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www.wasteadvantagemag.com September 2013 Vol.4, No.9

WasteAdvantage magazine

The Advantage in the Waste and Recycling Industry

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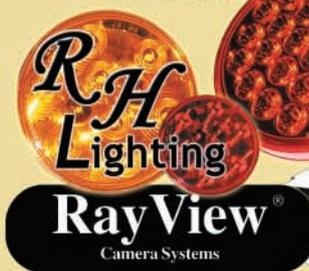
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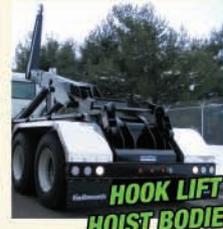
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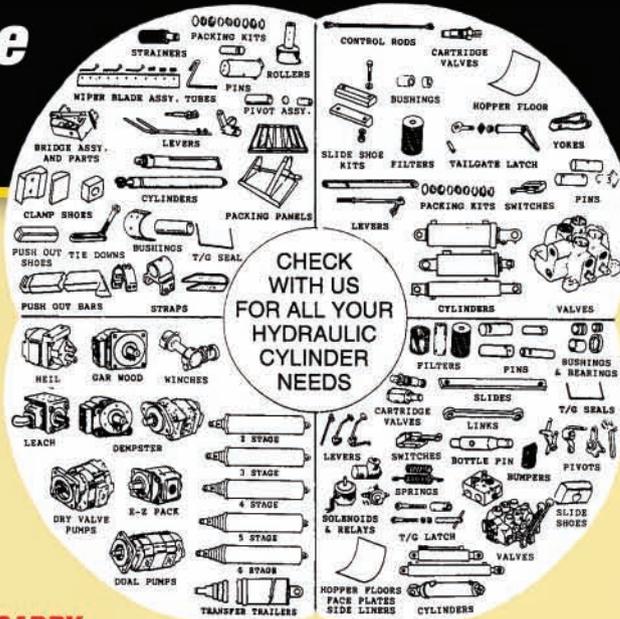
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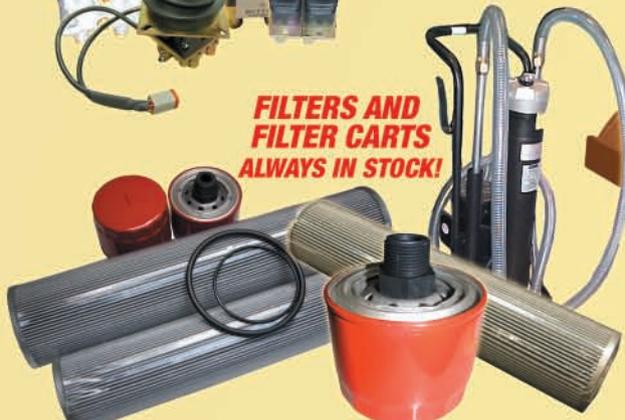


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**SEE MORE OF OUR
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Editor's Note



WELCOME TO LONG BEACH! WE LOOK FOWARD TO MEETING WITH EACH OF you again in this great city on the water. Be sure to visit us at booth 1718 to talk about past, current or future issues or just to chat.

Our September issue is packed with great articles on topics from safety and finance to odor control and truck equipment. This month's In the Spotlight (page 14) features Sue's Recycling and Sanitation in Vian, OK, a hauler that has just celebrated 20 successful years in the industry. Growing from a two-person operation to now covering 16 Oklahoma counties, Sue's Recycling has faced challenges head on while compacting costs and implementing new technologies. "Creating a Safer Waste Truck Environment" (page 18) talks about the safety advantages of using video-event recording for accident analysis and driver behavior, while "How to Build a Sound Relationship with Your Finance Provider" (page 24) gives you some useful tips for working with financial companies now and in the future. And don't miss "The Cold, Hard Facts" (page 22). As we head towards the colder months, this article points out that the dangers of cold stress should be taken as seriously as extreme heat, giving important information about what symptoms to look for and how to protect yourself.



Photo courtesy of Long Beach CVB.

In the R/T/L section, check out "Navigating the Litigation Process" (page 48), which talks about the importance of legal representation during zoning approval and "Odor Control Chemicals" (page 54), breaking down the types of solutions available and the pros and cons of each. And don't forget "Smoke Alarms: Best Practices for an Environmentally Sensitive Device" (page 60), discussing each recyclable element of the smoke alarm.

Waste Advantage Magazine and our partner, Green Endeavor, are looking for companies who have committed to using better chemicals in the waste industry. Our Green E's Challenge looks to recognize those that have joined the trend towards safe, effective and cost-efficient chemicals in upcoming issues of the publication. Turn to page 11 to fill out an application, visit www.wasteadvantagemag.com to download a form or visit us at booth 1718 during WASTECON to pick one up and be a part of this important movement. We look forward to speaking with about you've done in the coming months. Feel free to contact me with any questions. We always like to hear from you.

Best Regards,

Angelina Ruiz
Editorial Director
angelina@wasteadvantagemag.com

Editorial Advisory Board

Sal Tagliavia
President
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PUBLISHER

Gary Orfe
gary@wasteadvantagemag.com
(800) 358-2873 Ext. 2

EDITORIAL

Editorial Director
Angelina Ruiz
angelina@wasteadvantagemag.com
(800) 358-2873 Ext. 7

Associate Editor
Meghan Pirone

ART/PRODUCTION

Director of Production/Design
Heidi Jensen
heidi@wasteadvantagemag.com
(800) 358-2873 Ext. 8

CIRCULATION

Circulation
Elisa Weil
elisa@wasteadvantagemag.com
(800) 358-2873 Ext. 5

SALES

Sales Manager
Noreen Cocron
(800) 358-2873 Ext. 1
noreen@wasteadvantagemag.com

Account Executive

Marcus Rubio
(800) 358-2873 Ext. 3
marcus@wasteadvantagemag.com

ACCOUNTING

Accounting Manager
Elisa Weil
elisa@wasteadvantagemag.com
(800) 358-2873 Ext. 5

WASTE ADVANTAGE, LLC.

PO BOX 30126
PALM BEACH GARDENS, FLORIDA 33420-0126
TEL: (800) 358-2873 • FAX: (888) 871-4515

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On the Cover:

A kaleidoscope of colorful LED lights illuminates Long Beach's Rainbow Harbor and the Glass-Domed Promenade Lobby of the Long Beach Convention & Entertainment Center.

Photo courtesy of the Long Beach CVB.

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who is selling what
in the solid waste
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Photos courtesy of Ergodyne, Tealinc and the Steel Recycling Institute.





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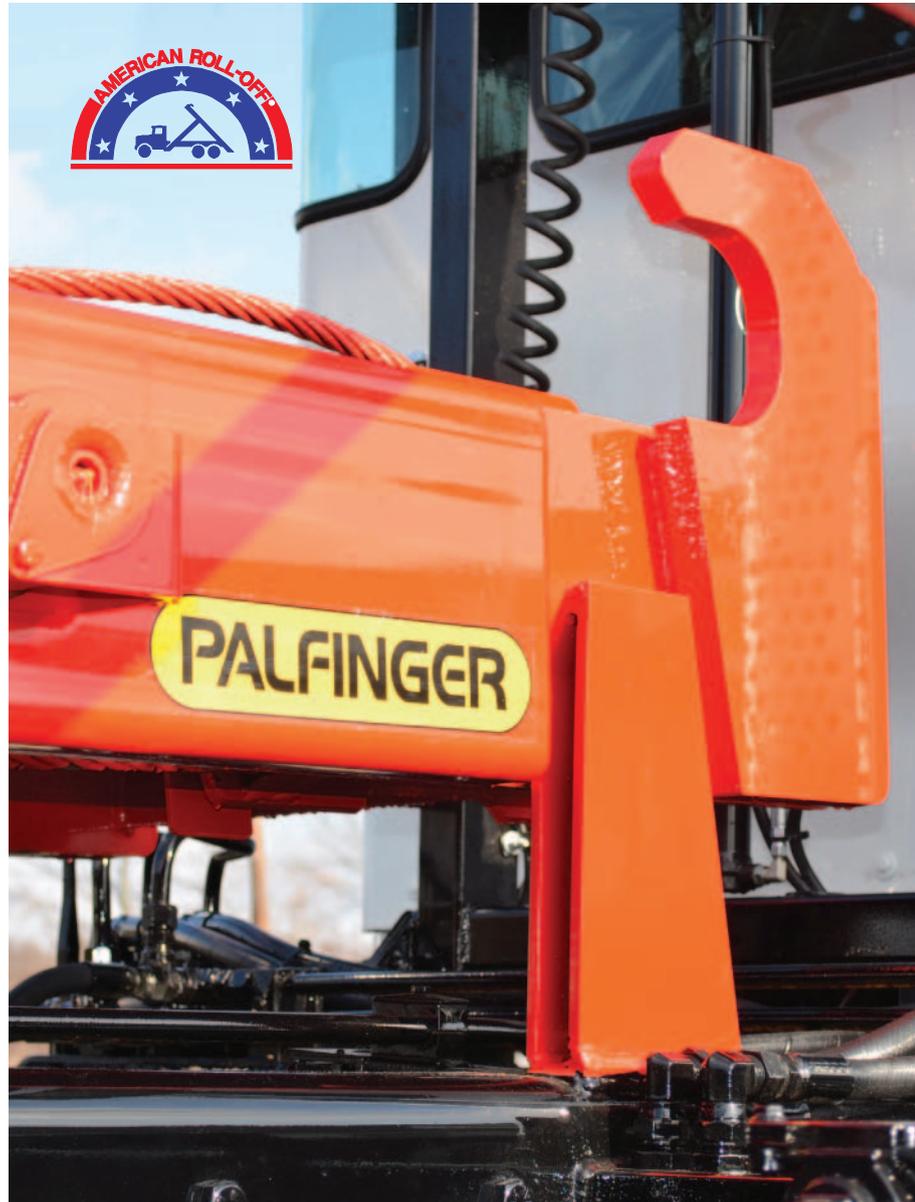
Hendrickson Announces Suspension Training Program

Hendrickson has scheduled its 13th session of Hendrickson Vehicle Suspension Institute (HVSI) technical suspension training for heavy-duty transportation service technicians and parts personnel. There will be two separate sessions held, from October 22 – 23 and the second from October 24 – 25, at Northwest Technical Institute Facility in Springdale, AR. Each session is scheduled for one and one-half days including lecture and hands-

on training covering Trailer 101, Hendrickson Tire Inflation Systems and TRI-FUNCTIONAL® Bushing Replacement. The training is conducted by Hendrickson's regional field service managers.

The HVSI program provides technicians as well as parts and service personnel with a basic orientation and hands on experience for the recommended installation, service, maintenance and repair procedures for Hendrickson truck, trailer and lift axle suspension systems.

For more information, contact Jose Cabral at (630) 910-2836 or e-mail jcabral@hendrickson-intl.com.



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Jason Kelley Named Sandusky Plant Manager

AKRO-MILS (Akron, OH) announces that Jason Kelley has been named Plant Manager for the company's Sandusky, OH, facility. Prior to joining Akro-Mils, Kelley held the positions of Director of Operations and Lean Manager at Tranter, Inc., in Wichita Falls, TX, a heat exchange technology manufacturer. He also held several management positions at Rain Bird Corp. in Tucson, AZ, a manufacturer of irrigation products.

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MAC TRAILER MFG. (Alliance, OH) celebrates 20 years of trailer manufacturing and looks forward to many more. "As I reflect to the days of having started in business as a one man operation repairing wrecked trailers in a single bay garage, I cannot lose sight of how many people then, and over the years have entrusted their hauling operations to MAC Trailer," stated Mike Conny Owner of MAC Trailer Mfg. The success of MAC Trailer can be attributed to a quality product built by quality people, complemented by an experienced and knowledgeable sales staff and professional Authorized Dealer Network, supported by a full service and repair facility, the benefit of a used trailer division and a complete aftermarket parts department—all committed to a higher level of customer service.

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Mark Your Calendar



OCTOBER 2013

1 – 2: NSWMA Heartland Annual Conference 2013

Quartz Mountain Resort
Lone Wolf, OK
www.environmentalistseveryday.org

7 – 9: High-Efficiency Truck Users Forum (HTUF) 2013

Hyatt Regency McCormick Place
Chicago, IL
www.calstart.org

7 – 9: 2013 Iowa Recycling and Solid Waste Management Conference

Hilton Garden Inn
Council Bluffs, IA
www.iowaconference.org

7 – 11: ISWA World Congress 2013

Reed Messe Wien
Vienna, Austria
www.iswa2013.org

8 – 9: EREF's Regional Summit on Managing & Treating Landfill Leachate

Four Seasons Hotel
Philadelphia, PA
www.erefdn.org

8 – 9: NSWMA Mid-Atlantic Annual Conference 2013

The Grove Park Inn Resort & Spa
Asheville, NC
www.environmentalistseveryday.org

9 – 10: 2013 TCAPWA/SWANA Annual Public Works Conference and Equipment Expo

Marriott Meadowview Convention Center and Resort
Kingsport, TN
<http://tennessee.apwa.net/events/11372>

10 – 11: International Recycled Rubber Products Technology Conference

Tropicana Hotel
Las Vegas, NV
<http://recycledrubberproducts.org>

14 – 16: NSWMA/WASTEC Executive Roundtable Leadership Conference 2013

Eau Palm Beach Resort and Spa
Manalapan, FL
www.environmentalistseveryday.org

15 – 17: Mississippi Chapter 2013 SWANA Fall Conference

Natchez Grand Hotel
Natchez, MS
<http://msswana.org/index.php/conferences>

16 – 18: Paper Recycling Conference & Trade Show

Marriott Chicago Downtown Magnificent Mile
Chicago, IL
<http://americas.paperrecyclingconference.com>

20 – 23: 13th Annual Conference on Renewable Energy from Organics Recycling

Hyatt Regency Columbus
Columbus, OH
<http://biocycleenergy.com>

21: Southern New England 10th Annual Recycling and Solid Waste Conference

Jiminy Peak Mountain Resort
Hancock, MA
www.swana.org

22 - 23: Hendrickson Vehicle Suspension Institute Technical Suspension Training

Northwest Technical Institute Facility
Springdale, AR
www.hendrickson-intl.com

23 – 24: WHEN Recycling Expo North 2013

York Fairgrounds
York, PA
www.whenrecyclingexpo.com

23 – 25: 2013 Coast Waste Management Association Annual Conference

Westin Bear Mountain
Victoria, BC
www.cwma.bc.ca

24 - 25: Hendrickson Vehicle Suspension Institute Technical Suspension Training

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Waste Advantage Magazine and Green Endeavor are committed to using better chemicals in the waste industry—the final step in the long process to be green. Join us as a leader of this growing industry movement to use safe, effective and cost efficient chemicals. From July to September, we are asking people to commit to this movement. Early adopters will be featured in future issues of *Waste Advantage Magazine* with coverage supporting the evolving movement and all participants will be recognized at a special event at Waste Expo 2014. We hope we can count on your support for this new commitment to the waste industry. The application fee is \$25. The deadline to submit an application is **September 30, 2013**.

