Power hires market specialist for waste industry

■ Muncie Power Products, Inc. welcomed back Salvatore Knieriem as the company's market specialist for the refuse industry.

Knieriem returns to the Muncie Power Products team with 37 years of experience selling power take-offs within the work truck equipment industry, five of which were previously with Muncie Power Products. Within this role, Knieriem will focus on working with key manufacturers within the refuse market.

Environmental Recovery hires Mark Rothenberger

■ Environmental Recovery Corporation (ERC) has hired Mark Rothenberger as controller. ERC is a large residual waste processing facility in the mid-Atlantic region, and is headquartered in Lancaster, Pennsylvania.

As controller, Rothenberger will oversee daily operations of the finance department as well as provide leadership and coordination of company financial planning, debt financing, and budget management functions. Prior to joining ERC, Rothenberger served as director of financial reporting and consolidations for Dentsply Sirona.

U.S. Ecology declares quarterly dividend

■ US Ecology, Inc. declared that stockholders of record on October 20, 2017 received a quarterly cash dividend of \$0.18 per common share.

The company currently has 21.7 million shares outstanding and estimates that approximately \$3.9 million in cash will be paid out for the declared quarterly dividend. The company has paid quarterly dividends continuously since 2005. The company's current annual dividend yield approximates 1.4 percent.

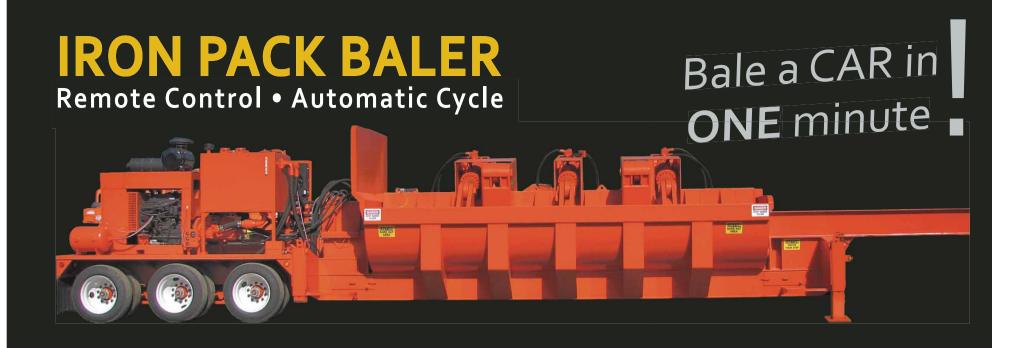


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FOCUS on ELECTRONICS

SECTION B www.AMERICANRECYCLER.com NOVEMBER 2017

The e-waste evolution rages onward

by MAURA KELLER

mkeller@americanrecycler.com

In recent years, the evolution of e-waste recycling has grown exponentially in the U.S and is now catching up to Europe. Since the early 2000s multiple acts have been passed in order to control the toxins that are released from the hazardous chemicals that e-waste produces.

Before the 21st century, the U.S only had a handful of states that actually controlled, and properly disposed of electronic materials. Now, there than more than 25 states that have enforced laws to better control the recycling process.

The electronics recycling industry has been filled with opportunities and challenges in recent years. On the opportunities side, the amount of e-waste available for recycling continues to grow, consumer awareness of collection and recycling programs has continued to improve, concern about factors such as environmental responsibility and data security has grown, and recyclers keep increasing their technical capabilities and adoption of e-waste certifications.

"Also, many states continue to support e-waste take back laws," said Jake Swenson, director of sustainability of Staples Business Advantage, the B2B arm of the more famous consumer brand, Staples. "As far as challenges, the industry is sensitive to fluctuations in commodity prices for metals and other raw materials. But savvy recyclers have moved in the direction of supplementing their recycling efforts with data destruction, which is so important today."

Consumers are more and more aware of the hazardous materials in electronic waste, the illegal export problem, and data destruction/data security issues—so they are, in fact, demanding certified solutions.

"I think people and businesses mostly want to do the right thing but if they hear of a convenient and easy way to recycle e-waste and feel comfortable with that entity collecting the material is going to recycle responsibly, they are going to recycle with that entity," Swenson said. "I think that is why you see a growing number of people continuing to recycle with retailers like Staples and Best Buy and entities like Goodwill."

Overall, Swenson said there seems to be a demand for better regulation and enforcement against bad actors in the industry.

"All these factors are why we work with ERI, a large, financially healthy and technologically advanced national recycling partner who is committed to responsible recycling, including having e-stewards and R2 certifications at all of their recycling locations," Swenson said.



PHOTO BY INTS VIKMANIS | DREAMSTIME

With the growth of technology and consumers' need to have the latest and greatest devices, e-waste has become a larger problem, said Digital Doc owner, Sean Chubner. Digital Doc is committed to keeping electronic waste out of landfills, so stores often host recycling events to collect tech devices that can either be reconditioned and donated or broken down and disposed of properly.

As Chubner explained, for companies and consumers to properly dispose of their e-waste, there are now drop-off centers located throughout the U.S. Tech companies, such as Digital Doc, have taken it upon themselves to host recycling events for their communities to properly dispose of broken or unwanted items.

"Business owners also help with controlling ewaste on a corporate level by incorporating the recycling process into their mission," Chubner said.

When it comes to recycling electronics, a new emerging trend is companies that actually buy the tech items for resale and then wipe the customer's information from the device. Other companies will actually go through and clear the information for the individual and then recondition it to donate back to local families in need.

"There are multiple challenges involved with the proper disposal of electronic items," Chubner said. "On a consumer level, most people worry that their personal information on the device will be stolen. Although there are the some risks, the truth is that memory stored on a device will be wiped since the electronics are placed in a machine to dismantle the parts and destroy the hard drive."

At Digital Doc, the number one challenge that they have is disposing of televisions. Companies charge for the disposal of TVs and monitors and most people do not want to pay to properly dispose of these items – they just toss it into a dump or leave it on the curb. Electronic discards with hazardous materials can pollute the air and water systems.

So how are recycling companies handling the glass recycling aspect of e-waste? As Chubner explained, items containing glass components are almost 100 percent recyclable. The device will be broken down and the glass removed to be reused in other products. A majority of the time, the glass is separated out by the color or type of glass, and then it's melted down for reuse. For phones and computer screens, these items can be sent off to companies that refurbish them for resale.

See E-WASTE, Page B7



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GPS trackers find more fake electronics recyclers sending e-waste to Asia

Following their exposé last year entitled "Scam Recycling" employing 205 GPS tracking devices placed inside electronic waste to find out what happens to it, the Basel Action Network (BAN) has released new findings in a short 15 page report. Their most recent data reveals 16 more instances of exports to developing countries involving 7 companies, most of which make public claims of never allowing the electronics they process to be exported.

"Our GPS tracking devices continue to serve as lie detectors for an industry that far too often lives a lie, cloaking themselves in green and using the word "recycling" as a shameful shield," said BAN director Jim Puckett.

E-wastes that are exported to developing countries end up being smashed, burned or treated with dangerous chemicals. Desperate migrant workers unaware of the hazards, are exposed to harmful chemicals such as mercury and lead as they break apart the old computers, printers and monitors. Wastes that cannot be readily recycled are dumped in waysides and fields. Such were the conditions BAN found last year in Hong Kong's New Territories where most of the trackers are going.

The latest tracker discoveries show that Goodwill Industries (Oxford, Michigan) continues to allow the export of the electronics they receive from the public despite policies not to do so. Further, several more U.S. Recyclers including California based recyclers: All-Green (Tustin), Attan Recycling (Chino), IQA Metals (Chino), Tri-Valley (Stockton) as well Great Lakes Recycling (Oak Park, Michigan), and Compucycle (Houston, Texas), were all companies targeted by the GPS deliveries that were found to be part of a "chain of export" that led to exports to Asia.

The wastes reported this time included one printer and 15 LCD screens laden with toxic mercury. These were sent to Hong Kong, mainland China, and the Philippines. Exportation of these hazardous electronics wastes to Asian countries does not violate US law but does violate international law (Basel Convention) and the laws of the importing countries. The exports also violate the companies' own stated policies declared on their websites making these companies vulnerable to fraud charges.

Despite the lack of national legislation forbidding most hazardous waste exportation, BAN's past citizen enforcement activities have so far resulted in one federal criminal conviction (Executive Recycling, Denver, Colorado), and four ongoing criminal investigations or indictments (Total Reclaim, Seattle, Washington; Diversified Recycling, Norcross, Georgia; Intercon Solutions, Chicago Heights, Illinois; and Stone Castle Recycling, Utah), all for fraudulent or illegal exports of e-waste.

As a solution to the problem of widespread electronic recycling fraud, BAN has created the e-Stewards Certification. This Certification for ethical recyclers is an alternative to the more easily attained "R2" Certification which allows exports even when they are likely to be illegal in importing countries. BAN has begun to use GPS tracking devices routinely in their e-Stewards verification program to better assure program integrity. Of the seven companies involved in this latest report, two were R2 certified and five were uncertified.

"We urge businesses and consumers alike, to prevent harmful global dumping and use only e-Steward Certified Recyclers," said Puckett.



To be included in the spotlight, you must **manufacture** the equipment featured. We require a company name, contact person, telephone number and, if applicable, a website address.

To be listed in the appropriate spotlight, please call 877-777-0043.

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Manufacturers are to contact American Recycler to ensure their company is listed in the Equipment Spotlight.

New York expands curbside e-waste collection program

New York Mayor de Blasio has expanded a successful curbside electronic waste collection program started on Staten Island to other boroughs of the city beginning this fall.

"Since the e-waste pilot on Staten Island was such a success, we're expanding it to a lot more New Yorkers." said Mayor de Blasio. "It's so important to our zero waste goals to recycle everything we can, including electronics – but we also need to make it easier for our residents to do so, and that's what this program is all about."

"We are proud to have worked with Council Member Matteo to bring the pilot curbside electronic waste collection program to Staten Island, and we are thrilled with the support we received from Staten Island residents. Based on this support, we have worked to make this a permanent program, and to expand the coverage areas to make it available to more and more residents in the months and years to come," said Sanitation Commissioner Kathryn Garcia

'Curbside e-waste collection is a crucial way to ensure that these potentially hazardous items are properly disposed of and potentially recycled. I want to thank DSNY and my colleague Council Member Steven Matteo of Staten Island for working together to develop this program, and now for expanding it to the other boroughs. Curbside e-waste collection will help New Yorkers who don't have their own vehicles, are elderly, or otherwise are unable to bring their items to a collection site to avoid fines as well. I look forward to seeing this program expand throughout the city," said Council Member Antonio Reynoso.