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Wisconsin Enacts Road Safety Law to Encourage Cautious Driving Near Sanitation Trucks

Wisconsin Governor Scott Walker recently signed into law a bill that doubles the minimum and maximum fines for reckless driving and certain speeding violations, with specific provisions for violations committed near sanitation vehicles. The bill, Wisconsin Act 39, or the Slow Down to Get Around Act, was supported by the waste and recycling industry to prevent road accidents and fatalities caused by careless driving around sanitation trucks, which are a major cause of injuries to trash truck operators and sanitation workers nationwide. "It's critically important, for everyone's safety, to slow down to get around garbage trucks," said Fred Radandt, president of Manitowoc Disposal, Inc., and chair of the Wisconsin Chapter of the NSWMA. "We applaud Governor Walker and the Wisconsin Legislature for supporting enhanced safety for motorists and for waste and recycling industry employees. Trash collection is a tough job with many challenges, and we want to be sure our workers return home safely to their families every night."

Wisconsin's reforms echo calls for greater road safety nationwide. The EIA has championed safety for years with its "Slow Down to Get Around" national campaign, which reminds motorists to drive more carefully near solid waste collection vehicles. The NSWMA Wisconsin state chapter was instrumental in helping to inform legislators and the public of the need for the new law.

For more information, visit www.environmentalistseveryday.org.

NGVAmerica Applauds Senator Inhofe for Bill to Encourage NGV Production

NGVAmerica commended U.S. Senator Jim Inhofe (R-OK) for introducing S. 1355, a bill that will increase the production of natural gas vehicles (NGV) by improving parity among alternative fuel vehicles without taxpayer subsidies. The original bipartisan cosponsors of the bill include U.S. Senators Mark Begich (D-AK), Roy Blunt (R-MO) and Robert Casey (R-PA). The bill encourages the production of more bi-fuel NGVs by amending the requirements imposed on automakers to meet the Corporate Average Fuel Economy (CAFE) standard. Currently, EPA and the National Highway Traffic Safety Administration (NHTSA) light-duty vehicle rules for greenhouse gases and fuel economy base the fuel economy of bi-fuel vehicles on a 50/50 fuel-use assumption and places limits on the number of credits that can be earned. In contrast, dedicated NGVs assume a 100 percent fuel use and are not subject to limits on credits. S. 1355 expands the definition of dedicated NGVs to include vehicles with a reserve gasoline tank to be used for incidental or emergency fuel use. Additionally, the bill amends CAFE standards to ensure NGVs are given equal treatment with electric vehicles. These amendments will ensure automakers receive the maximum number of credits for the production of natural gas vehicles.

For more information, visit www.ngvamerica.org.

EPA Reduces Regulatory Burden for Industrial Facilities Using Solvent Wipes

EPA modified the hazardous waste management regulations under the Resource Conservation and Recovery Act (RCRA) to conditionally exclude solvent-contaminated wipes from hazardous waste regulations provided that businesses clean or dispose of them properly. The rule is based on EPA's final risk analysis, which was peer reviewed in 2008 and published for public comment in 2009, that concluded wipes contaminated with certain hazardous solvents do not pose significant risk to human health and the environment when managed properly. EPA estimates that the final rule will result in a net savings of between \$21.7 million and \$27.8 million per year.

Wipes are used in conjunction with solvents for cleaning and other purposes by tens of thousands of facilities in numerous industrial sectors. "Today's rule uses the latest science to provide a regulatory framework for managing solvent-contaminated wipes that is appropriate to the level of risk posed by these materials," said Mathy Stanislaus, assistant administrator for EPA's Office of Solid Waste and Emergency Response. "I've heard directly from stakeholders about the benefits of this rule and the need to finalize it. The rule reduces costs for thousands of businesses, many of which are small businesses, while maintaining protection of human health and the environment."

The final rule excludes wipes that are contaminated with solvents listed as hazardous wastes under RCRA that are cleaned or disposed of properly. To be excluded, solvent-contaminated wipes must be managed in closed, labeled containers and cannot contain free liquids when sent for cleaning or disposal. Additionally, facilities that generate solvent-contaminated wipes must comply with certain recordkeeping requirements and may not accumulate wipes for longer than 180 days. EPA estimates that the final rule will result in a net savings of \$18 million per year in avoided regulatory costs and between \$3.7 million and \$9.9 million per year in other expected benefits, including pollution prevention, waste minimization and fire prevention benefits.

For more information, visit www.epa.gov/epawaste/bazard/wastetypes/wasteid/solvents/wipes.htm.



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Sue's Recycling and Sanitation: Two Decades of Expanding Business and Reducing Waste

As Sue's Recycling and Sanitation celebrates their 20th anniversary, the Smith family and THEIR EMPLOYEES REFLECT ON THEIR TWO DECADES IN THE WASTE REMOVAL BUSINESS.

WHEN JIMMY AND SUE SMITH ACCEPTED THEIR first customers for residential waste collection in the spring of 1993, they couldn't have imagined the success Sue's Recycling & Sanitation would experience. The notion for the Vian, OK-based business came one day while the Smiths were mowing a local park and noticed the amount of uncollected trash. The couple submitted a bid to the Army Corps of Engineers with the idea that waste collection would add a year-round element to their lawn care business. Much to their surprise, the bid was accepted.

Soon after, they discovered a profit could be made recycling discarded cans, bottles and scrap material. The business received its moniker when word spread about the local company that would pick up garbage

and recyclables, greatly reducing the waste headed for nearby landfills. "It's been 20 years of blood, sweat and tears—sometimes in that order," jokes Sue Smith, co-owner and namesake of the business. "But I'm very proud of what we've done."

The Sue's Recycling 'fleet' began as one used truck, purchased shortly after the park bid was accepted, with Jimmy and Sue personally servicing Vian. Today, with a team of 20 trucks and 30 employees, including son Taylor, the Sue's Recycling family provides sanitation in 16 Oklahoma counties with two transfer stations and a wide variety of options for commercial, industrial and residential services. The company also works directly with many of their commercial and industrial clients to remove recyclables from their waste streams.

As Sue's Recycling celebrates their 20th anniversary, owners Jimmy and Sue Smith reflect on how their operation has grown from servicing a single community to 16 Oklahoma counties. Photos courtesy of Sue's Recycling and Sanitation.



Technology Overcoming Rural Challenges

Managing waste and recyclables in rural environments has always been a challenge and it's no different for Sue's Recycling. The company services an area spanning 16 counties from just two locations, and some of the routes travel long distances from the nearest locale every day. Runbacks to customer locations are costly and time consuming, so the staff makes every effort to ensure that each stop is handled with care and every service is completed correctly on the first visit.

Trucks are dispatched electronically using handheld devices, providing drivers access to the most up-to-date route information. Any route changes are transmitted to the drivers in real time so schedule adjustments can be made on the fly. Drivers record details about the service performed at each customer location and that information is immediately available to customer service personnel to answer any customer inquiries. The handhelds also allow drivers to capture photos of extra garbage, providing proof of service at the time of billing. These photos can be emailed to customers or included on invoices in case of billing disputes. "Since we began tracking and verifying our services electronically in 2007, we have substantially cut down on the number of runbacks to customer sites. Customers know that we have a time stamp for all completed services and GPS tracking information for all of our vehicles," notes Controller Taylor Smith. "If a customer calls our office to report a missed pickup, our staff can tell instantly what time we were at their home or business and why the pickup wasn't completed. This saves a return trip to the customer's location and a lot of time and money."

Compacting Costs

Sue's Recycling hasn't been isolated from the effects of the unstable economy, but they have implemented new policies focused on cost savings and efficiency to maintain profitability and longevity. "We've achieved a large amount of cost savings by bringing most vehicle maintenance in-house," says Taylor Smith. "Our mechanic manages the service schedule for our fleet to ensure scheduled maintenance items are completed on time and addresses preventative maintenance issues to keep the fleet on the road. Our staff also performs as much of our tire service as possible in our own facilities. These may seem like small changes, but they have made a big difference in our bottom line."

"It's just so much more convenient for us to do our own maintenance," says Mechanic Larry Daniels. "The closest repair shop for most of the trucks in our fleet is more than 50 miles from our yard, and general maintenance and many repairs can easily be done right here in our own facility. It really helps keep our overhead costs down while minimizing truck down time."

Another way Smith feels that Sue's Recycling cuts costs and maintains their high standards of customer service is taking steps to retain employees. "We are extremely proud of our team of employees. Many have been with us for longer than 10 years, and we know that is part of our success," says Taylor Smith. "We are pleased to be able to offer our team members competitive wages and a strong package of benefits, and we believe the expense of these items is more than offset by the quality of workmanship we receive from our team and the savings incurred from the low rate of employee turnover."

"A long term employee understands the business and knows how it operates," says driver and 16-year employee Randy Scott. "Many of us have

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Sue's Recycling and Sanitation: Two Decades of Expanding Business and Reducing Waste

worked together at Sue's for many years, and I think that bond makes us work better as a team."

Community Involvement

Sue's Recycling and their employees partner with a variety of local entities to help make the communities they serve in eastern Oklahoma better places to live by promoting or supporting worthy causes. One such cause is working with local fire departments and other civic organizations to help raise funds. In one instance, the company matches proceeds dollar for dollar on deposits from any cans recycled on behalf of a local association that is responsible for organizing community events. Local fire departments are also offering special pricing on their recyclable materials. Another example of Sue's Recycling's generosity is their contribution of both funds and services to the Happy Paws Animal Shelter in Checotah, OK over the past several years.

The company has also partnered with municipal and government officials to publicize and encourage participation during local cleanup days in different communities. Sue's Recycling has been recognized by the Oklahoma Department of Transportation for their efforts eight years running. Maybe their most visible support of charitable causes is Sue's new recycling truck, which is painted in the shade of pink associated with breast cancer awareness and sports the 'Fight like a girl!' slogan. A portion of all revenue generated from the truck is donated to breast cancer research.

Maintaining a strong focus on safety has been another key to the success at Sue's Recycling. Formal meetings are a necessary part of any training or safety program, but the team receives frequent reinforcement through informal toolbox meetings and the posting of safety related articles and news stories. "Our team sees our commitment to safety every day. And even though we have formal safety meetings every month, I feel like our drivers receive just as much benefit from a casual discussion about a news article around the time clock," says Jimmy Smith.

Bottom: While Sue's Recycling started with just one used truck, today their fleet is made up of 20 vehicles, including one that helps raise funds for breast cancer research.
Right: Experienced employees like driver Randy Scott (16 years with the company) help make Sue's Recycling a strong, seasoned team.

Looking Ahead

The company's commitment to technology, efficiency and accuracy has helped their business flourish in a challenging rural environment where other haulers have struggled. As part of their ongoing effort to improve processes and reduce costs, Sue's Recycling is currently working to optimize their routes to reduce daily mileage and increase route density.

Sue's Recycling will also continue working with local residents and businesses to provide options for the responsible disposal of waste and recyclable materials. They currently operate two dropoff facilities for recyclable materials with a few areas receiving pickup service, however they would like to add a more convenient way for all of their customers to recycle. "Convenience is the key to widespread adoption of recycling programs," says Sue Smith. "There are some recyclers willing to deliver their recyclables to a dropoff station, but participation would be much higher if we were able to offer curbside recycling options. We recognize that focusing on waste diversion and sustainability is critical to the future of our environment. Recycling is nothing new to our company's culture, but adoption and participation in recycling programs in this part of the country is behind some regions. We hope to continue establishing partnerships with communities and municipalities in our area to offer affordable curbside recycling programs in the rural regions we serve."

"We've really started to see a change in people's mindset about recycling in the last couple of years," adds Jimmy Smith. "People are calling our office asking how they can participate and what materials can be recycled. Even though our recycling pickup service is limited to a small area at this time, customers are willing to drop off their materials at our sites. It's exciting to see people taking that initiative, and we are excited to expand our curbside recycling options." | **WA**

For more information, contact Taylor Smith at taylor@suesrecycling.com.





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Creating a Safer Waste Truck Environment

John I. Rich

As the drumbeats of regulation become louder due to federal agency post-accident investigations, studies clearly show **THE SAFETY ADVANTAGES OF USING VIDEO-EVENT RECORDING FOR ACCIDENT ANALYSIS AND DRIVER BEHAVIOR.**

USING THE MOST RECENT DATA AVAILABLE FROM the Bureau of Labor Statistics (BLS), when adjusted for the differential in both the estimated numbers of people employed and vehicles, a waste collector is eight times more likely to lose his or her life in a transportation-related incident on the job than a police officer driving a cruiser. The BLS statistics also show that solid waste collection is the fourth most hazardous occupation in the U.S., and more than 10 times the average rate for all occupations in the country.

Of course, waste hauling poses a threat to the safety of others and their property. Negotiating narrow alleyways through neighborhoods in a vehicle that can weigh as much as five elephants, will, understandably, cause significant damage to another vehicle and injury to its passengers—not to mention what it could do to an unprotected bicyclist or pedestrian. As Don Quixote's sidekick, Sancho Panza, said in the Broadway musical *Man of La Mancha*, "Whether the stone hits the pitcher or the pitcher hits the stone, it's bad for the pitcher."

One insurance underwriter who has specialized in analyzing the loss data for the waste industry for more than 20 years maintains that for every 10 waste vehicles in a fleet there will be two accidents annually, and one of every nine collisions will involve bodily injury to the other party. And, with the tremendous size difference between vehicles and the number of plaintiffs' attorneys using the Internet to actively solicit injured parties specifically from waste vehicle accidents, the needle on the assumption meter will point squarely at the waste truck operator.

Here are a few statistics worth noting: As reported by the Web site TruckInfo.net, more than 75 percent of truck driving accidents in which waste vehicles are involved are due to the driver of the passenger vehicle. However, in instances when the truck driver was at fault, the National Transportation Safety Board (NTSB) reported that 80 percent of all large truck crashes and 65 percent of near-crashes were the result of the truck driver's inattention or distraction. So, although it appears that the likelihood is low that the driver of the trash truck might have been at fault, in the cases when he was at fault, the chances are high that the driver was involved in a distractive activity.

It can be challenging to prove that your driver was not at fault, and difficult to improve driver behaviors. But there are technologies available that can address

and, in some cases, solve these problems. Following is a summary of each of them, along with their respective advantages and limitations.

Event Data Recorders

Event data recorders (EDRs) are common devices that have been in use on trucks and automobiles since the early 1990s. They collect and store such meaningful data as wheel speed at the last stop, engine behavior, accelerator governor, cruise-control use, engine-use history and fault codes, all of which can be useful in crash analysis. But, because they are manufactured by several companies worldwide, the information they collect is inconsistent.

In 2010, NTSB issued a recommendation to the Federal Motor Carrier Safety Administration (FMCSA) that all trucks over 10,000 Gross Vehicle Weight be equipped with EDRs, and be governed by a uniform set of performance standards.

Suggested standardization and inclusion of EDRs on all heavy trucks notwithstanding, the retrievable information recorded provides no video evidence. Nor do they offer driver-centric information that could be useful in modifying poor or risky driver behavior. Moreover, the reliability of the data has been called into question. Therefore, while providing some useful data, the efficacy of EDRs in post-accident analysis and driver-behavior modification is limited.

Global Positioning Systems

Global positioning systems (GPS) have been in use since the early 1970s. Information is sent from a transmitter in the cab, through a series of satellites, to a receiver where data such as a truck's fuel usage, historical speed data, hours of service, hard-braking incidents, maintenance records, and safety compliance can be recorded and transferred to the GPS tracking server. There, it is available for review via a Web site, an advantage over EDRs. Fleet activity can be viewed instantaneously or historically, and the stored data used for record-keeping, analysis and training.

GPS, while offering information that addresses a broader scope of risk-management needs than an EDR, offers no video evidence to graphically show driver behavior or the activity outside of the waste truck.

Accident Event Recorders

One of the most effective means of positively modifying driver behavior, a crucial safety component and one which neither the EDR or GPS can capture, is the video recording provided by an accident event recorder (AER). Most of the available setups have an inward-facing camera that records driver behavior immediately preceding and following an event triggered by sudden erratic vehicle movement, including a crash, as well as an outward-facing camera that memorializes what happened in the driver's field of vision.

AER technology continues to evolve with additional features either currently available or on the horizon including a larger-capacity storage card that is capable of recording up to three days of activity, geo-fencing, which sets up a virtual safety perimeter around the vehicle and ensures that the driver is adhering to pre-determined route parameters, live tracking, and capturing data from events other than sudden changes in the speed or truck direction. For instance, events will be triggered by exceeding the posted speed limit or running a red light or stop sign using sign or traffic light recognition technology. Other advantages that address the unique exposures of a waste hauler are the ability to add up to six rear and side vision cameras in addition to the two traditionally mounted in the cab, providing eight recorded views and the ability to access the information remotely through the Internet.

In 2010, the NTSB investigated a multi-vehicle crash that involved a pickup truck, a bobtail tractor and two school buses in which two people were killed and 38 injured. The NTSB determined that the truck driver responsible for causing the string of collisions had sent and received a combination of 11 text messages immediately prior the accident. The resulting NTSB investigation led to their release of a strong recommendation to the FMCSA in December of 2011 that would, in the words of the NTSB:

- "Require all heavy commercial vehicles to be equipped with video-event recorders ...", and
- "Require motor carriers to review and use video-event recorder information..."

In an FMCSA report that summarized the top 10 factors for which drivers of large trucks (over 10,000 pounds) were coded in a fatal crash, speeding was the most commonly coded factor. This would have been captured on an EDR, GPS or AER. But the remaining nine factors, including the second most-cited code—driver inattention from eating, texting or cell phone use—would have required video evidence not available on either an EDR or GPS for use in post-crash visual review and analysis. So how important is remaining attentive behind the wheel? A research project conducted by The Virginia Tech Transportation Institute found that a safety-critical event is 163-times more likely to occur if a driver is distracted.

To show the effectiveness of video event recorders that capture video evidence, the FMCSA conducted a hands-on study with the cooperation of two large commercial trucking carriers. Of the two carriers involved in this study, one experienced a 38 percent reduction in the mean rate of recorded safety-related events per 10,000 vehicle miles traveled, while the other experienced a 52 percent reduction in recorded safety-related events.

AERs are offered on a self-administered program in which the hauler's risk manager reviews the footage. In this arrangement, the cost to the transporter is that of purchasing the cameras, which range from \$500 to more than \$1,500 per truck, and the time of the risk management person charged with reviewing the recordings, identifying risky behavior, creating reports and designing appropriate training sessions. Also available is an option in which the recordings are reviewed for a fee by trained professionals, employed by the camera provider, who provide to the hauler reports and coaching recommendations based on their findings. The loss-control divisions of a select

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Creating a Safer Waste Truck Environment

few insurance companies that specialize in insuring heavy vehicles offer ways to help mitigate the cost of these systems. Waste haulers can contact their insurance company, broker or agent to investigate this option.

With the hard data supporting the effectiveness of AERs in positively changing driver behavior and reducing accident frequency, waste haulers are making this technology the centerpiece of their risk management programs. According to data by a leading provider of AERs, the growth of camera use and related third-party analysis services has grown by more than 98 percent in the last three years alone and is expected to nearly quadruple each year from 2012 to 2015, and see exponential increases for at least the next 10 years beyond that.

AER technology offers critical video evidence not available from either an EDR or GPS, making it a much more effective tool in the event of a claim and in positively modifying driver behavior. While continuous recording technology is available from some vendors, many AERs only capture the very moments before and after a sudden, erratic change in direction or braking—as in an accident—leaving only a short video record of driver behavior. Almost all installations include one camera with its outside range limited to a forward-facing field of vision with its predictable blind spots. Other activity surrounding the vehicle is not recorded.

Radar-Enhanced Technology

Radar-enhanced technology, including active doppler technology, offers a collision warning system equipped with sensors that can be installed in the front, rear, side or any blind spots, and are designed to detect the presence and movement of objects, including people, animals or other vehicles around the

truck. Since a vehicle speed of only 5mph equates to a 7.3 FPS (feet per second), vehicle movement active sensing in addition to visual confirmation is highly recommended. As the device detects that it is closing in on an object, it emits both an audible warning as well as a series of lights that visually warn the driver of impending danger. The latest models are even capable of detecting hazards that are approaching from around a corner and can maintain a pre-set distance between the truck and a vehicle ahead of it. Operators may elect to integrate radar-enhanced systems with AER technology to provide the most comprehensive safety solution.

Similar to the other devices, radar-enhanced technology captures the truck's average and maximum speeds, turn rate and significant braking events, as well as the status of the truck's controls and working systems. Unlike the EDR, the radar computer technology allows it to gather, monitor and transmit the data directly to an analyst or risk manager. Downloading the information wirelessly reduces the chance that data will be lost, as has been the case in at least one major NTSB study of EDRs.

Another advantage of radar technology is its ability to be unaffected by environmental conditions that other sensor technologies are susceptible to, such as snow, ice, rain, fog, barometric pressure and sunlight. This allows radar to provide the rates of speed and direction of other vehicles involved in an accident and the location of nearby objects without the possibility of interrupted performance—all critically important in accident reconstruction. Like the AER and GPS, the radar system can either be installed as a part of the truck assembly or retrofitted on an existing truck.

“But, it wasn't my fault!”

Accidents often cause finger-pointing situations. For example, the driver of a passenger car may allege that the garbage truck ran a stop sign or a red light, while the waste truck operator might tell the boss that the other driver was in the wrong. Simply playing back a video recording of the incident will graphically depict what actually happened and the discussion, as well as the resulting insurance claim, will end pretty quickly. If a claim settles quickly, costs are reduced, which in turn improves a company's loss experience. The better the experience, the better chance a hauler has of paying less for insurance.

Results Pay

Every waste hauler will evaluate whether upgrading to some form of accident event recorder makes sense for their company. Regardless, it cannot be disputed that waste vehicles will be involved in accidents, employees will get injured or worse and damage will be caused to the vehicles of others as well as their occupants. It is also true that there continue to be advances in technology leading to equipment that can provide more and more valuable information for use in accident causation analysis, positive driver behavior modification and compliance gathering data. There has been tremendous actual and projected growth of accident event recording devices in waste vehicles, especially by larger haulers whose cost-benefit analysis has fueled this growth.

The drumbeats of regulation are becoming louder because federal agency post-accident investigations and results of university studies clearly show the safety advantages of using video-event recording for accident analysis and, as previously mentioned, changing driver behavior. AERs work and more waste haulers are coming to the conclusion that the time is now to install them. **WA**

John I. Rich is director of environmental transportation for National Interstate Insurance Company, a specialty property and casualty insurance company based in Richfield, OH, that focuses on the transportation industry. He can be reached at (800) 929-1500, ext. 1356 or via e-mail at john.rich@natl.com.



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WasteAdvantage Magazine September 2013

The Cold Hard Facts

Adria Hardy

Cold stress is just as dangerous as heat stress. AWARENESS IS KEY. Being informed about the dangers of cold stress and the importance of breathing warm air can help save lives and keep workers warm, comfortable and productive.



Photos courtesy of Ergodyne.

Worker is wearing a snug fitting knit cap with soft, CoolMax™ liner, class 3 rain jacket with breathable poly shell that keeps the rain out while letting perspiration escape, class E thermal pants with breathable 3M™ Thinsulate™ providing warmth and waterproof comfort, and hi-vis thermal waterproof gloves with 3M™ Thinsulate™ and Hipora® insert liner.

WHEN WE'RE YOUNG WE TAKE IN A LOT OF TALL tales—otherwise known as misinformation. One of them is the idea that cold air causes the common cold. Even though the common term for being sick (having a “cold”) comes from the belief that weather can cause illness, we’re eventually smart enough to know that these are infections caused by bacteria and viruses.

Effect of Cold Temperatures on the Body

Still, extreme cold temperatures can affect the body in a number of ways. These include dehydration, numbness, shivering, frostbite, immersion foot (trench foot) and hypothermia. As you can see, effects can be both local and systemic.

Shivering is the first and most common symptom. It’s also the most often ignored. When the body drops below 98.6 degrees, blood begins to flow away from extremities and towards the core. This results in the immediate cooling of exposed skin and extremities and increases the risk of cold stress, specifically hypothermia. If body temperatures continue to fall, dexterity decreases and speech may be slurred. At 85 degrees Fahrenheit, severe hypothermia sets in, which can result in unconsciousness. And at 78 degrees or below, the body is at maximum risk for brain damage, and even death, if not treated immediately.

Prone to Cold Stress

While risks are, of course, highest in colder regions, in areas where the seasons change less drastically, workers are often less prepared, and it can only take near freezing temperatures to trigger the onset of cold stress. Individuals who are more prone to cold stress than others include those who are:

- Not physically fit
- Living with an underlying condition or illness (those with asthma or other respiratory ailments are particularly at risk)
- Under the influence of alcohol or drugs (illegal or prescription)
- Working in wet or damp conditions
- Exposed to vibration from tools

- Working without proper personal protective equipment (PPE)
- Not acclimated to the cold

Protection from the Cold

Employers can help protect workers from cold stress through several means. They should provide training, control the work environment with heaters and windbreaks; establish worker rotations; schedule work during the warmer hours of the day and times of the year; remind workers to pace themselves; and always keep emergency supplies on hand.

Equally important, workers in cold conditions should take necessary precautions to protect themselves from the cold, including wearing proper PPE and being aware of cold stress warning signs. The CDC recommends the following safety tips for employers and workers:

- Train employees for the cold and changing weather
- Use a buddy system
- Adjust work schedules to the cold or changing weather
- Eat and drink hot or warm foods and liquids
- Layer clothing (water vapor permeability is important)
- Wear proper PPE including insulated footwear, headwear (winter liners, balaclavas or knit caps), and warming packs.

The Bottom Line

Cold stress is just as dangerous as heat stress. However, with its sneaky symptoms, it often goes undetected until it’s too late. Awareness is key. Being informed about the dangers of cold stress and the importance of breathing warm air can help save lives and keeps workers warm, comfortable and productive.

WA

Adria Hardy is the product manager of Ergodyne’s (St. Paul, MN) Elements Pillar of products. Her main mission is protecting workers from the elements through training, education and the development of crafty, effective product solutions. Since 1983, Ergodyne has pioneered the development of safety products that Make The Workplace A Betterplace™. What started with just one product has grown into a line of top flight, battle-tested, Tenacious Work Gear®, all precision



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How to Build a Sound Relationship With Your Finance Provider

Paul R. Frey and Tim A. Pratt

If a solid relationship is in place and there is a good flow of information, it's much easier to STAY ON TOP OF YOUR FINANCE PROVIDER'S MIND.

IN TODAY'S LENDING ENVIRONMENT—WITH

opportunities on the rise and interest rates still near historic lows—a sound relationship with your finance provider may prove more helpful than ever before. With the most difficult years of the recession hopefully behind us, your relationship with your finance provider should be an important element of your overall finance strategy.

In the past, refuse haulers have not had a wide variety of lenders to choose from that have a dedicated knowledge of and interest in the solid waste industry. Now that the economy has been growing for several years, lenders are looking for growth opportunities and the waste industry has become more appealing as a potential target market. Simply put, there are more lenders in the refuse hauler market than we've seen in a while.

The company leaders reading this magazine are likely to have one or two primary finance relationships that help them keep their enterprise running smoothly. Some companies use one source for their traditional banking needs and another provider for their equipment finance needs. Others will use the same financier for both. But whether your finance provider is a traditional bank, a manufacturer captive or an independent finance provider, all are looking for pretty much the same thing—good information.

Building a Mutually Beneficial Relationship

You can do a lot to build a mutually beneficial relationship by keeping your lender(s) informed about your company's financial situation and the business environment you are working in. As with any relationship, you simply give yourself a better chance at success when you keep the communication lines open. Here are a few pieces of information you can provide or action steps you can take to maximize the benefits of your relationship with your finance provider(s):

1. *Keep resumes of team leaders current.* The right people and relationships are vitally important. Personal relationships make a difference. Demonstrate that your executive team has the industry skill, stability and

management expertise to be successful with a bio or resume of each person.

2. *Draft a thorough and updated business plan.* Maintaining a detailed 1-year plan plus a more general 5-year plan is a good idea and both should be updated consistently. Detail what your goals and objectives are from year to year and how you plan to achieve them over a period of time. You may have heard this saying: If you fail to plan, you plan to fail.

3. *Keep a well-defined customer profile.* Problems can arise when you get away from your target market sweet spot or if too much of your revenue is generated from a limited number of sources. That doesn't mean you can't be opportunistic and search for new revenue streams, but it does mean you need to be thoughtful about how you expand your business. Discuss your customer concentration and how to diversify it. You may be surprised at how much your finance provider has to offer in this regard.

4. *Write a brief written history of the company.* When first applying for financing, one way that you show your ability to succeed is by demonstrating that there is a history with some continuity and experience. This written history doesn't need to be lengthy or flashy—just show that your company and the leaders in it have a record of success.

5. *Provide financial information on your company.* When you share timely and accurate quarterly results with your finance provider, it helps prevent surprises. Take time to discuss your results with your finance provider and seek insight into how to position yourself for success. There are often appropriate ways to reallocate certain kinds of debt that may be able to strengthen your balance sheet, improve cash flow and increase bonding capacity.

6. *Deliver relevant industry news.* Consistently deliver news items that illustrate how your business environment is changing. This practice shows that you are aware of the forces that impact your business directly and indirectly. It also shows that you are willing to take steps to make the most of new opportunities while mitigating emerging risks.

7. *Invite others to company and industry events.* It won't hurt to extend an invitation to your finance provider to



Quick List of Best Practices

- ✓ Work with your finance provider as an extension of your leadership
- ✓ Keep the communication lines open with good news and not-so-good news
- ✓ Share timely and accurate company financial information
- ✓ Keep the resumes of key company executives current
- ✓ Extend invitations to company and industry events
- ✓ Distribute relevant company and industry news
- ✓ Discuss customer concentration
- ✓ Talk about your opportunities for growth and how to finance them
- ✓ Write out and share your company's history

attend company or industry events. Meeting the people behind the numbers is important to us too. They may not always be able to attend, but the gesture will always be appreciated.

An Important Advisor

Another way of looking at this list of suggestions is this: your finance provider should be viewed as an important advisor to your leadership team and your company. Your account manager / sales representative can be much more than someone you call when you need money. That person should become a resource that helps you anticipate problems and capitalize on opportunities. It makes sense to choose a financial provider that follows your industry, knows the developments and trends, has a broad array of products and services, has a strong capital base, and is proactively presenting ideas. This is the real advantage of building a deep and trusting relationship—it can simplify your life, inform your business decisions and save you time and money.