Last April, as part of the FY 2017 Executive Budget and in response to growing concerns from New Yorkers about the lack of convenience of electronics recycling programs, the Mayor announced that the Department of Sanitation would launch a one-year pilot program to collect electronic waste at the curb from residents of Staten Island. That program began in October 2016 and has been overwhelmingly successful.

In the first six months of the program (Oct. 2016 – March 2017):

•Staten Islanders scheduled 6,036 appointments for e-waste collection by calling 311 or going to nyc.gov/electronics.

•Through the program, DSNY has collected 10,912 electronic items, diverting more than 400,000 pounds of electronic waste from landfills.

Now, based on the success of the pilot on Staten Island, the program will be made permanent and expanded to the Bronx, Brooklyn, and Queens over the next three years. The expansion will start in North Brooklyn (CBs 1-5, 8-9, 16-17) this fall and will continue in FY19 and FY20.

Electronics often contain valuable materials, like gold and copper, as well as harmful materials, including lead, mercury and cadmium. Recycling electronic waste not only keeps these toxins from polluting the air, soil, and water, it also reduces energy and water use associated with manufacturing new materials. In January 2015, the New York State law banning the disposal of electronic waste took effect, barring the City from collecting these materials as refuse.

How E-Waste Collection Works

Residents of 1-9 unit buildings can make appointments at nyc.gov/electronics or calling 311. Residents select an available appointment slot and indicate the number and type of electronic items they want collected. Up to 20 items can be recycled per appointment. Residents must place all items on their curb line the evening before their confirmed collection day. While certified specialists will erase computer hard drives after collection, it is highly recommended residents remove all private information from electronic items before pickup. Up to 40 appointments will be available in each collection zone per day and appointments can be made up to two weeks in advance.

Sanitation workers collect these items in a specialized truck and bring them to a central facility for consolidation. Once enough electronic items have been collected, the city's electronics recycling vendor transports the material to a regional recycling facility for proper recycling.

E-Waste Collection for Apartment Buildings

Since 2013, the e-cycleNYC program has offered residents of apartment buildings with 10 or more units convenient, in-building collection of electronic waste. Buildings interested in enrolling have their electronics collected either with a collection bin or in a storage area. Residents place their unwanted electronics in the bin. When the bin is full, the material is collected and then recycled. The program is a public-private partnership between the Department and ERI; it is fully funded by electronics manufacturers and is free to taxpayers and participating buildings.

New Yorkers can also donate working electronics through DonateNYC (www.nyc.gov/donate) and can recycle unwanted electronics at household hazardous waste drop-off sites and SAFE Disposal events in all five boroughs.

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Staples offers recycling for technology

Staples offers responsible, free and convenient recycling solutions for technology, ink and toner cartridges, and rechargeable batteries at all of our retail stores in the U.S., most of Canada, and various locations in Europe. Customers value these recycling programs because they help make it easier for them to be more sustainable.

Managing this material flow is valuable to Staples as a business, since it generates additional store visits and traffic through these programs; fostering a positive brand experience with customers by helping them recycle traditionally hard-to-recycle items; and can offer incentives to customers to drive new purchases when they recycle. Plus these programs reduce the lifecycle environmental impacts of the technology products we sell.

In 2007, Staples was the first U.S. retailer to offer a national electronics recycling program. Staples has been offering free office electronics recycling to all customers in the U.S. since 2012. Customers can bring any brand of office technology in any condition, regardless of where they purchased it, to Staples® stores for free recycling by their recycler, Electronics Recyclers International (ERI).

Staples has similar e-waste programs in Canada, where a variety of electronic waste is collected, with some variations and exclusions depending on the province. Staples is an e-Stewards Enterprise and are committed to using certified e-Stewards® Recyclers wherever feasible to handle the electronic materials we collect for recycling.

Staples also offers a technology recycling service for all of our U.S. Staples Business Advantage® customers.

This B2B recycling program allows businesses to recycle old electronics such as computers, cell phones, keyboards, telecom equipment and multifunction devices in three easy steps:

- •Order recycling boxes online.
- •Fill boxes with electronics and ship back to Staples using the provided return label.
- •Receive a Certificate of Recycling from Staples certifying that their electronics have been properly recycled and data was safely removed.

Staples collected more than 16.7 million pounds of e-waste from our U.S. customers and more than 26.5 million pounds of e-waste globally.

Through participation in EPA's Sustainable Materials Management Electronics Challenge, Staples is committed to increasing responsible electronics recycling by increasing the volumes collected from customers and working with recognized recycling partners.

The trouble with being punctual is that nobody's there to appreciate it.

—Franklin P. Jones

Staples offers R2 revisions considered

The R2 Technical Advisory Committee (TAC) has been meeting regularly via conference call to consider revisions to the R2 Standard. The TAC is comprised of representatives from regulatory and public interest entities, recyclers/refurbishers, corporate users of electronics recycling services, and technical advisors with a broad-ranging expertise in the industry who share SERI's vision for safe and sustainable electronics reuse and recycling. The first draft of the revision is currently planned for late 2017, with the release of the final version in 2018, and full implementation by 2020.

Some of the proposed changes under consideration:

•FM Management Plan (Provision 5.a) – Strengthen accountability, transparency, and clarity of the recycling chain. New requirements to ensure that R2 recyclers demonstrate the expertise and capacity of their downstream vendors to process the equipment containing focus materials. The FM management plan would also need to include a flowchart of the downstream recycling chain (moved from Provision 5.e.6).

•Upstream Notifications – Recyclers would be required to notify their upstream customers of changes in the downstream recycling chain.

•Enhanced Tracking – An overhaul of Provision 7 would include more prescriptive requirements to ensure equipment, components, and materials are accurately tracked and received by downstream vendors. Also proposed are requirements that would impose time limits for processing equipment and shipping materials, to ensure the continued flow of equipment through the reuse and recycling process.

•Clarifying Reuse – A rewrite of Provision 6 in a format that will be

Telangana to boost e-waste recycling

The Telangana government disclosed two new policies focusing on ewaste.

Telangana proposes a new IoT policy designed to attract investments and create employment for over 50,000 people in the next 5 years.

Telangana's new e-waste policy also calls for earmarking industrial space in three districts for dismantling and recycling the e-waste in already existing industrial parks.

Industries minister KT Rama Rao said, "We aim to develop world-class infrastructure to promote the development of IoT products and IoT-based solutions. Hence, we will create five zones each in Hyderabad, Warangal and Sricilla districts for deployment of points of contact (PoCs) in the IoT space."

more understandable and better fit the normal process flow of refurbishers, while still maintaining the same high standards for testing and reuse.

These proposed changes are not yet finalized. Once deliberations are finished and consensus is reached by the R2 TAC, a full draft of the R2 Standard revision will be released for public comment.

In the meantime, suggestions for improving, clarifying or strengthening the R2 Standard are welcome, and may be submitted via the SERI website. The Standards Development web page also includes the list of TAC members if you would like to contact them directly. Additionally, the public is invited to attend the next in-person TAC meeting scheduled for November 7-9, 2017 in Denver, Colorado.

TAC Members have volunteered their time and expertise for the purpose of strengthening and improving the R2 Standard. The issues are difficult and complex. Member participation is appreciated. Reaching consensus is often long and difficult, but the resulting benefit is a final product that is thoroughly vetted and agreeable to the broad community of stakeholders.

For a direct link to the SERI website, view this article on www.AmericanRecycler.com.

Reaching new milestones: over 700 R2 certified facilities exist

More than 700 R2 certified facilities are now operating in 30 countries.

RoHS (Restriction of Hazardous Substances) is a European Union (EU) Directive that restricts the use of specific hazardous materials found in electrical and electronic equipment. It affects all applicable product sold in EU countries after July 1, 2006. RoHS compliance may be identified with a green RoHS label with a checkmark. The RoHS 2 Directive 2011/65/EU was published July 2011. It expands coverage of RoHS and requires compliance before products can have the CE mark.

There is a common misconception that RoHS compliant equipment does not contain focus materials, and therefore, does not need to be managed in conformance to R2's Provision 5 requirements. This assumption is not always correct, and could result in a non-conformance.

This is significant because it means more sustainable practices are being implemented and companies are operating under the oversight of independent auditors. Due to awareness and accountability, R2 certified recyclers are holding downstream partners to higher levels of scrutiny.



EQUIPMENT SPOTLIGHT



E-Waste Recycling **Equipment**

by MARY M. COX

maryc@americanrecycler.com

As rapid breakthroughs in technology continue and as electronic commodity prices drop dramatically, an increase in electronic waste has resulted. A whopping 20 to 50 million metric tons of e-waste are disposed of annually so items such as computers, cells phones, fax machines and printers are piling up and it is best to recycle rather than dump them.

Andela Products provides solutions for generating marketable glass product from waste glass, including cathode ray tubes (CRTs). The thick face panel glass accounts for approximately two-thirds the weight of each tube and is lead free when separated from the frit and the funnel. Due to the leaded glass in the funnel portion of the tube, many choose to manually separate the funnel from the clean panel glass prior to reduction. By doing so, front panels can be pulverized and resold as glass product, while the leaded funnel and frit go to a lead market. The firm has designed



Andela Products

tion hour.

and developed glass recycling technology for 25 years.

Andela glass breakers and pulverizers provide size and volume reduction options for the CRT glass. The panel glass can be size separated and converted into safe handling aggregate/sand product using Andela's industrial grade turn-key systems producing 3/8"-1/8" aggregate and 1/8" minus glass sand product at capacities of 3 to 20 tons per hour. "This versatile material can be marketed as a substitute for a wide variety of applications right in the (plastic, rubber, wood, textile L

local community," Cynthia Andela, president and chief executive officer said. She added, "We provide fully integrated breaker and pulverizer modules designed for containerized, crushing and separation of whole CRT monitors. Patented flexible impactor technology reduces glass material and metal is discharged separately for further processing. Any harmful dust particles are contained



Eldan Recycling

within the enclosure paired with adequate dust collection."

The Eldan Recycling Company reports that more than 830 of their complete systems and 7.100 of their individual machines have been

> installed, worldwide. Eldan's Ring Shredder S1500 is used for primary shredding of computer scrap that contains main frame and personal computers, keyboards, monitors with a glass tube, printers, fax machines, hard drives, printed circuit boards (PCBs) and more. The S1500 can handle pieces up to 40" x 40" x 28" with a maximum weight of 100 pounds. Output size is 1.5" x 4" and the high speed (990 rpm) shredder has a 535hp electrical drive with

a rotor length of 60". Maximum capacity is 7 tons per produc-

Processing electronic waste with an Eldan system allows a user to retrieve: various fraction of ferrous and SS (stainless steel), various fraction of nonferrous metals (aluminum, copper, brass), PCBs, refining material containing copper, brass, zinc, lead and precious metals (PM), and organic fraction and dust). A complete Eldan WEEE (waste electrical and electronic equipment) recycling system includes the following: a shredder, an eddy current separator 1, a tumble back feeder, a multi-purpose rasper, an eddy current separator 2, a heavy granulator and a separation table.