If a solid relationship is in place and there is a good flow of information, it's much easier to stay on top of your finance provider's mind. That rapport will also help you overcome any temptation to delay sharing bad news. Good news often can wait. Surprises, however, can be a bad thing; so be sure to deliver bad news promptly. A lender is more likely to be able to find solutions to support your business if that relationship is well established and the communication lines are open. | **WA**

Paul R. Frey is a senior vice president and regional manager for the Environment Services Group of the Wells Fargo Commercial Banking Group. Based in Chicago, Frey provides strategic direction and leadership for his team, which serves the financial needs of business in the \$270 billion environmental industry. With more than 30 years of experience in the environmental services industry, he has served on a White House Environmental Direction Committee. Paul can be reached at (312) 920-9171 or via e-mail at paul.frey@wellsfargo.com.

Tim A. Pratt is a senior vice president and division manager for the Specialty Vehicles Group of Wells Fargo Equipment Finance, Inc. With 32 years of transportation industry experience and based in Tempe, AZ, Pratt leads a team of equipment finance specialists that focus on the refuse and recycling industry. Tim can be reached at (480) 784-9594 or via e-mail at timothy.a.pratt@wellsfargo.com.

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Important Steps to Make Your Company More Profitable

Andy Sawyer

Every day that passes without a credit and collection policy in place equates to lost dollars. Follow these three steps to start and **MAINTAIN YOUR CREDIT AND COLLECTIONS POLICY.**

NEW INNOVATIONS AND TECHNOLOGIES IN THE waste industry are highly sought after. Better ways to identify opportunities, leverage newer equipment, perform in a more “green” manner, improve efficiencies and reduce costs across the board are very attractive and worthwhile initiatives. These initiatives all come with an associated cost. Of course, the ultimate goal is to ensure that these investments result in increased revenue and cash flow for your company. This is what makes the upfront cost and effort worthwhile.

Unfortunately, many companies invest in opportunities and resources to increase their customer base and product offering. In doing so, they lose sight of the fact that these increases need to ultimately result in cash for the company to justify the cost and effort. For example, if you are currently producing \$1,000,000 per year in revenue, and you increase your customer base (and sales) by 20 percent, this brings you to \$1,200,000 in annual revenue. If 10 percent of just your newly generated revenue is allowed to fall past due without much attention, that results directly in \$20,000 of lost cash flow; ultimately, being written off to bad debt.

To this point, it’s critical to an organization to have an effective credit and collection policy. A strong policy surrounding your credit and collection practices can ensure that you bring on the right customers and keep those customers paying according to your payment terms. With cash flow being the lifeblood of any organization, it’s critical that accounts receivable get as much attention (if not more) than any other initiative within your company. Below are some best practices for establishing and maintaining an effective credit and collections policy.

Have a Plan

First and foremost, it’s critical that your key management is on the same page with the importance of this policy. A credit and collections policy does not begin

with the accounting or accounts receivable department; it begins at the time of sale and continues through the entire lifecycle of an account. It is paramount that your entire team understands their role and impact on the policy. They must all have a working understanding of the overall goals of the collection policy.

Once you have everyone on the same page, it’s time to start putting policies in place. Again, a solid credit and collections policy begins at the time of sale. When new customers are brought on board, this is the best, and sometimes the only, time to gather as much information on them as possible. Primary information that should be collected include: name, address, phone number, etc. But additional information that may be helpful down the road should be gathered now: additional contact phone numbers, alternate addresses, best days/times to be reached, e-mail address, cell phone communication authorization, etc. (see **Figure 1**). Your policy will do everything possible to ensure that you never need to use this information, but inevitably, some customers will force your hand and it may become necessary. Once a customer has a past due invoice, they are not typically as willing to give you their additional contact information.

Constant Communication

Once you have a customer on board, and have gathered the appropriate contact information, you will start billing them. One of the keys to an effective collection policy is timely and frequent communication regarding invoices. Your specific company policies, software and staffing all need to come into play when deciding on a communication schedule. As a general rule, the more often you can communicate with a customer regarding their invoice, the better. This should include reminder calls and/or letters when an invoice is approaching its due date. A proactive approach in communicating with your customers will allow you to address any unknown service issues or personal financial struggles. Don’t count on your customers to be vocal with all of their questions or concerns. Often, the way a customer lets you know they have a question or concern on an invoice is by not paying it and waiting for your subsequent call. The earlier you do this, the earlier you become aware of the situation and can start to make arrangements around this.

Figure 1: The more information that you have the more likely you are to contact your customers. Capturing this information in the beginning is hugely important.

Figures courtesy of A.R.M. Solutions

Name	E-mail	Phone Number + Alternate	Address + Alternate	Fax Number
Employer	Employer Contact Information	References	CC Billing Address	Best Days/ Times to Contact



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Additionally, this timely and frequent communication begins to teach your customers that you have a well-organized policy in place and that they can expect to hear from you if they fall past due on their invoice. Often, customers become well aware of which vendors they can pay late without consequence. You do not want to be on this list. Make sure your customers know that they will hear from you if they fall past due. This will put your bill towards the top of the stack when the customer is in a position of deciding whom to pay.

Frequent and timely communication when a customer actually does fall past due is also critical. This is your first sign that an account is in jeopardy of going unpaid, remaining unpaid and, ultimately, being written off to bad debt. An ounce of prevention in this area is worth well over a pound of cure. A phone call to engage the customer in a conversation about their situation and/or a letter to let your customer know that they need to get in touch with you can go a long way in diagnosing the situation and allowing you to propose all possible options to your customer. Many times, customers feel their only option is to pay a bill in full and if they can't do that, they become completely uncommunicative. While this may be the only option, it's still very worthwhile to have a conversation with your customer. This can help work through any issues, and it can reassure them that if this happens again, they can call you and count on assistance rather than just hard demands for full payment immediately. Again, this retrains your customer on how you handle past due invoices and shows that communicating with you is always the best route to take.

As customers reach later stages of delinquency, it's important to start letting them know what specific consequences may take place. This can range from a late fee, to discontinuing service, to being sent to an outside collection agency. All of these options (where permitted) should be part of policy and used in an escalating manner. This will ensure that you are not presenting every negative consequence to a customer, but that they merely needed a nudge in the right direction. If your approach gradually escalates, this allows you to become as aggressive as

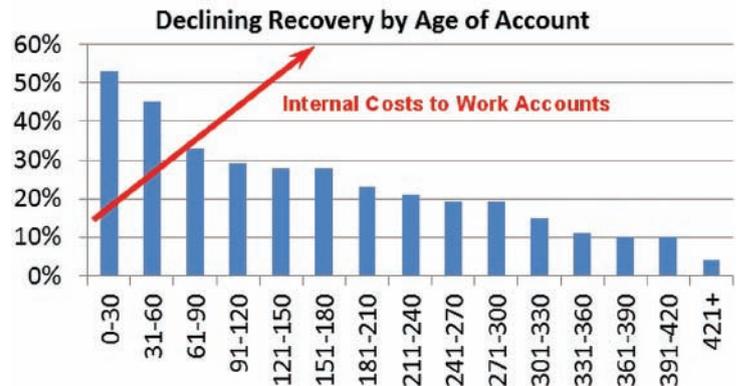


Figure 2

Time is the most important factor in your ability to collect a debt. Internal costs quickly add up while collectability diminishes.

necessary without the risk of alienating customers that don't require higher levels of intensity. Your letters and calls should be consistent in letting your customers know when certain actions will take place. This gives your customer a deadline to work from and allows them to control their destiny. A letter stating "we have assessed a late fee on your account of \$30" just frustrates a customer. It makes them feel like there is no need to respond urgently since the late fee has already been applied. A message of "A late fee of \$30 will be assessed if this account is not brought current in 10 days" gives your customer a reason to treat the situation with the appropriate urgency to avoid the negative consequence.

Asking For Help

Ultimately, all your efforts will still leave you with a small subset of customers that continue to be unresponsive. This is where your strategy must include a point at which you cut your losses. At some point, all of your efforts



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Important Steps to Make Your Company More Profitable

will have been exhausted, and repeating them over and over is just spinning your wheels. Generally, in the waste industry, we see that somewhere between 60 to 90 days is where the results of your internal collection efforts begin to deteriorate (see Figure 2, page 29). And since your cost for sending letters and making phone calls never goes down, your return on investment begins to diminish significantly as fewer customers respond—to the point where you will actually have a negative ROI on these efforts. Your specific “sweet-spot” of where your results start to decline will vary, but it’s important that you identify it. It is critical that you have a plan in place to escalate your accounts to an outside collection agency. Again, in keeping with the theme of the policy, this should be reserved for the customers that require this level of consequence. Accounts reaching 60 to 90 days past due without any sort of resolution on their account are ideal candidates for this step.

Your relationship with your collection agency is critical. It should not be a burden on your team to submit accounts to the collection agency. You want the process to have as few barriers as possible and it should be very easy for your team to follow. When securing a third-party collection agency, ensure they have a seamless and user-friendly way of accepting your accounts so you can always be confident that your collection policy is moving forward as outlined. Additionally, the agency you choose needs to have the same philosophy on customer service and retention that you maintain internally. Your agency will be an extension of your efforts and a reflection on your company. Despite common misconceptions, third-party collection efforts do not need to be demeaning, aggressive or alienating to customers. Traditional contingency collection agencies are strictly motivated by squeezing every dollar possible out of the accounts placed since this is how they are compensated. In contrast, a Flat Fee model is structured to be in line with your goals. Customer sensitivity, reengagement and retention is the goal as this model promotes continued forward flow of business. Ensuring you find an agency that understands and nurtures a customer sensitive, diplomatic approach will guarantee a long and fruitful relationship.

As with any policy within your organization, simply documenting it is not enough. Your policy does you no good if it just sits on the shelf and is not adhered to. Create your policy, deliver it to everyone involved and monitor it. Even the best outlined policy is completely ineffective if it’s being ignored or overlooked.

So, when is the time to create and implement your credit and collection policy? Now! Every day that passes without a policy in place equates to lost dollars. Follow these three steps to start and maintain your credit and collections policy:

1. Gather your team to formulate and compile a plan for your policy.
2. Ensure consistent communication with your customers is the foundation of every step along the way.
3. Know when it’s time to stop spinning your wheels and escalate your efforts to the next level.

Don’t wait for someone else to do it. Don’t wait for the perfect time to come along. And don’t wait until it’s too late. Taking these three steps will ensure that you protect the single largest asset your company has. | **WA**

Andy Sawyer is Vice President of Business Development for A.R.M. Solutions, Inc. (Camarillo, CA). He has been in Accounts Receivables, Sales and Business Development for nearly 15 years. Andy is an experienced expert at diagnosing and solving A/R-related problems. He and A.R.M Solutions have developed an expertise in understanding and anticipating the needs of haulers and their Accounts Receivable Departments. Andy can be reached at (888) 772-6468, ext. 504 or via e-mail at asawyer@ARMSolutions.com.

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Darell Luther

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A RAILCAR PERFORMANCE MANAGER HAS JUST uploaded to the central database an inspection report for a group of railcars hauling a very basic consumer generated commodity. He completed the inspection today so the information is current and reflects the current condition of the railcars. The railcars have been under lease to Company A for a period of five years and had an extensive railcar shopping program completed prior to entering service some five years ago. To say the least, they went into service in pristine condition. Today, they reflect a service of hard usage and abusive service. Some six months ago, the Railcar Performance Manager generated an inspection report for sister railcars of similar build specifications following a five-year lease to Company B. The inspection report for the cars leased to Company B reflects the complete opposite result. The inspection report showed that while the railcars leased to Company B were not in pristine condition when the lease begun, the condition following five years in service only reflected normal wear and tear. Poor railcar handling practices at loading and unloading facilities almost always result in expensive railcar repairs and more importantly are often not safe operating environments.

Facility Setup

Many loading and unloading facilities and the tools used to support them in the waste, construction debris and scrap industries are secondary to the overall business at hand.

They are simply a cost center and, often, the approach is to expend less capital or operating costs on the near term with the anticipation of better overall results. This approach expanded over a longer term view is generally more costly.

Railcar handling begins with safe and efficient rail facility setup. If you're fortunate enough to design a Greenfield facility (one from the ground up), make sure your plan includes sufficient clearances to allow an ATV to pass safely between the tracks and build in sufficient clearance to run a pickup truck alongside the tracks. Grades or slopes should be as flat as possible to minimize braking requirements, optimize the ability to move railcars (whether it's with a front end loader, railcar mover or locomotive) and to provide a safety margin negating railcar rolling impact damage to other railcars. A flat(ter) grade also results in less human injury.

If you're not as fortunate to start from a Greenfield approach, then formulation of an operating plan around the physical layout and impediments is necessary. Conduct a conditional assessment of your track layout noting slope or gradient, track condition, track lengths and railcar capacity of each track. Note also locomotive or railcar mover clearance requirements and blind spots that impede ability to switch your rail yard. A non-inclusive list should include answers to questions such as:

- What length of railcars do I have, are they consistent and how many will fit in each track and still allow a safe clearance?

Bulging end from a tamping product.



End cut from pushing with loader.





Railcar pushed over stop.



Side sill cut from sideswipe.



Side stake cut from forklift.

- Do I have any blind spots in my switching operation and can they be overcome with the use of two-way radios or other like-type communication devices?
- Are there sufficient walkways to provide a safe environment for switch personnel on the ground?
- Are all switches free of debris and easily worked by ground personnel?
- Are there any potential railcar sideswipe areas that need special operating instructions developed to insure safe movement?
- Are there approved bumpers or berms in place to keep railcars from rolling off the track and/or into the path of other railcars?
- Do I have a service plan that is reliable and consistent to reduce human error?
- Am I using the right type (locomotive, railcar mover, front end loader) of method to push and pull railcars?

Railcar Handling

Railcars are long, big and laborious to move around. They generally weigh

empty between 30 and 35 tons each and 130 to 143 tons when loaded. They can be as short as 40' (approximate) and as long as 92' (approximate) in length. They take up a lot of room and require substantial horsepower to efficiently move around. Moving them without a plan is a recipe for disaster either causing damage to the railcar or to human life. Assuming that you've done a conditional assessment of your rail yard and have devised a switching plan, you're now ready for execution of that plan. So, where do you start?

First, do a plan overview with your personnel. It's important to do this whether you have two or 10 people on the switch crew. A plan overview creates a path that is time sensitive so all employees have a clear understanding of expectations.

Second, do a safety briefing. Point out areas that are hazardous and ensure that operators expend caution when switching these areas. Include operating methods such as use of radios, timing of switching, clearance and riding on train requirements, etc.

Third, implement checkpoints. As you progress in your switch operations, implement crew checkpoints to regroup your crew on where you are in the plan. It may seem tedious, but even simple communications via radio that

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Yard hump of flat car (no-hump car).



Yard operations planning.

Photos courtesy of Tealinc.

result in a crew consensus are important. If everyone isn't on the same page then regroup and assess the situation before moving forward.

Fourth, review your operating tools and equipment. It goes without saying that you need to use operational radios or other methods (in some cases, hand signals still work fine) of communication, but don't forget about the physical requirements on the ground as well. Switches should be clear and easily operable by ground personnel, clearances in each track should be marked and easily identifiable, locomotives and railcar movers should match the number of loaded or empty railcars to be switched and be able to move them efficiently, and end of track stops should be in place and sufficiently designed to handle the tonnage of the railcars being switched.

Fifth, review your "don't do" list. Don't put yourself in an unsafe situation, don't forget to communicate clearly, don't forget to work at the pace required to be safe and efficient and don't use the wrong tools for the job. Despite the overriding requirement to be safe, miscommunications can lead to sideswipes from not adequately marking clearances, derailments from not tying down brakes when uncoupling, pushing railcars off the end of a track, etc. Sideswiping due to either poor judgment or laziness and using the wrong tools for the job,

for instance using front end loaders to move railcars, can create damage to the structure of a railcar including damage to top chords and side posts.

Plan and Execute

Most railcar and railcar-human incidences happen at railcar loading and unloading facilities. How you plan and execute that plan is important to a safe and efficient operation. Notwithstanding the concern of human safety, railcar safe and proper handling also negates expensive damage to railcars. The implementation of a through railcar loading and unloading plan will save you railcar maintenance and/or replacement costs in the future. | **WA**

Darell Luther is president of Forsyth, MT-based Tealinc Ltd., a rail transportation solutions and railcar leasing company. Darell's career includes positions as President of DTE Rail and DTE Transportation Services Inc., Fieldston Transportation Services LLC, managing director of coal and unit trains for Southern Pacific Railroad and directors positions in marketing, fleet management and integrated network management at Burlington Northern Railroad. Darell has more than 24 years of rail, truck, barge and vessel transportation experience concentrated in bulk commodity and containerized shipments. He can be reached at (406) 347-5237, via e-mail at darell@tealinc.com or visit www.tealinc.com.



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The Garbageman's Guide: Having Difficult Conversations

Norm LeMay and Steven Kaufman

By getting rid of garbage, you can turn a tough conversation into a productive, useful talk and HELP PUT THE PROBLEM IN THE REARVIEW MIRROR WHERE IT BELONGS.

Figure 1: To get rid of trash in a difficult conversation, just ACT.



Figures courtesy of The Garbageman's Guide.

WHETHER YOU'RE HAULING TRASH, BUILDING waste equipment or providing valuable services, running a company in the waste industry isn't easy. To maintain your edge, you need a highly motivated workforce that can ace tough issues head-on—including the ability to have difficult conversations. That's what this article is about: how to tackle those really tough talks that we don't like to have, but are crucial to keeping your team productive and inspired. You're going to learn that when you think like a garbageman, sitting down and working it out can be a whole lot easier.

Introduction to Difficult Conversations

When we use the term garbage, we mean the thoughts, beliefs, and opinions—or TBOs—that are floating around your head that have no value anymore; thoughts like, "I can't get along with anybody" or "That person thinks I'm a jerk." Thoughts like this won't

do you any good if the goal is to get through a difficult conversation.

There are different reasons why you may need to have a difficult conversation. For example, you're a manager and you have to find a way to stop two employees from constantly antagonizing each other. You may need to speak to one of your employees about their performance or you're working on a task force and you keep butting heads with another colleague. While there are other types of difficult conversations, in

this article, we're going to focus on the ones that involve conflict between you and someone else or between two people and you have to mediate.

In any difficult conversation, there are two factors at play. The first is feelings. Conflict is full of emotion. If

you're going to resolve it, you have to be sensitive to the fact that the people involved have strong feelings about what's going on. To resolve a conflict, people want to know that those feelings are going to be taken seriously and not dismissed as irrelevant.

The other factor is outcome: a goal like hitting the quarterly sales numbers. Outcomes are very important. They help the business grow and expand. They bring focus and direction and provide a larger backdrop against which we can measure our behavior.

When facing a difficult conversation, it's critical to find a balance between feelings and outcome. If the conversation focuses solely on the person's feelings, they may feel better after the conversation, but there's no action plan, no specific way to make things better. At the same time, if the focus is solely on outcome, there's a risk of coming across as unfeeling and bossy. That continues of cycle of creating anxiety, which hampers productivity, brings in unnecessary drama, and drains the energy and motivation from your team. You want everyone to bring his or her best self to the conversation. Spotting the trash that creates anxiety and clearing it out of the way helps everyone get through these difficult conversations with the least amount of discomfort.

Getting rid of the trash that can cause conflict can be accomplished when you ACT, which stands for "Aware, Choose and Toss". To pick out the thoughts in your mind that are garbage, start by paying attention to what you're thinking. That's when you begin to realize, "Hey! That belief or opinion about myself or the other person has absolutely no value if the goal is to resolve this situation."

Once you start spotting your own garbage, it will become easier to see if the other person brings it into the conversation. Keep in mind that a lot of the garbage associated with conflict is rooted in ego. Ego puts us in a defensive mode. It kicks in our "fight-or-flight" mechanism. It generates mental trash mostly in an attempt to protect us from getting hurt or trapped. If there's a difficult conversation, there's a good chance that everyone's ego is going to be in full gear.

ACT can help you keep egos in check by quickly spotting trash and getting it out of the way. Remember: the goal is to get through the discussion and find a resolution. The more you can get rid of anything that could derail it—including garbage—the higher the

chances that you'll resolve the conflict and the conversation won't be as bad as you might fear (see Figure 1).

Sometimes we are afraid to have a difficult conversation because we focus on the worst-case scenario: the conversation will completely blow up and the relationship, which is already on shaky ground, is going to get even worse. We play these scenarios out in our minds until our emotions boil and our stomach is in a knot.

It's helpful to think of those scenarios as trash by asking yourself how much value there is emotionally and physically reacting to something that hasn't even happened yet. Is it worth all that time and energy? If not, get rid of it and focus on preparing for the conversation, not dreading it. With that as an introduction, here's a straightforward, practical plan to have a difficult conversation with someone.

Step 1: Detach

Detach means looking at the conversation, and the entire situation surrounding it, as objectively as possible. To begin, try to look beyond the immediate conflict and see if there's anything going on in the other person's life that may be contributing to the problem. Financial pressures or health issues may be driving their behavior—and have nothing to do with the conflict at all.

The second way to detach is to watch out for excuses. Let's say you're a manager having a difficult conversation with an employee who's late for work all the time. The person always has an excuse: his car broke down or his child was sick or there was bad traffic. Acknowledge the reasons he's late and find ways within the limits of your role in the company to help; for example, see if you can adjust his schedule so he can arrive later.

If that doesn't work, however, you'll need to shift the balance between feelings and outcome. It may be appropriate to say "Look, I understand those are difficult things and they're creating a lot of trouble for you. However, our customers count on our reliability. That's a core value for our company and each of our employees needs to have the ability to get to work on time." Be respectful and understanding of the other person's feelings while, at the same time, maintain your responsibility and commitment to the outcome. Balancing these two factors lets you detach so you can stay focused on the issue and its resolution.

Step 2: Diffuse

The next step in having a difficult conversation is called Diffuse. The goal here is to remove as much energy and emotion from the conversation as you can. To begin, remember that everyone has his or her point of view about what's happening. No one is right or wrong, so telling another person that they shouldn't feel a certain way is guaranteed to make a difficult conversation even tougher. Also, don't plug into the reasons why they feel angry or upset. Sometimes, it's enough just to say, "I really see that you're mad." A sincere and genuine tone can be all it takes to reduce the level of tension and create a constructive environment for the conversation.

Another way to diffuse the situation is to bring in accountability; that is, to have all parties take more responsibility for their actions and their decisions. It means standing behind what we do and say, holding ourselves to a certain standard, and knowing there will be consequences if we don't meet that standard. Here are some ways to bring in accountability in order to help tone down a conflict:

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The Garbageman's Guide: Having Difficult Conversations

- Eliminate blame so we can't push our actions onto other people.
- Maximize each person's ability to make their own decisions. With responsibility comes growth and commitment.
- Enforce the rules evenly—on others and yourself—so everyone knows there are guidelines they have to follow and no one is exempt from following them.
- Discourage ego and winning as the pattern for getting things done.

Don't forget: if you're part of the conflict, don't leave yourself out of this accountability piece. The goal is to have all parties walk away from this conversation feeling better and having received something of value. That may include you, too, so apply these accountability principals to the role you're playing in the conflict. Bottom line: as you're preparing for a difficult conversation and you need to bring the emotion and energy down a notch or two, try to find a way to bring in accountability—for everyone.

Step 3: Dissect

Dissect is built around a very basic concept: don't reach for a solution until you first understand the problem. How many times have we gotten ourselves into trouble by thinking that we know what the issue is and we start hammering out a solution before we have all the facts? There we are, working away doing what we think is best, and wham! We run right into a brick wall because we're fixing the wrong thing. It's like repairing the transmission on a garbage truck when, with a little more investigation, the problem was actually in the electrical system. There you are, with the entire transmission in pieces in front of you, facing twice as much work: putting it back together, then trying to fix the actual problem.

As you prepare for a difficult conversation, ask lots of questions. What's really going on? What are the issues or events that led you to this point? Why are things so rocky? Get as much information as you can. As you learn more about what's actually going on, the real solution will start to show up. Then, start thinking about an action plan. Dissecting the true problem in this way is always time well spent.

Step 4: Drill

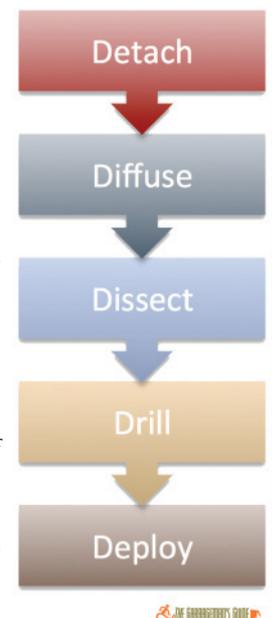
This is where you're going to practice the conversation before you have it. The more you rehearse it, the easier it is to actually do it. To begin, enlist the help of a friend or a trusted colleague—someone who gives you good, honest feedback, whose opinion you respect, and someone you know won't breach your privacy or feel awkward once you confide in them. Have them play the role of the other person with whom you're having a conflict. Run through the conversation two or three times until you start to get comfortable with the way it's going.

Then, have your friend get angry or upset or do something unexpected; in other words, have them throw some garbage right in the middle of the conversation, because you never know how the actual talk is going to go. Learning how to think on your feet and deal with different scenarios is a great way to help you prepare.

One tool you can use during the drill phase is Role and Goal. This is where you guide behavior by pointing out the roles each person plays in the company and to remind everyone of the goals you're all striving for. For example, if an employee keeps questioning your decisions in front of the staff, you can remind him or her of their role to support decisions once they're made, which supports the goal of having a cohesive, teamwork-oriented department.

Finally, as a busy professional, you won't have time to drill every difficult conversation that's facing you. Think of drilling as an extra layer of preparation that you can use when you're facing an especially tough conversation and need some additional preparation.

Figure 2:
The five steps of having a difficult conversation.



Step 5: Deploy

The last step is called Deploy: the time when you have the actual conversation. To begin, remember that the conversation will never unfold in the same way as you drilled it. Just given the nature of tough talks, there is always an element of unpredictability and things rarely go the way you practiced. That's when the preparation you put in really pays off because you're not going into the conversation cold.

As you're having the talk, try to get all the parties to agree on what the problem is, and then commit a solution to the conflict. This can't be something that you impose because most people are resentful when they're told what to do. However, if they feel like they're part of the solution and that they've played a role in helping to resolve the conflict, there's a much better chance that it'll stick.

Be willing to admit to the things you've done that have contributed to the conflict. Sometimes, just saying, "Look, I'm sorry. I was upset and I took it out on you" can lead to the other person saying, "I'm sorry for reacting like I did." It might be difficult for both of you to admit that, but that crack in the tension may be all you need to start throwing out the trash that's causing the problem.

Finally, look for areas where you both can agree and be willing to come off your position, so long as you're not compromising any principals that are important to you. As you work towards a solution, ask what you might do to avoid this from happening again—especially if this is a person that you've had other run-ins with the past. There may be a pattern where you both keep bringing garbage to your interactions. The difficult conversation could be a great way to settle the conflict, now and in the future (see Figure 2).

Final Thoughts

Coming into a difficult conversation with guns blazing will likely mean the conversation is going nowhere. First, keep yourself in check. Listen carefully. Stay calm and collected. Remember: it takes two to have an argument. If you make the first overture to tone it down, many times, the other person will agree to do the same thing.

Second, make sure the other person is ready to talk. Both of you have to be willing to sit down and work it out, or it's going to be a one-sided conversation and the other party is going to feel like they're being dictated to—and that won't resolve the conflict.

Third, as the other person is talking, use active listening skills. Don't interrupt. Nod your head, make sure you're posture is open and inviting, and say "Yes" and "uh huh" to encourage the other person to keep talking.

And finally, repeat back what you heard and ask, "Is this right?" That gives the other person a chance to say, "No, that's not what I'm saying." This keeps everyone on the same page and keeps trash like misunderstanding and jumping to conclusions out of the conversation.

By getting rid of garbage, you can turn a tough conversation into a productive, useful talk and help put the problem in the rearview mirror where it belongs. | **WA**

Norm LeMay and Steven Kaufman are co-authors of the book The Garbageman's Guide to Life: How to Get Out of the Dumps. If you'd like to see a video of this article, or if you'd like to download a free worksheet that can help you have a difficult conversation of your own, visit GG-TALK.com. For more information, contact Steven Kaufman at (503) 203-1200 or via e-mail at steven@thegarbagemansguide.com.

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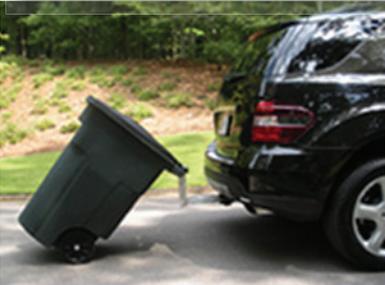
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Breakthroughs and Innovations



TRASH CAN CADDIE (Birmingham, AL) is a lightweight, user friendly device that attaches easily to a standard trailer hitch receiver and hauls large waste receptacles to the street with ease. No more struggling to haul that large trash can down your long or steep drive. It was created to work on most vehicles (cars, trucks, SUVs) with a standard 2" trailer hitch receiver. With an aftermarket adaptor, it can easily be used with a 1 1/4" receiver. Trash Can Caddie can also be easily used with many off road vehicles (recreation utility, golf carts, etc.). Features include:



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- Works with most large type, wheeled trash cans on the market
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trash cans every week. Single and double models are available.

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ARI-HETRA (Manassas, VA), providing heavy-duty vehicle maintenance equipment, has introduced the KPP143 heavy-duty King Pin Press. This product revolutionizes the way diesel mechanics change king pins. The primary goals of the ARIHETRA King Pin Press are safety and time efficiency. Its emphasis on safety begins with the mechanic by allowing him to work at a safe distance and by reducing physical overexertion often associated with removing king pins using a hammer and punch or cumbersome manual presses.

The KPP143 reduces if not eliminates the potential of accidental spindle or axle damage. Therefore, it is a product that will reduce costs and increase time-savings. Time efficiency is achieved from the product's adaptability and ease of use, which makes king pin replacement a one person job that can be routinely performed in only minutes. The King Pin Press features an air-assisted piston that moves the press into place and a responsive hand pump that uses 143,000 lbs. of compression force to remove the king pin. The KPP143 is adjustable, so it easily maneuvers around obstacles that would otherwise make the job time consuming and difficult. It also comes with a tooling set so mechanics are prepared to readily replace king pins of various sizes.