Eldan first supplied a complete WEEE system to a customer in Switzerland, in 2001. Ken Moulin,

> area sales manager noted, "We were one of first firms to offer a complete system for processing of WEEE and we now have installations all over the world. We satisfy customers with superior equipment and technology, and a high level of after sales support. Eldan can tailor a system for each customer's specific requirements. I recently attended the annual

E-Scrap conference in Orlando, Florida. We have exhibited at this event for several years and this year's event brought out several new attendees and provided us with some nice opportunities. I think this is a good sign for the U.S. and Canadian markets. During the past 60 years, we've worked hard to supply the best equipment to the recycling industry. We're the first choice for so many in the industry because we offer high-quality, flexible products that are developed and manufactured by experienced, service-minded personnel."

JWC Environmental has offered unique solutions in recycling for years. JWC's Shred Series products are designed to process and destroy mass loads of electronic waste in wet or dry applications. Shred Series products are available in four differ-



JWC Environmental

ent sizes; 1-Shred, 3-Shred, 4-Shred & 7-Shred. Stacy Peshkopia, industrial product manager stated, "The machines are ideal for companies that focus on reducing their e-waste volume and so reduce hauling costs. JWC offers shredders that have interchangeable cutters, motors, and sizes depending on the specific waste requirements. Based on the desired particle size, there is plethora of standard and custom-steel, hardened cutters available to ensure your recycling goals are being achieved."

See E-WASTE EQUIPMENT, Page B6

MANUFACTURER LIST

Andela Products Jeremy Croft 315-858-0055 www.andelaproducts.com

BCA Industries John Neuens 414-353-1002 www.bca-industries.com

Cumberland John Farney 608-347-6087

www.cumberland-plastics.com **Eldan Recycling**

Ken Moulin 716-731-4900 www.eldan-recycling.com

Franklin Miller, Inc. **Dave Schuppe** 800-932-0599 www.franklinmiller.com

JWC Environmental **Kevin Bates** 800-331-2277 www.jwce.com

Komar Industries Inc. **Mark Koenig** 614-836-2366 www.komarindustries.com

> **Shred-Tech** Joe Roberto 800-465-3214 www.shred-tech.com

SSI Shredding Systems Inc. **Dave Fleming** 503-682-3633 www.ssiworld.com

UNTHA Shredding Technology Bernhard Martinz

603-601-2304 www.untha-america.com



New program provides refurbished computers to disadvantaged students

The electronics recycling and refurbishment certification program known as e-Stewards® announced a new "digital equity" program designed to channel computer equipment from large corporations and institutions to needy individuals and communities across North America.

Despite the fact that education, jobs, job access and emergency services depend heavily on the internet and computing equipment, one in five persons in the U.S. still do not have access to the internet. Meanwhile, every year, thousands of working computers, printers and peripherals are removed from service and are shredded, or worse, exported to dirty recycling operations in developing countries.

The new e-Stewards Digital Equity (eDE) program, due to go live on January 1, 2018, will tap large corporate partners to donate working or repairable IT equipment directly to e-Stewards Certified Refurbisher/Recyclers, who will refurbish them. Like-new devices in this program will then be sold to and deployed by city led digital equity

programs to provide digital access to low income end-users at very low cost. The e-Stewards program hopes to divert thousands of computers and peripherals each year via ethical refurbishment.

By providing large enterprise companies with the assurance of careful management and refurbishment of their old equipment, and an established, reputable channel to needy communities, the e-Stewards Digital Equity program will allow enterprise corporations to more easily engage in donating to ethical reuse for community good. e-Stewards Certification assures worker protections, data security, minimum specifications for tested and fully functional equipment, and prohibits the export of hazardous electronic scrap to developing countries.

E-Stewards is actively enrolling interested cities, e-Stewards Certified Refurbishers/Recyclers, and enterprise donors and service providers as eDE partners to profoundly change the lives of the 20 percent of citizens that are prevented from engaging in the digital age.

EnviroLeach partners with Jabil for e-waste processing

EnviroLeach Technologies Inc. has entered into a strategic global partnership with Jabil Inc. As part of the partnership, Jabil will utilize EnviroLeach's patent pending formula and processes for the recovery of metals from circuit boards and electronic waste. The new process will operate at Jabil's 650,000 sq.ft. facility in Memphis, Tennessee.

EnviroLeach's cyanide free and acid free based chemical formula operates at ambient temperature and at near neutral pH. The eco-friendly process helps responsibly manage the fastest growing waste stream in the world – electronics.

EnviroLeach reports that they and Jabil are developing an initial five ton per day pilot plant for the processing of e-waste at the Memphis facility. The plant will encompass all aspects of the recycling process, including the de-manufacturing, milling and the chemical extraction of metals. The plant will be built in Vancouver, BC.

Jabil and EnviroLeach will be contributing to the costs of development. The financial terms of the relationship are not considered material at this time.

Duane Nelson, EnviroLeach chief executive officer, said they are also exploring the use of the chemical formula into the recovery of rare earth metals and the recycling of lithium ion batteries with Jabil.