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PETERSON MANUFACTURING (Grandview, MO) introduces a new USA-designed, tooled and manufactured 7-inch round LED headlight. Peterson's new, DOT-legal 701C 7-inch round headlight is a drop-in LED replacement for all PAR56 standard headlights, including popular H6014, H5024 and H6024 halogen sealed beams. It exceeds FMVSS-108 and CMVSS-108 requirements, and its construction and performance conforms to all applicable SAE standards.

The 701C incorporates two OSRAM Opto Semiconductors OSTAR HL Pro LED devices per headlamp (one for low beam and another for high beam). These LED light sources are much more efficient than halogen lights, drawing only 0.7 to 1.9 amps, and will last many times longer than a traditional sealed beam. A color temperature range of 5400k - 6300k closely simulates the natural daylight. The solid-state multi-volt design is compatible with all 12-volt and 24-volt vehicles.

The heavy-duty cast aluminum housing and hard-coated polycarbonate lens ensure that the lamp assembly will last as long as the diodes. Peterson's 701C has its standard H4 3-blade terminals integrated directly into the cast alloy housing, not wired onto the light as a separate pigtail.

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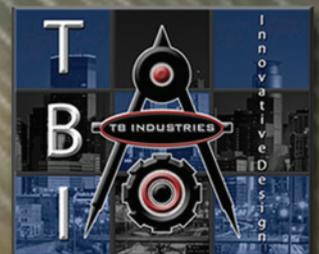


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Breakthroughs and Innovations

MAHA USA (Pinckard, AL) introduces the MCL 12 and MCL 15 to their series of Mobile Column Lifts, accompanied by the redesign of the MCL 16 and MCL 18. Proudly made in the USA, the mobile column lifts are engineered to accelerate maintenance activities with a flexible system that creates a more open, productive and accessible workspace. MAHA USA's addition of the MCL 12 gives users a lighter capacity mobile lift option. Lifting 12,000 lbs per column, the MCL 12 is a cost effective solution for lighter duty maintenance facilities that are in need of a larger capacity lift to service medium duty trucks and vans.

The new MCL 15 holds 15,000 pounds per column and features a 20 inch fork length with an extended base. This longer fork length allows the option to lift dual tire assemblies while completely engaging the surface of both tires. According to MAHA USA, all MCL base frames have been redesigned and notes that their MCL 16 is now equipped with 16" long standard forks and is capable of engaging super-single tires better than any other standard length carriage on the market. Updates to the MCL 16 include an increased carriage width, giving users the ability to engage wider tire diameters.

The MCL accessory line has also undergone updates, most notably: MAHA USA is now one of the few companies to develop a 36,000 pound capacity crossbeam. This larger capacity works in unison with the MCL MCL 18 for frame engaging under trucks and buses for wheels-free access.

FOR MORE INFORMATION, CALL (866) 624-2872 OR VISIT WWW.MAHA-USA.COM.



The ENVIRONMENTAL RESEARCH & EDUCATION FOUNDATION's (EREF) (Raleigh, NC) Continuing Education Program provides quality and technically beneficial online courses, live Webinars and in-person Regional Summits for members of the solid waste

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Waste Advantage Magazine's Recycling/Transfer Stations/Landfills (R/T/L) section has become a very important part of our readership. Our timely, relevant editorial in this section—products/services releases, statistics, short tips, etc.—provides you, our R/T/L professionals, with the useful information that you need when making that important purchasing decision. By making this important move, *Waste Advantage Magazine*, provides something for everyone in the waste and recycling industry and makes it the most complete one-stop-shop publication available today. We look forward to expanding our coverage of this segment of the industry and hearing your feedback.

Q&A

Navigating the Landfill Approval Process

THE LANDFILL APPROVAL PROCESS HAS MANY LAYERS OF COMPLEXITIES,

often requiring legal guidance to navigate the minefields in the zoning and permitting stages. Tom Terrell is a North Carolina land use and environmental attorney who has represented more than 20 solid waste companies and local governments in their efforts to site, permit or expand more than 25 solid waste facilities, including MSW, C&D, LCID, medical waste and scrap recycling sites. His experience includes local zoning, state permitting and litigation. In the past year, he has represented Randolph County, NC in its local permitting for a municipal solid waste regional landfill; handled a 20-acre rezoning, annexation and variance for a scrap yard for LKQ Corporation, the world's largest recycler of automobile parts; negotiated a Development and Reimbursement Agreement for a 520 acre industrial park, the largest annexation in the city of High Point's history; and conceived a bill to revamp local land use boards in North Carolina. Terrell appointed and chaired the committee for the latter effort and quarterbacked the political lobbying effort for its unanimous legislative approval. This bill rewrote the legislation for counties' and municipalities' boards of adjustment, who make decisions regarding variances, decide appeals of zoning decisions, and approve or deny permits for everything from airports to cell towers to rock quarries. He is chairing the redraft of all North Carolina land use statutes moving into the 2015 legislative session, and had the North Carolina Supreme Court uphold his trial court victory in a land use and environmental law litigation matter involving 1,100 jobs in eastern N.C. He talks to Waste Advantage Magazine about getting zoning approval and overcoming challenges.

When did you start representing solid waste clients? I was a politically active member of my former law firm in the late 1980s, which created an opening for a land use and zoning practice. As my client base expanded regionally, I gradually developed a reputation as someone who could handle complex cases, and landfills and waste facilities are about as complex as they come.

What is the lawyer's role in the approval process? In simple terms, the lawyer's job is process management. Solid waste is serious business and not for the timid. You shouldn't start the process if you aren't willing to challenge local or State agency decisions in court when approval is denied. Within that process, the lawyer must know when to step back and allow the company representative, the engineers or other consultants to take the lead.

How does a lawyer help the zoning approval process move forward? What kind of things should they be knowledgeable on? The lawyer must keep his eye on the big picture and keep everyone—client, staff, governing board and others—focused on the real issues and real facts. Once opponents and the media start screaming, focus becomes a challenge. As to knowledge, a good lawyer must first know all of the local zoning ordinances and land use plans and know what legal standards he is dealing with. But he or she must also become thoroughly familiar with the local political structure, and be almost as conversant about the science of solid waste management and the engineering aspects of landfill construction as the team engineers.

Does it help to know the local government players? Always, and that includes staff as well as elected officials. Politics is a nuanced sport, but you seldom need to be local to play. In fact, it's often easier to come in as an outsider without baggage and meet who you need to meet. Once you've developed an

appropriate rapport, it's the lawyer's job to learn the local ordinance better than the staff itself knows it and to assist in managing a complicated process.

When is it the right time to bring in a lawyer? It's much easier and cheaper to prevent problems than to fix them later. If you wait until you think you need a lawyer your problems probably are beyond fixing. Most solid waste facilities involve anywhere from hundreds of thousands to several million dollars in capital outlay, and a prudent company will involve the attorney long before the application process begins. If the lawyer is any good, he will help the company outline a deliberate and carefully planned process that anticipates all issues, assumes the worst and lays the foundation early on for late stage litigation if it becomes necessary.

Do local officials resent the lawyer's presence? There's often resentment of a legal presence in any context, but typically it's only when someone "acts like a lawyer." With complex land use cases, a lawyer is most effective when he or she does not act threatening, but rather works collaboratively and demonstrates how he or she can help local officials reach the right decision with sufficient facts to support a "yes" vote. Because it's usually easier for them to vote "no," board members appreciate an attorney who makes it easier for them to do what's right.

What is typically the biggest obstacle? I used to think irrational fear was the biggest obstacle to landfill approval. Fear of change. Fear on the part of neighbors that they are being devalued or disrespected as humans by their proximity to a landfill. But over the years I've realized that many landfill opponents are not fearful. They just use convenient and effective fear tactics. There's a difference.

What drives opposition to a landfill if it's not fear? Some people genuinely feel fearful. But even in the absence of fear, people enjoy fighting a common enemy. It gives them meaning and purpose.

How do you overcome opposition? Oftentimes you can't. However, photographs of well-run facilities can have a calming effect, especially on the decision-makers. Additionally, being professional, factual and quick to explain the science goes far. I always advise my clients to be aggressively proactive with information that pre-empts the claims that you know opponents will make. When that doesn't work and you are denied, everything you need in the record should be there to support the business decision to litigate.

What's the most important lesson you have learned? In football terms, if the lawyer is the quarterback, a good engineer can play every other offensive and defensive position on the field. I never get out ahead of my engineering colleagues, and I rely on their expertise every chance I get.

What was your first landfill case? My first landfill case, ironically, was opposing a proposed "stump dump" adjacent to a commercial client. Rather than focusing on the backs I could slap, I concentrated on the legal standards and the facts. In that case, a key fact was that all trucks had to cross a bridge that wasn't rated for the average weight of incoming trucks. Twenty-five years later I still focus like a hawk on the facts and the law while never forgetting that you must also manage the political process. | **WA**

Tom Terrell can be reached at (336) 378-5412 or e-mail tom.terrell@smithmoorelaw.com. He frequently comments on solid waste issues in his blog <https://nclcgallandscapes.wordpress.com>.

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Recycling

Steel Recycling 101: An Introduction to the Importance of the Industry

Casey Fenton

THE EXPRESSION GOES, “OUT WITH THE OLD AND IN WITH THE NEW.” BUT

what happens to the old? Is it forgotten? Is it no longer our problem because we're too busy focusing on our 'new'? There was a time when the old wasn't much of a priority, but when it comes to steel recycling, the old is vital in creating the new.



A single-stream conveyor belt waiting for sorting.
Photo courtesy of The Steel Recycling Institute.

As long as steel has been made, there has been steel recycling. Steel prides itself on being North America's #1 most recycled material today. In fact, more steel scrap is recycled annually than paper, plastic, aluminum and glass combined. Reaching this point has come from a long history of efforts to build a stable and strong recycling infrastructure. It was the building of this infrastructure that gave steel the ability to go from “recyclable” to “recycled.”

“A lot of products claim to be recyclable, but some may experience some shortfall in actual recycling,” explains Gregory L. Crawford, Executive Director of the Steel Recycling Institute. “Steel has always been recyclable, but it wasn't until an infrastructure was built did that become truly recycled. Recycled is where you want to be.”

Truly Recycled Material

A truly recycled material also repeats the same process continuously with minimum to no waste. For something to be truly ‘recyclable’, by definition, it must pass through the same process from which it came. For example, with steel recycling when they make a batch, the mills know they will see that steel again if it is recycled at the end of their useful life regardless of the product it is made into, it will return as scrap. Even during the production process, there is ‘runaround scrap’ that is generated at the mill while cutting and shaping steel for varying uses. They run this extra steel back to the beginning to further eliminate waste.

The term ‘recycling’ has been broadened, unnecessarily, to include materials

that are recyclable but not yet properly recycled. Terms such as reuse, recover, reduce and others should be used instead, as appropriate. For example, when rubber from a tire is no longer usable it can be shredded and made into a high school track or padding for a playground. It could also be tied to a tree and made into a swing. Both of these are examples to avoid the landfill; however, both are more accurately described as ‘reuse’ rather than recycling.

Also, wood can be recut, refinished and reused as long as the material can handle it. However, wood cannot be made into new wood. This is the barrier of entry into the truest definition of recycling.

Each product or material promotes and provides education for its responsible disposal method. These plans are formulated based on several factors such as the best available technology, most cost, beneficial method and existing infrastructure to collect the product. The effort to minimize the impact on the environment is a noble and necessary effort and all materials are on the same team in wanting this goal. Through continued innovations and technologies, the recyclability of each material will someday expand to a point where they each can be efficiently recycled but, for now, it is important to remember that true recycling isn't accomplished simply by collecting it at a curbside or drop-off—that is only one part of the whole process.

Steel Recycling Industry

There is an entire industry dedicated towards that process of true recycling and it involves huge corporations, down to the local citizens, resulting in millions of direct and indirect jobs. If tomorrow everybody decided to stop, ignoring the huge environmental disaster, there would be a tremendous amount of people who couldn't support themselves or their families.

The reason that an industry exists is because there is both a need in the manufacturing of new products and it is a profitable endeavor if run successfully. In the aggregate, steel cans make economic sense to collect, ship, melt and manufacture. Volume and efficiency are key. You recover that recycling cost by offsetting the expense of new materials, natural resources or energy. Demolition companies can also offset their overall costs by selling steel to processors. Similarly, households have options to receive rebates in many States when they responsibly take old appliances out of service for steel recycling. These rebates can be used to purchase new, more efficient EnergyStar appliances.

The most obvious and publicized reason for actual recycling is the benefit to the environment. It should be simpler and more efficient in terms of energy, water and natural resource conservation to create new product materials by using older versions of the same material, product or another. We're removing the dead weight and volume of no longer useful, old scrapped products, and through whatever process the material demands, creating something that is once again useful and, oftentimes, more efficient than its predecessor. This also keeps that dead weight and volume out of our increasingly scarce landfill space.

The steel recycling industry is a continuous cycle that relies upon each part to keep the next part going. The lifecycle of a material is often referred to as cradle to

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Knox County Recycling Center in Mount Vernon, OH sorting materials.
Photo courtesy of Knox County Recycling Center.

grave, but for truly recyclable materials such as steel, which are recycled through the same process they're created, cradle to cradle describes it more accurately.

Steel Recycling Lifecycle

Roughly speaking, there are four basic steps of that lifecycle. It begins with those who accumulate the scrap, those who transport it, those who receive delivery for sorting and grading until finally the mill that turns that so-called scrap back into product materials the original users want to purchase.

Consumers are the donors to the curbside recycling bin and their recyclables are a charitable donation to Mother Earth. Households generally recycle for reasons other than making money. In commercial and industrial sources they are working with bigger scrap quantities, so they accumulate enough value to become sellers. Demolition companies offset some costs by recycling old materials once a building is leveled. It has become practically required in the industry to recycle materials to save these costs and promoted by entities such as the U.S. Green Building Council. It would be more accurate to refer to some elements of the industry as 'deconstruction' because the same care and importance is placed on materials taking the building down, as there is putting it up. These companies know that getting paid to sell this scrap is a no brainer when the alternative is paying someone else to haul it to a landfill which charges its local tipping fee, on top of the hauling.

Now that these materials are collected and transported through a solid waste company from a blue bin or drop off to a Material Recovery Facility (MRF), all of the recyclables are loaded on to a sorting line. Different methods of sorting the varying materials come into play now. If it is a single stream source, as are most now, the materials must be separated at the facility. The method for steel products is magnetic separation. Steel food containers and empty steel aerosol cans, like all steel products, are magnetically attracted. Virtually all MRFs have magnetic belts which are used to easily and efficiently separate this valuable steel scrap. Once sorted, the steel cans fall into a large bin, then are baled. "A successful recycling coordinator is the one that can facilitate cooperation between the first three stages to create a successful opportunity in the fourth," says Crawford. The best success comes when the market is balanced across all steps. When the desire for steel products rises, companies will require more steel scrap to meet this demand. If their need rises, so does their willingness to pay more.

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Since the entire industry relies on one another so closely, it is mostly self-regulating. When scrap prices are high, the collectors and processors are profiting but the mills are being forced to pay more. When prices are low, the mills are able to buy more for less, which encourages increased production and lower costs so companies are more willing to buy steel. But now, the collectors and processors are less motivated to sell their scrap, and will sometimes sit on quantities until the price is more favorable. Both sides benefit as the market is automatically, over time, balanced.