CalRecycle proposes amending electronic waste regulations

affect areas within Chapter 8.2 of Division 7 of Title 14 of the California Code of Regulations. They will primaexisting emergency regulation packages that address:

•The assessing of civil liabilities pursuant to the authority granted under Public Resources Code (PRC) section 42474, and

•The management of treatment residuals derived from the dismantling of covered electronic waste (CEW).

In addition to other general edits, the proposed rules will also amend and clarify aspects of definitions, applica-

The proposed regulations will bility and limitations, documents and records, net cost reports, applications, prohibited activities, appeals, requirements for collectors and recyclers, rily serve as a vehicle to finalize two claims, cancellation, and manufacturer

On January 24, 2017, staff presented a request for approval at the Cal-Recycle Monthly Public Meeting to initiate the formal rulemaking process.

CalRecycle filed proposed regulations with the Office of Administrative Law and initiated the prescribed public comment period.

Staff held a public hearing October 11, 2017, in Sacramento at the CalEPA building.

Pennsylvania county recycles almost 200k pounds of electronics

Cumberland County, Pennsylvania's electronics recycling center opened for business in July, 2017.

The cash fee to recycle electronics is \$0.50 per pound. There is an additional 1.5 percent convenience fee for debit card users and a 2.5 percent convenience fee for credit card users. Both types of cards have a minimum convenience fee charge of \$2.50.

All electronics are weighed on a certified floor scale. The total weight of the electronics and the total bill is presented before payment is accepted.

Cumberland County takes steps to secure computers with hard drives and hard drives by themselves while in the possession of Cumberland County and awaiting transportation to our R2 certified recycler. Cumberland County cannot, however, guarantee the security of such information. The county recommends people erase all personal and private files from their computer or hard drive before turning it over for recycling.

Electronics are sorted into like materials and packaged on either pallets or in Gaylord boxes. Once a full load of electronics is obtained (18,000 pounds), the collected electronics are sent to a contracted recycler, Sunnking, in Brockport, New York. Sunnking is certified to the R2 Standard. The R2 Standard provides a common set of processes, safety measures, and documentation requirements for businesses that repair and recycle used electronics. R2 is rigorously and independently audited, emphasizing quality, safety, and transparency.

As of October, Cumberland County has taken in 173,657 pounds of electronics for recycling.

Shepherdstown W. Virginia receives grant to recycle glass

The Shepherdstown, West Virginia town council received a grant from the West Virginia Department of Environmental Protection (DEP) in the amount of \$56,000 to establish a program to pick up glass for recycling.

The town's trash hauler, Apple Valley Waste, now requires clear, brown and green glass to be delivered separately.

The cost of separating the glass in three colors is proving too expensive for for-profit trash handlers with the drop in price for recycled glass.

The town plans to buy a skid loader with the grant money, a machine needed to collect glass, non-glass recyclables and non-recyclable trash.



INDUSTRY PROFILE

A Closer Look

by Donna Currie

Sebright Products Gary Brinkmann • 800-253-0532

Sebright Products, a family owned and operated company, got its start in 1984, according to Gary Brinkmann, the company's director of multinational sales. At the beginning, the company built compactors. Now, it's "one of the most innovative manufacturers of waste and recycling equipment in the entire world," Brinkman said.

"We are a solution designer that manufactures the solutions we design," Brinkmann said. Customers come to them with the application the machinery will be used for, and Sebright figures out what sort of machine will solve the customer's problems.

While the company has machines that can be sold off the shelf, many customers will ask for that machine, but customized, like the customer who wanted a garbage compactor made from stainless steel. "We have a robust



engineering team," Brinkmann said, so they can design exactly what the customer needs, for their particular applications.

Bright Technologies, the wet waste division of Sebright Products, specializes in stainless steel machinery for use in harsh environments, and has a separate plant dedicated to stainless steel manufacturing. Interestingly, one of those harsh environments is in the soda bottling industry, where the acidic sodas would eat through steel machinery in a short time.

Brinkmann explained that many companies need to "control the product from cradle to grave" and also make sure that "none of the product comes out the back door," and Sebright can help with exactly that problem.

One soda manufacturer had a problem with soda that had been mixed wrong, and it had been bottled. It was imperative that the soda didn't make it to consumers, so they talked to Sebright about a machine that would extract the liquid, bale the containers, and ensure that none of the product or containers would enter the marketplace. Of course Sebright manufactured exactly what was needed.

"We strive to avoid being a 'me too' business," Brinkmann said. "We make something new or better."

The same type of machines that extract liquids for soda manufacturers can also be used for other products including dairy, bottled water, coffee creamers and other food and non-food products. Once the liquid is removed, the bottles or cans can be sent to recyclers in either densified or baled form.

While Sebright machines are not designed to be the cheapest in the market, they are designed to last longer. Brinkmann said their equipment can last at least twice as long as similar machines that are less expensive.

Besides working with food bottles, the company makes machines for a wide range of industries. Paper mills have used Sebright extruders that pay for themselves in about four months. "They all pay for themselves in under a year," Brinkmann said of their machines.

Another machine is designed to extract oil from oil filters. Brinkmann said that the customer "showed us their boneyard of equipment that didn't work," and then Sebright got to work and designed a machine that doubled the amount of oil recovered from the same number of filters.

Brinkman said that he talked to people who worked with the oil filter machines who told Brinkmann, "This machine changed my life." Prior to the Sebright equipment, the employees had to squeegee the floors to remove spilled oil, and now they simply sweep it to clean. They also don't get themselves covered with oil during the workday.