Growth and Education

Despite the continued success of steel recycling, there are still opportunities for growth. One of the biggest opportunities comes from empty steel aerosol cans. This valuable source of steel scrap suffers from misconceptions and myths about containing chlorofluorocarbon (CFC) propellants. The truth is that CFCs have been banned since the 1970s and an exhaustive report showed that when aerosol cans are recycled, they are not just empty but very empty. Consumers buy these products to use them to the last spray and are eager to recycle them safely and successfully. The biggest problem for personal care aerosol products is also that the bathroom, where many aerosol products are kept, is further away from the kitchen and curbside bin, so consumers need to literally take that extra step. Recycling programs that already accept steel cans may begin accepting empty steel aerosol cans immediately as they are indistinguishable in a single stream. The magnetic belt will aggregate them both and keep this valuable scrap out of the landfill.

The biggest way to continue improving the industry is through education. The Steel Recycling Institute (SRI) offers a series of curricula that spans Kindergarten through 12th grade certified and available for free on the AISI Web site (steel.org) through the steel store. SRI also recently launched a completely new children's Web site Roscoe's Recycle Room (www.recycleroom.org) where kids can play games, submit their own recycling stories, learn fun facts and more.

Since SRI's beginning in 1988, it has been a strong, contributing factor in the building of the current recycling infrastructure for steel cans, as well as other household items, such as appliances. Some major recycling is also accomplished unseen, as giant shredders render old cars into valuable auto shred for making all kinds of steel products, such as construction materials. SRI continues to educate, inform and promote the benefits and necessities of recycling.

A youthful enthusiasm that can be attracted through education will continue to strengthen an already thriving recycling industry. As members of the industry gain more experience, the ability to pass that knowledge down to new, young, professionals will create a depth of talent that will increase recycling rates, company bottom lines and a stronger infrastructure for many years to come. SRI and other professionals will maybe one day update the expression into a more steel recycling appropriate, "In with the old, and out with the new." | **WA**

Casey Fenton is the Communications Assistant for the Steel Recycling Institute (Pittsburgh, PA). He has been working on behalf of the environmental advancements of the North American steel industry since 2010. Casey works along with communicators from the American Iron and Steel Institute (AISI) and the Steel Market Development Institute (SMDI) to facilitate grassroots communications efforts, working with both the public and private sectors to promote awareness of steel's recycling accomplishments and sustainable advancements. He can be reached at (412) 922-2772, ext. 248 or via e-mail at cfenton@steel.org.

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Odor Control

Odor Control Chemicals: Not All Chemicals Are the Same

Dan Peter

ODOR EMISSIONS FROM TRANSFER STATIONS AND LANDFILLS CONTINUE

to be a major issue for surrounding residents and businesses. The fermentation and degradation of waste, which is the source of odors, are accelerated at elevated temperatures, making the problem of odor emissions more acute during summer months.

While tarps, domes or other enclosures help contain repugnant odors, chemical treatments work at the source of the odors to help reduce the severity of odors or in some cases eliminate them completely. Though the idea behind odor control chemicals is the same, the methods and effectiveness of each solution is different.

Atomized Essential Oils

Atomized essential oils have been used for years to treat organic odor emissions. The mechanisms for odor treatment include adsorption (covering) and absorption (penetrating) of odor molecules on and in the surface of the oil droplet, respectively.

The perception of odors is based on the molecules being in a gaseous state, and once these odor molecules are adsorbed or absorbed into a liquid phase, they are no longer odorous. Water-soluble oils make the atomized less polar, increasing the solubility of odorous compounds in the water. Non-water-

soluble oils form a thin film on each atomized droplet, creating a negative electrostatic charge on the droplet's surface. This reaction forces the droplets to repel each other, preventing the accumulation of the droplets and suspending them in air for a longer period of time.

Though essential oils encapsulate or suspend odor molecules, they do not reduce or prevent these odors. Along with its characteristic scents, essential oils mask odors and can be less effective when wind patterns cause odor to travel quicker, reducing contact time between the atomized droplets and odor molecules. The accumulation of residue from essential oils can also interfere with equipment performance, as well as become an allergen to people in and around the facility.

Masking Agents

Similar to essential oils, masking agents do as their name suggests. Fragrances or heavy perfumes attempt to cover or mask malodors to make them less offensive to olfactory senses. Masking agents are usually effective in small, confined areas, but are largely ineffective in large, open areas since the masking agent and odorous molecules separate due to differences in gas-phase diffusion coefficients.

Non-active biocatalysts (NABCs) come highly concentrated that only fraction of the product is needed to be highly effective. Mixed with water and applied to waste, NABCs will not only eradicate repugnant odors, but also improve the quality of leachate, allowing it to be recycled back into the system in some cases.



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Enzyme/Protein Solutions

Enzyme/protein solutions interact with odor molecules similarly as essential oils, but do not mask odors. They are also dissolved in water and atomized to present a high surface area to the odorous gases. Odor molecules react with the enzymes and proteins changing their molecular structure, inhibiting them from becoming odorous and undetectable by the olfactory senses.

Though constraining odor molecules forming by adding enzymes/proteins can be effective, it does not necessarily work in all environments or applications. There are more than 10,000 different enzymes identified by scientists and each one has a specific job or ability. On the other side, within any landfill or transfer station, there could be a wide array of odors present, each with a unique molecular structure. Since enzymes/proteins are usually specific to certain types of odorous molecules, the effectiveness of reducing or eliminating odors can vary significantly.

Non-Active Biocatalysts

Rather than masking/encapsulating odors or introducing an active enzyme/protein into a waste environment, vegetable-based non-active biocatalysts (NABCs) expedite the natural degradation process of existing bacteria through the introduction of micronutrients. It naturally eradicates odor-causing molecules by disallowing the formation of contaminants such as hydrogen sulfide, ammonia, mercaptans and skatole.

NABCs do not contain active bacteria, enzymes/proteins or harsh chemicals. Instead, these environmentally beneficial products contain nutrients vitamins and trace elements that provide "good" bacteria with the ability to expedite the

Case Study RYDALL OE Odor Eliminator Eradicates Odors, Recycles Leachate Back into Landfill

A Florida landfill was experiencing significant odor issues from the open face of the landfill and its leachate holding tank. The odors were not only a nuisance for residents and businesses in the surrounding community, but also resulted in costly fines on a regular basis. Essential oils, fragrances and other masking agents were largely ineffective and proved not to be cost-effective.

After learning about the science behind *RYDALL OE Odor Eliminator* from Apex Engineering Products (Aurora, IL), as well as calculating the cost-savings, the landfill decided to use *RYDALL OE* in two phases. The first phase was to dilute 7 gallons of *RYDALL OE* into 3,500 gallons of water and apply it over the open face of the landfill on a daily basis.

After approximately one week, the repugnant odors emanating from the landfill significantly decreased, putting an end to the regularly issued fines. To achieve further odor eradication and cost-savings, the second phase targeting the leachate was implemented. Approximately 65,000 gallons of leachate is collected daily and stored in an 80,000-gallon tank until hauled off to the local wastewater treatment plant (WWTP), adding significant costs for haul-off and WWTP fees.

In this second phase, approximately 13 gallons of *RYDALL OE* was added to the 65,000 gallons of leachate and retained for 24 hours. After the treatment, rather than having the leachate hauled off, the effluent was able to be recycled back onto the landfill for further odor eradication without additional *RYDALL OE* dosing.

In addition to the elimination of fines and odor complaints, the landfill also saw substantial savings from reduced haul-off and WWTP fees for its leachate. The amount of *RYDALL OE* needed on a daily basis to maintain the optimal level of odor control was also decreased as this non-active biocatalyst continued to work on all layers and areas of the landfill.



Rydall OE Odor Eliminator, along with its sister product RYDALL WO Water Optimizer, is the only non-active biocatalyst (NABC) currently on the market. RYDALL OE is biodegradable and environmentally beneficial as it not only eliminates foul odors, but also treats leachate and other wastewater. Photos courtesy of Apex Engineering.

digestion of odor-causing organics and converting it into water, carbon dioxide and various innocuous salts.

NABCs do this by enhancing the existing metabolic processes of the microorganisms present in all live matter, regardless of environment type. The naturally existing bacteria already produce enzymes that facilitate the absorption of organics through their cellular membranes. Since it can be used in any waste environment with odor issues, it does not have the limitations that enzymes/proteins have with targeting specific odor molecules or potentially having a negative effect on the current biological environment.

Application

Many other odor solutions try to control odors once it has been generated, misting continuously at entrances and exits of the transfer stations or around the perimeter of the landfills where air currents and wind can make these applications inefficient. Coverage and retention time is key for optimal results. NABCs should be applied in transfer stations and landfills by regularly spraying

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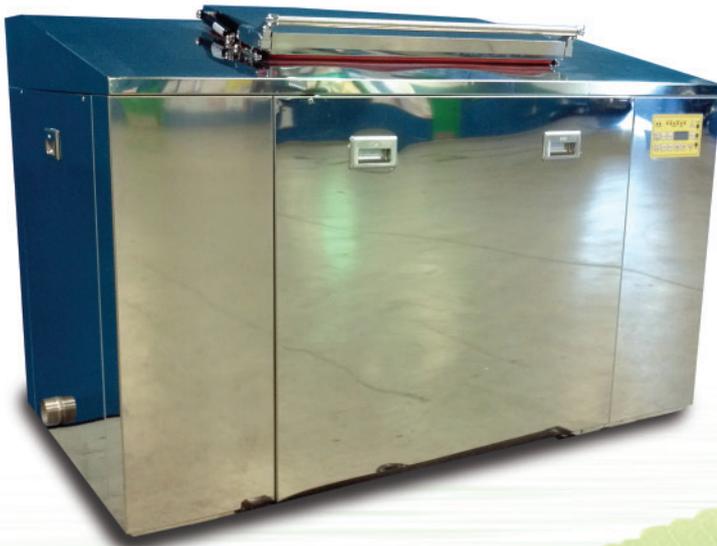
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over new waste, which is the source of the odor. This multi-layered coverage allows the bacteria to constantly feed on organics to disallow the formation of malodors.

The use of NABCs at transfer stations and landfills also reduces, and in most cases, eliminates, the need for leachate water treatment. NABCs have eradicated many of the odor-causing contaminants, including FOG, BOD and more, and no chemicals needed to be added, allowing the leachate to be reused. The safety and green nature of NABCs is unparalleled. Containing all organic elements, NABCs are truly safe for humans, animals and the environment. It is non-allergenic, non-irritating

Nature's Biological Cleaning Crew

Keeping odors from becoming a nuisance to the surrounding community can not only be a public relations issue, but also a financial one. Treating those odors with ineffective or environmentally harmful methods can prove to be just as detrimental.

NABCs not only provide a cost-effective solution for transfer station and landfill odor issues, but they can also be used in sludge tanks, lagoons or other areas where odors are an issue. The environmentally beneficial foundation of NABCs provides effective and natural odor elimination without any environmental or safety concerns. Think of NABCs as nature's biological cleaning crew. | **WA**

Dan Peter is the Marketing Director for Apex Engineering Products (Aurora, IL), a manufacturer of safe and biodegradable specialty chemicals, including RYDALL OE Odor Eliminator. For more information on how RYDALL OE can help with odor and leachate issues at your landfill, transfer station or accompanying equipment, call (800) 451-6291 or (630) 820-8888 or visit www.apexengineeringproducts.com.



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Smoke Alarms: Best Practices for an Environmentally Sensitive Device

Scott Logan

DID YOU KNOW THAT KNOW THAT MOST SMOKE ALARMS CONTAIN radioactive material? Most Americans and many solid waste management professionals do not realize that ionizing smoke alarms and detectors contain Americium 241 (Am-241). While there have been many public education efforts made over the past several decades about the importance of properly managing common household hazardous waste (HHW), electronic waste (E-waste) and of course wastes regulated by the Resource Conservation Recovery Act (RCRA), the smoke alarm waste stream has been largely ignored. For those ‘early eco-adopters’ who realize that placing smoke alarms in the solid waste stream is not a prudent action, the disposal information readily available to them on the Internet is most often incorrect. The following discussion is designed to explain why the radioactive material contained within an ionizing alarm requires proper management, the hazards created by mismanagement and to clarify misconceptions regarding whose responsibility it is for the device’s end-of-life management.

What’s the difference between a smoke alarm and a smoke detector? Most homes have what we now call “smoke alarms.” These units detect the presence of smoke and sound an alarm. Many properties, particularly non-residential properties, some multi-family complexes and newer single-family homes, have smoke detectors that are components of an alarm system with a panel. The detection unit itself does not sound the alarm. Instead, when smoke is detected, a signal is transmitted from the smoke detector to the control unit that then sounds the alarm throughout the premises. The term “alarm” is used interchangeably for this discussion.

Ionizing smoke alarms contain the only radioactive material that has secured a place in our daily lives, and the only waste stream that has permeated the entire U.S. residential, commercial and industrial landscape. It is estimated

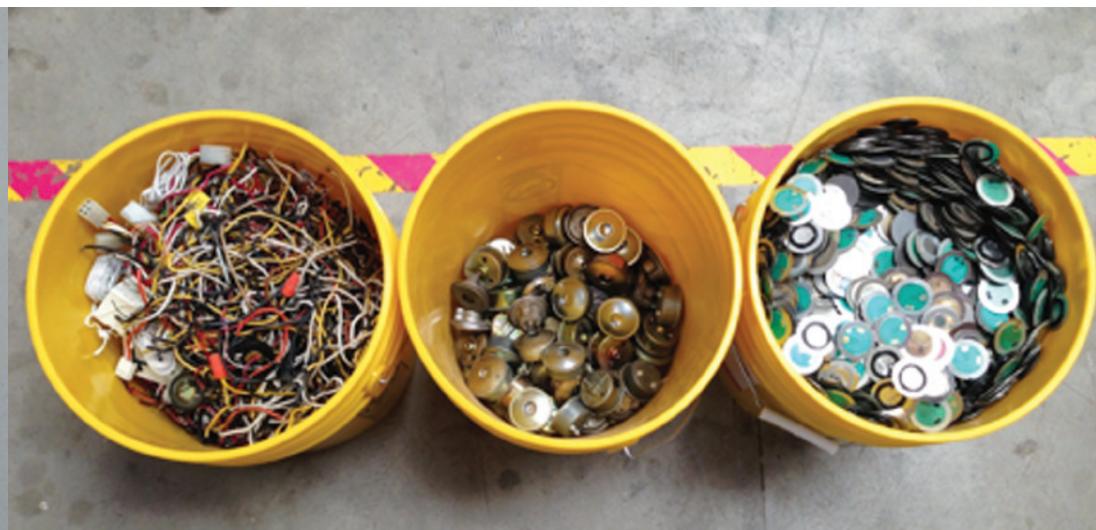
that 96 percent of all homes have at least one smoke alarm. Most homes typically have three or more. Approximately 87 percent of these are ionizing as they are the least expensive of the three types of smoke alarms on the market. Factoring in alarms from non-residential properties, the number of smoke alarms in America is a waste stream worthy of thoughtful disposition.

Why do progressive waste management programs disregard a radiotoxic item from management? Household Hazardous Waste (HHW) programs have made great strides in the last 25 years to divert toxic materials and even relatively benign items such as latex paint and non-RCRA liquids and solids from the municipal waste stream. However to date, most solid waste/HHW programs refuse to accept smoke alarms and advertise to simply throw them in the trash or return them to the manufacturer. This approach has largely been driven by a void in the marketplace for a responsible and focused waste management resource, and an oft repeated Internet rumor.