Brinkmann started working for Sebright in 2012, but he and the company's founder, Brent Sebright, had met quite some time before. "We could see we were traveling down the same path and we thought we could do it better together," Brinkmann said.

Since his start with the company, Brinkmann said that he's seen the company become more solutions-based, but he still sees challenges ahead with customers who think it's easier to throw products away.

To make recycling easier for those customers, Sebright said, "We design solutions to match their operational workflow." The recycling equipment becomes part of the process, and the customer doesn't need to change what they do. "It's not built like a compactor, it's built like a piece of production equipment," he said. Continued, see SEBRIGHT, Page B7

Over 10 million electronic devices recovered over the last 5 years in Quebec

The Electronic Products Recycling Association of Québec (EPRA-Québec) congratulated Quebecers who have contributed to the recovery of over 70,000 metric tons of electronics over the past 5 years, which is equal to over 10 million electronic devices.

For EPRA-Québec's 5th anniversary, the organization is calling on popular scientist Martin Carli to raise awareness among Quebecers regarding the importance of bringing their old electronics to one of close to 1,000 authorized drop-off points across the province. In doing so, consumers can be sure their old devices will be handled in a safe, secure and environmentally sound manner by certified companies.

Despite the miniaturization of electronic products, volumes of collected devices have continued to grow year over year since EPRA-Québec's program was launched in July 2012. In 2016, each Quebecer recycled an average of 2.6 kg - that's over 21,500 tons of products recycled or directed for reuse. Among all the items collected over the past five years, some of the most popular devices in Quebec include TV sets and cathode-ray tube computer monitors, wireless remote controls, keyboards and printers.

According to a recent EPRA-Québec survey, two out of three Quebecers still have old electronics at home, including laptops or desktops, cell phones, portable music players, digital cameras, video-gaming consoles and DVD/Blu-Ray players.

Thanks to EPRA-Québec's program, Quebecers can enjoy peace of mind knowing that end-of-life electronics will not be sent to landfills or illegally exported, but rather recycled.

EPRA-Québec takes charge of all electronics left at its authorized dropoff points throughout the province, including several municipal ecocentres, many retailers as well as other organizations and companies. The devices are then sent to certified and approved companies for recycling according to Canadian standards, ensuring that they are handled in an environmentallyfriendly way while minimizing risks to health and safety. Once the products are disassembled, component materials such as metals, plastics and glass are sorted, conditioned and reused to make new products, therefore preserving non-renewable natural resources.

Cal2Recycle releases innovation to increase battery safety

Call2Recycle, Inc., North America's first and largest consumer battery stewardship organization, announced an innovation to bolster the safety in handling and transporting potentially dangerous batteries. Its U.S. battery collection containers will include an innovative, flame retardant liner. This new feature is part of the organization's Charge Up Safety! initiative to further the safe collection, transport and recycling of consumer batteries.

When certain types of batteries reach their end-of-life, they may still retain a residual charge that can present a safety risk if not handled properly. To reduce any safety incidents, the Call2Recycle® program will include the flame retardant liner in all its battery collection boxes as an extra layer of protection during collection, transportation and recycling.

The patent-pending liner is made of a dry polyester fiber and provides an additional level of defense should a thermal event occur during the battery recycling journey – from collection to transportation to sorting and processing. The liner is manufactured from used plastic bottles, and is both reusable and recyclable. This innovation, when applied with the program's guidelines, can limit the potential for flames to escape from a battery box in the event of a thermal runaway or ignition of materials.

The flame retardant box, manufactured for Call2Recycle's use, has been independently tested, and can withstand up to 1,100 degrees Fahrenheit. Call2Recycle will begin fulfilling boxes with this liner to all collection sites across the U.S. in the coming weeks and to Canada in early 2018.

Call2Recycle offers more than 14,000 public drop off sites where consumers can recycle their batteries at no cost. Since 1996, the organization has collected and recycled over 130 million pounds.

E-Waste Equipment Continued from Page B4

As the volume of electronic waste Installing our shredders in recycling, continues to grow, so will the portion of it that includes related accessories. The JWC Shred Series products are capable of both electronic and accessory destruction, including cell phone cases, keyboards, headphones and more. "We must find better ways to recycle and recover the valuable commodities contained in e-waste.

waste to energy, commercial facility sewage, food processing and oil and gas facilities will help dramatically in that effort. With JWC's 40 years of manufacturing experience and distribution, our Monster products are working every day in various applications and are ready to take on your next project." Peshkopia explained.

Recycling partnership formed to provide work for disabled

electronic recycling company, Green Network Exchange.

Green Network Exchange, led by president/chief executive officer David Williams, is a "Green Technology Company" that has become one of the most prominent electronic waste recycling companies servicing greater New England and New York, including 30 property management firms and more than 500 independent clients. With demand being so high, Williams was excited when Triangle, Inc. contacted him looking for an employment opportunity for one of its students.

Triangle, Inc.'s Transitions to Successful Careers (TSC) program provides high school and college students with

Triangle, Inc. has partnered with the disabilities the opportunity to learn career readiness skills and matches them with a six-week internship with an organization in their community based on their career aspirations.

From the start, Roger, a TSC student, expressed an interest in computers, software, and data. He is a high school senior who wants to pursue a degree in computer science upon graduation - the perfect fit for Green Network Exchange. Williams has gone above and beyond, working closely with Roger one-on-one, traveling around the "128 Tech Corridor" together to pick up recycled technology. David's leadership is allowing Roger to have the support and training he needs to pursue his goals in the computer science industry.