“I read it on the Internet. It must be true.” Well-meaning HHW programs and other public waste management entities continue to erroneously promote the idea that smoke alarm manufacturers must accept smoke alarm returns. This widely-accepted myth used to be the case, but no longer. When smoke alarms became popular and gained widespread use in the 1960s and early 1970s, they were manufactured under a general Nuclear Regulatory Commission (NRC) license which required their return to the manufacturer after their useful life was over. During the mid to late 1970s, NRC regulations changed and smoke alarms began being manufactured under a NRC exempt distribution license. As a result, smoke alarms are no longer required to be returned to the manufacturer under this exempt license structure, as opposed to a general license that requires the accountability of radioactive materials produced by the manufacturer.

A typical household ionizing smoke detector. Note how the unit markings convey warnings that it contains radioactive material including the radioactive trefoil universal symbol, radioisotope (Am-241), activity in microcuries and NRC exempt distribution license number.

Copper wire, ferrous metal and non-ferrous metals recovered from smoke alarm recycling.



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ABS plastic recovered from smoke alarm recycling.



Smoke alarms as received in cubic yard bags prior to being recycled.



Smoke alarms received prior to processing.

There are important differences in NRC and RCRA regulation design/applicability. Most waste professionals are familiar with RCRA regulations that differentiate between homeowners and commercial generators (and their rates of generation), but the NRC exempt distribution licenses do not differentiate between generator types or rates of generation. Another distinction is that the exemption applies to the manufacturer and not to the generator as RCRA regulations are configured.

If it is exempt, why should it matter? The amount of Am-241 in smoke alarm ranges from 0.5 microcuries to 80 microcuries. The typical contemporary alarm has approximately 1 microcurie. Am-241 is regulated by the NRC at > 0.05 microcuries, which is 20 times less than a typical modern smoke alarm. If this level of radioactivity were not specifically exempted due to being inside a smoke alarm, the radioactive material would otherwise be subject to licensing by the NRC or NRC agreement states.

Am-241 is a long half-life (432 years) and radiotoxic isotope due to the alpha radiation it emits. (Alpha emitters are the most dangerous if ingested.) Low

energy gamma radiation is also emitted, which contributes to the external dose rate. While the external dose rate for most Am-241 (as for most other alpha emitters) alarms is very low, the primary hazard is from ingestion and uptake. It should be noted that in the 1960s and 1970s, Radium 226 (Ra-226) was also used which has a half-life of 1,600 years. Older model smoke alarms with higher activities of Am-241 and most all Ra-226 smoke alarms can contribute a moderate to significant dose rate and often can set off radiation portal alarms at solid waste, scrap metal and electronic waste recycling facilities.

The NRC has determined the benefits of smoke alarms manufactured under a NRC exempt distribution license outweigh the small amount of dose received when used to protect life and property against fire. However, the key is that the smoke alarm must remain intact to remain safe—and that is not likely once it enters the solid waste stream.

As the primary hazard is from ingestion and uptake, the potential hazard occurs when smoke alarms are disposed as trash in the solid waste stream



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Older high activity industrial type smoke alarms. A 40 microcurie Ra-226 alarm is on the left and a 80 microcuries Am-241 alarm is on the right. These smoke alarms should set off radiation portal alarms at solid waste, scrap metal and electronic waste facilities.



A technician performs radiological surveys on smoke alarms prior to recycling. Photos courtesy of SRI.

or unknowingly received at electronic waste recycling facilities. Hazards are created if the smoke alarms are subsequently crushed during solid waste transport and landfill compaction operations allowing for the spread of radioactive contamination, or if radiation is released directly into the air from resource recovery combustion facilities. Also of concern is when ionizing smoke alarms are unknowingly shredded at E-waste facilities.

Steady turnover requires diversion. The National Fire Protection Association (NFPA) recommends consumers replace all smoke alarms when they are 10 years old or sooner if they do not respond properly when tested. This includes alarms that use 10-year batteries and hard-wired alarms. The NFPA recommends testing monthly and changing the batteries/testing each year when Daylight Savings Time commences. All of these recommendations are picking up steam as it is being promoted more frequently in both local and national public service announcements.

Do other countries ban smoke alarms from being thrown in the trash? Yes. The U.S. is lagging behind the United Kingdom, Australia and certain Canadian provinces, which require proper management of smoke alarms.

How should smoke alarms be recycled? Due to the radioactive nature of ionizing smoke alarms, recycling companies with specialized experience in

radiation management should be used. Recyclers should perform radiological surveys, separate smoke alarms by isotope, activity and manufacturer. Detailed documentation regarding this information along with NRC-exempt licensing information for each smoke alarm received should be provided by the recycler after processing smoke alarms. The plastic and metal components should be recycled. The ferrous and non-ferrous metal should be source separated and shipped for scrap metal recovery. Any non-recyclable radioactive components should be shipped for final management at a licensed radioactive waste facility. A small percentage of smoke alarms may also be returned to the manufacturer.

Lifesaving during their useful life, ionizing smoke alarms pose long-term environmental hazards when end-of-life proper management is ignored. As the only waste stream, and in this case radiotoxic, that is found across all generators—residential, commercial and industrial—careful consideration must be given by waste management professionals in dealing with these long ignored environmentally sensitive devices. | **WA**

Scott Logan is owner and President of Curie Environmental Services, LLC (Albuquerque, NM). He is a 32-year waste industry veteran with experience in radioactive, hazardous and regulated medical waste. Scott can be reached at (505) 888-9392, via e-mail at scott.logan@curieservices.com or visit www.curieservices.com.

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Recycling

Third of Three Parts

Best Practices for Pay-As-You-Throw—Implementation

Stephen P. Lisauskas

THERE ARE MANY VARIATIONS ON THE PAY-AS-YOU-THROW (PAYT) concept, as the earlier articles in this three-part series have explained. The most successful PAYT programs can reduce solid waste volumes by 50 percent or more. However, for the programs to succeed, they must be properly designed, and they must be implemented correctly.

Implementation is the final step that municipal leaders need to consider when putting in place an effective PAYT program, and it is perhaps the most important of all. Communities that implement their PAYT programs with care and community engagement are well on their way to success, while those that do not could suffer setbacks that can be difficult to overcome. The previous two articles in this series addressed best practices for choosing from among the different PAYT options (*Waste Advantage Magazine*, July 2013) and for planning for a program (*Waste Advantage Magazine*, August 2013). To complete the series, we will now look at what municipal leaders can do in the crucial weeks around program initiation to help ensure success over the long term.

Pre-Launch

The weeks leading up to the “go-live” date for a PAYT program are critical. There is a great deal that municipal leaders need to do, both to make certain that the program is in final working order and to prepare for the rush that will come upon implementation. Once the program reaches its kickoff stage, there will likely be a frantic few days when public works officials will spend more time than expected reacting to the public. The final “calm before the storm” period is the last opportunity to plan how to act and respond in a range of situations.

Proactive Communication and Resident Education

Communication about PAYT should happen early and often. As we discussed in the two prior articles in this series, municipal leaders and

managers should have already been communicating to the public the rationale for implementing PAYT. As implementation nears, these communication efforts need to continue, including print, broadcast and social media, as well as in face-to-face interactions when possible. It will be important to explain why the municipality is implementing this program and what the benefits will be for the community and individuals.

Leaders should develop a clear, concise and compelling series of key messages addressing the need for the program, its benefits to the municipality, its benefits to residents and its inherent fairness. Leaders must be well-versed on those messages, and they should use them in all face-to-face public and media interactions, as well as in all printed materials.

The fact that municipal leaders have been considering this issue—and communicating about it—for many months does not necessarily mean that all residents know about the program, and those who do know about it may have learned of it from only partially informed sources. Communicating clearly at this point will help ensure a smooth transition at launch.

This communication should also include a resident education component, explaining in detail what will be asked of residents, showing them exactly how to participate in the program, and teaching them about activities such as recycling and composting. Finally, as the program initiation date approaches, flyers should be distributed to eligible households, attached to garbage cans, and posted at transfer stations and convenience centers to make sure that residents receive direct communication about the upcoming transition.

Bag Distribution and Inventory Control

For bag-based PAYT programs, it is critical that municipalities use the pre-launch period to ensure that an appropriate supply of bags is available at local retailers and that the bags are in identifiable locations within the stores. In our experience, before a program starts, residents generally overestimate the number of bags they will need, and they “stock up” early. To be safe, stores

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THE TRADITIONAL WAY OF PAYING FOR TRASH

With traditional ways of paying for trash (flat fees/tax bills), there's not much motivation to recycle or reduce trash. And many see the system as unfair.

- Residents who recycle don't get the benefits of doing the right thing.
- Residents who choose to generate a lot of trash shift these costs to those (e.g., seniors, enthusiastic recyclers) who typically generate less.
- Trash is generated in unchecked, unsustainable amounts while recycling rates stagnate.

Residents have no control over their costs and little incentive to recycle.

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- Residents control their trash costs by paying only for the trash they throw away (by buying only the bags they need). Those who generate lots of trash pay more. Those who don't, pay less.
- Residents aren't penalized with an inflexible, flat fee.
- Trash is reduced dramatically—and recycling rates skyrocket!
- Recycling is often free and may even generate revenue.

Residents are in control and are rewarded for recycling!

IT'S FAIR.



Effective resident education materials are a key factor in successful PAYT implementation. Image courtesy of WasteZero.

must stock up to 20 percent of the expected first year's supply for just the first few weeks of the program. Also, the community must work with its bag vendor to ensure that a surplus supply of bags can be delivered to retail stores rapidly in case of a shortage.

Selection of Start Date

Choosing the right day to begin the program can go a long way toward starting out on the right foot. Conversely, starting on the wrong day can lead to unnecessary confusion and disarray. In our experience, the best time to start is on a weekday that does not follow a holiday. Initiating a transfer station- or convenience center-based program on the weekend can amplify the natural confusion inherent in any transition, as more people use these facilities on the weekends and government offices are generally not well staffed to provide assistance should any issues arise. Beginning after a holiday or during a holiday week can mean dealing with the greater amount of waste often generated from parties and other events. This may give residents the impression that they will always be using an artificially high number of bags, when typically they use very few.

Finalizing Enforcement Strategy

During the program's adoption, municipal leaders likely discussed enforcement strategies, or enforcement may have been addressed long ago in illegal dumping ordinances or bylaws. These last weeks before launch are the best time to finalize the details of how these policies and laws will be implemented. Some communities will opt for personal outreach from solid waste staff to explain the issues of non-compliance prior to actual enforcement. Others choose to send warning letters either via the mail or attached to

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garbage bins, and still others levy fines upon the first infraction. How to handle enforcement is an individual choice for each community; what is important is that they determine their enforcement protocol before the program commences. This allows municipal staff to publicly set resident expectations as well as enforce the program consistently and fairly.

It is important to note, however, that in well-designed PAYT programs, program infractions are quite rare. When they do occur, they are usually minor and occur only during the program's initial few weeks. While any good program needs a well-conceived enforcement protocol, it will most likely be used only rarely.

Setting a Baseline for Illegal Dumping

Despite volumes of research to the contrary and the positive experience of thousands of cities and towns, some residents may still fear that the new program will bring with it an increase in illegal dumping. It will be helpful to establish baselines for existing locations, amounts and composition of illegal dumping prior to the program's launch, and then track and take note of any differences after implementation. Most likely, there will be little or no change. Nevertheless, establishing a baseline will give the municipality specific, credible data to steer the discussion away from a misguided perception to a discussion about what is really occurring.

Rollout

For public works officials, the first few days of a new PAYT program can feel like a blur. All at once, residents are adjusting to a new way of disposing of their trash, while public works staff are trying to support the new system and guide residents on how to do PAYT. Communities that have planned well for this stage are those that have prepared everything that can be prepared, leaving their staff ready to focus on the immediate needs of implementation, education and enforcement. There will always be a need to adjust protocol "on the fly," but if you are planning on the fly, mistakes can happen, instilling in residents a dissatisfaction with the municipality and its services.

Being On the Ground

Woody Allen once said that 80 percent of life is just showing up, but on the first few days of a new PAYT program, that number is closer to 100 percent. Having municipal staff present at transfer stations or convenience centers, on some collection routes and available at municipal government offices is essential. This allows them to observe how residents are disposing of their trash and how other municipal employees are addressing questions and concerns. Making these officials available for questions in "real time" will dramatically improve the speed by which officials can respond to and resolve questions and concerns, improving the public's experience with and perception of the program.

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Monitoring Bag Purchases

For bag-based PAYT programs, municipal staff also must stay in close contact with the retail outlets that carry the bags, calling them frequently and occasionally stopping by to take a look at the inventory. When bags are selling quickly, the store's staff may not notice it in enough time to place another order without experiencing a stock out. A constant focus on this issue is essential in these early days of the program, as there is little more frustrating for residents than to be unable to buy the bags they need to dispose of their trash.



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Ongoing Management

The rush of activity that comes with program initiation subsides quickly. Once this rush is over, PAYT programs are in the ongoing management phase. At this point, a community's PAYT program feels like its previous solid waste management program in terms of the level of resources and engagement that the municipality needs to devote to it. Often, it will feel like the PAYT program runs more easily than the previous one. All the same, communities can engage in several key ongoing activities to help keep the PAYT program running efficiently and effectively.

Tracking Data

Good data collection is essential to effectively managing the long-term operations of any public service, PAYT included. Several key metrics must be tracked, including solid waste volume, recycling volume, tipping fee savings, operational savings associated with more efficient collection routes and revenue from the sale of recyclables (if available). Tracking these variables over time allows the community to measure the effectiveness of the program and adjust it if necessary. It also provides the information needed to effectively communicate program results, a critical factor that often gets overlooked by municipalities working hard to deliver excellent services with limited staffing.

Periodic Monitoring

While the in-person monitoring conducted during the first few days of implementation can be scaled back significantly in the ongoing management phase, it should not be neglected completely. To observe disposal patterns and

staff activity, staff should still occasionally ride along with a collection crew or inspect the contents of the hopper at the transfer station or convenience center. Continued communication with retail outlets is also important to make sure that supplies are adequate and distribution is going smoothly.

Regular Reporting and Stakeholder Review

Municipal leaders must use the data and observations that they gather to report on the success of the PAYT program and keep stakeholders apprised of trends. Via the media, leaders should communicate with residents on a regular basis—twice a year or annually—about the program's success in reducing waste, increasing recycling and saving the municipality money. Keeping these positive results top-of-mind for policymakers and residents will help ensure continued support for the program and for Public Works in general.

Plan and Manage Carefully

Putting a pay-as-you-throw program in place is not difficult, but the process does have many moving parts that must be planned for and managed carefully. Communities that follow the steps laid out in this series are well on their way to having an effective, well-run PAYT program that meets municipal goals for fiscal savings, fairness and equitability to residents, and sustainability. | **WA**

Stephen Lisauskas is Vice President of Government Affairs at WasteZero (Raleigh, NC), a company specializing in municipal waste reduction programs. He is a former municipal manager who has implemented solid waste-related reforms in a number of communities. Stephen can be reached at (617) 821-5933 or via e-mail at slisauskas@wastezero.com.

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