E-Waste Continued from Page B1

"Not only is this a great practice to control the amount of e-waste, but also allows companies to offer repairs and services at a lower cost to consumers," Chubner said.

And glass, in particular CRT glass, has been a challenge for many electronics recyclers because of the lead that was incorporated into CRTs. For years, glass was being sent to glass-to-glass facilities for the remanufacturing of

According to the Electronics Recycling Landscape Report from the Closed Loop Foundation, multiple companies went out of business due to poorly managed stocks of CRT displays, and Videocon, the largest glassto-glass smelter in the world stopped accepting new displays. As more companies continued to close in 2016, some state programs have discontinued collection, and Best Buy began charging consumers to take these devices. The small piece of good news is that Videocon has started accepting displays again from select vendors in the United States, with an expected demand for glass for another three years. "The past year has illustrated the volatility in CRT glass management markets, and underscores the challenges and uncertainties that organizations responsible for managing these materials face," the report stated.

"Due to the glass to glass market shrinking, more markets have opened up for CRT glass," Swenson said. "Our partner ERI created a process in 2010 for cleaning CRT glass on site. The panel and funnel are separated and then tumbled in a dry process to remove the phosphors on the glass. That glass is then sent to one of a few downstream markets to be used in new products. Those downstream markets are glass to glass, lead smelting and the ceramic tile industry."

A convergence of factors has resulted in a challenging business environment for e-waste handlings, as well as subsequent glass recycling. The decline in commodity prices, especially for the precious metal components found within e-waste, has resulted in a cost-prohibitive environment for electronics recycling due to the time required in the transporting and disassembling of electronics devices.

Sebright

■Continued from Page B6

But it's not just about making recycling part of the process. Brinkman said, "We show them how to make money at it. It's a challenge, but I also classify it as an opportunity."

Another challenge is the way plastics are combined in the bottles used today. A plastic water bottle might be PET, while the cap is polypropylene, and the label is polyethylene. Bottles are lighter than they were several years ago, but they are also made from a wider range of materials. "You really have to know the material grades," Brinkmann said.

Looking forward, Brinkmann sees growth in recycling aseptic containers that are made from paper, aluminum

and polyethylene. Brinkman said that ten years ago, these were not considered recyclable, but now they are.

Since Sebright sells equipment all over the world, Brinkmann said that he sees upcoming trends that have not become popular in the U.S. yet. He expects to see more waste-to-energy and waste-to-fuel in the U.S., as well as landfill mining as previously unwanted materials become valuable for recycling. As trends change, he expects that Sebright won't "just ride the wave, but create the wave" as they work on solutions for their customers.

While Brinkmann started in the finance world, he found a more comfortable home at Sebright. "It's a legacy thing," he said. "My children are able to say, 'my dad helps the environment," and he said that's something he's "darned proud of."

Staples sustainability survey discovers that 90 percent of businesses engage in sustainable activity regularly

sustainable efforts, found that more than 90 percent of businesses practice some form of eco-friendly activity regularly, including recycling, making energy-efficient choices, and/or shopping for more eco-friendly products.

"Making daily green choices is not a trend, it is a regular ritual and a priority for our customers," said Mark Buckley, vice president, environmental affairs, Staples, Inc. "Our survey found that both businesses and individuals engage in some form of regular ecofriendly activity both in the workplace and at home, and are actively seeking environmentally conscious choices. Staples is excited to be a trusted partner through our large sustainable product assortment and extensive recycling services."

The Staples sustainability study revealed:

•89 percent of businesses and consumers believe that eco-friendly products are the same or higher quality than non-eco products.

•While 74 percent of consumers recycle containers made of glass, metal or plastic, only 51 percent recycle electronics at the end of their life.

•59 percent of businesses implement one or more energy efficient practices.

The findings come from the Staples sustainability survey, conducted by Frank N. Magid Associates, Inc. to further understand the commitment of businesses and consumers to sustain-

Staples, Inc., an industry leader in ability in the workplace and at home. This 2016-2017 customer sustainability survey was conducted online, among 600 U.S. consumers and 1,300 businesses (small businesses to commercial and enterprises), from December 28, 2016 to January 6, 2017. Those surveyed were the office or household product and service decision-maker or influencer.

> Earlier this month, ENERGY STAR recognized Staples for its energy efficiency practices, awarding the company an ENERGY STAR Partner of the Year Award for the eighth year in a row. This recognition is just one of the many ways Staples is leading the industry in various sustainable practices including conserving energy, selling more sustainable products and recycling. In 2016, Staples, the only retailer to offer completely free electronics recycling year round, helped customers recycle more than 25 million pounds of office technology and sold more than \$4 billion in products with environmental features globally.

> Electronics Recycling - While Staples offers free electronics recycling all year round, during Earth Week Staples Rewards members who recycle old electronics will receive a coupon for \$10 off their next purchase of \$30 or more. The offer is redeemable in store for Rewards Members only. Customers who are not already Rewards Members can easily sign up online or in-store to be eligible for the coupon.

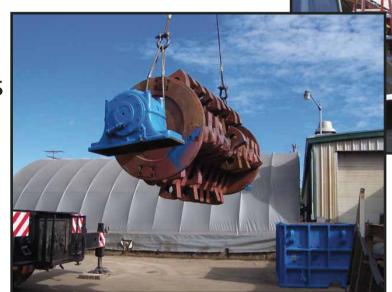


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