



The

| ► WINTER 2017

# Keystone

For the Solid Waste Professionals of the Keystone Chapter of SWANA

Inside this issue

- Brewing Beer from Waste Water? ..... 2
- Up-Coming Leachate Treatment Mini-Tech ..... 3
- From Blue-Box to Waste Free Ontario..... 5
- Bureau of Labor Updates Industry Stats..... 7
- Save-the-Date: Safety Summit..... 9
- Centre County Skips Switch to Single Stream..... 10
- Steve Tucker Loses battle with Cancer..... 13
- SWANA Road-E-O Winners Circle ..... 14
- Too Cool for School-Drone Mini-Tech Review..... 16
- Just for Fun - The Keystone Crossword..... 17
- W-T-E from C-U-B..... 18
- Office Recycling: Business As Usual? ..... 19
- Trash Hauler Killed in Lancaster Hit & Run ..... 19
- Call2Recycle Sees Up-Tick in Battery Recycling ..... 21
- Crosswords Solution ..... 22
- NYSD Testing DME Trucks in NYC..... 23
- New to the Keystone SWANA Family ..... 24
- Chapter Calendar..... 25
- Chapter Members ..... 26

## WASTECON and World Congress are Coming to Baltimore MD



**WASTECON / ISWA World Congress** is coming to Baltimore in September 2017, and it will be hosted by your next-door sister chapter...the Mid-Atlantic Chapter, which includes Maryland, Delaware, and the District of Columbia.

WASTECON is the premier solid waste industry-focused conference in North America, bringing you the latest in news, education, advancements and products, and it is coming to Baltimore. This is a unique and inviting opportunity for the Keystone Chapter because of the close proximity (possibly commuting distance for some of our members), as WASTECON has never been closer to Pennsylvania than Baltimore. The last time it was hosted in Baltimore was in 2001!

Additionally, for the first time in over 20 years the World Congress, the biggest annual event organized by the International Solid Waste Association (ISWA), is going to be co-located with WASTECON making it a more exciting experience with the potential for a large international attendance.

The Mid-Atlantic Chapter invites Keystone members to take advantage of this opportunity in the following ways:

- ◆ Attend WASTECON
- ◆ Exhibit at WASTECON and/or
- ◆ Sponsor at WASTECON

**What to Expect**

The ISWA World Congress and WASTECON maintains the standard of excellence you've come to expect from SWANA by offering opportunities to see what's new in collection, processing, marketing and management of compost, recyclables and solid waste. You can join thousands of industry professionals from throughout the world for technical sessions, facility tours, exhibits and networking opportunities. And you can explore a variety of new topics and expand your knowledge of what's happening in solid waste management.

**Want to Help out?**

The Baltimore location should be attractive to many Pennsylvania companies interested in promoting their products and services to regional, national and international attendees. Other than participating the week of WASTECON, we also ask that Keystone members assist the Mid-Atlantic Chapter to

See "WASTECON" continued on page 4

## Brewing Craft Beer from Waste Water?

In autumn of 2014 - three years into California's devastating drought - architect Russ Drinker became fixated on brewing beer from recycled greywater (that is, water that's been treated after use in sinks, showers and washing clothes). He was increasingly frustrated that the media paid little attention to water recycling. *"They were focused on conservation instead. But if Californians really want to have an impact on our water use, we have to recycle our freshwater ... and get over our psychological resistance to that."* While some microbrewers have been working hard to get their water usage down - some to three gallons of water for every gallon of beer - the industry has a high water to beer ratio [typically around 7 to 1]. Despite this, it took Drinker about a year to find a brewer up for the challenge. But when he broached the idea with the Half Moon Bay Brewing Company, a craft brewer located south of San Francisco, owner Lenny Mendonca didn't hesitate.

Last October the brewery unveiled a version of its regular Mavericks Tunnel Vision IPA made with recycled water after a blind taste test at an urban sustainability conference in the Bay Area. Made using the same NASA water recycling technology as astronaut Scott Kelly used during his year long stint on the International Space Station, the tasting panel couldn't detect which of the two pints was made with recycled water. *"This is the product [where] people think that water is the most important ingredient,"* said Mendonca. *"So if I can demonstrate to people that not only is [greywater beer] good, but it's great, then why wouldn't you use that water for everything else?"*

Mendonca has only made the greywater beer available for sampling twice and says commercializing the product isn't his first priority. California can't legally directly pump treated recycled water back into the drinking water supply, so it's currently not practical (shortage of supply) or cost effective. His focus instead is on using the beer as a tool to catch the eye of both policymakers and the public. Getting the legislation to bring recycled water directly into the drinking water supply, would be the first step for mass application, just as Singapore has done with its recycled water plant.

### Craft brewers turn green

Brewing beer from recycled water is an unusual approach. But a growing number of craft breweries in the US are finding new ways to reduce their environmental footprint. Weak wort, a type of sugar wastewater generated by Colorado-based Avery Brewing Co, will be do-

ated to the city of Boulder for use in its wastewater treatment plant to break down nitrogen. This will save the city \$500 per day on the acetic acid it would have purchase to do the same job, said Chris Douville, Boulder's wastewater treatment manager. *"We were looking for a local carbon source that others see as a waste,"* he said. *"It's a mutually beneficial relationship."* Boulder is currently

outfitting its plants to treat nitrogen using weak wort, says Douville, and should be ready to put the new equipment online by the end of the year.

Other craft breweries, such as Lagunitas Brewing Company and Bear Republic Brewing Co in Sonoma County,



Oak Barrels containing Northern United Brewing Co.'s Jolly Pumpkin, the company's sour beer brew.

- Photo from: Northern United Brewing Company

California, are using a new onsite wastewater treatment system housed in a shipping container. The EcoVolt, developed by Boston-based startup Cambrian Innovation, is powered by electrically active bacteria that use anaerobic digestion to scrub the breweries' wastewater of up to 90% of pollutants, according to Bajji Gobburu, the company's director of sales and marketing. Each EcoVolt unit, which is targeted towards other boutique food and beverage operations such as wineries and dairies, can process up to 300,000 gallons of wastewater per day, and enables the breweries to re-use water in their cleaning operations and produce methane that is converted into heat and electricity. *"When Lagunitas completes the installation of its second EcoVolt, its water footprint will drop by 40%,"* said Gobburu. *"And the systems will also recover 20% of its facilities' energy needs."* It's also been a money, time and petrol-saver. Previously, Lagunitas had to truck over 50,000 gallons a day of its concentrated wastewater to a treatment plant in Oakland over 40 miles away.

In Dexter, a town of about 4,000 people nestled in the corner of southeast Michigan, the Northern United Brewing Company has installed a smaller version of EcoVolt to treat its wastewater onsite, helped by a \$200,000 innovative technology grant from the state of Michigan. The technology has saved the city the millions of dollars it would have cost to give Dexter's wastewater plant the capacity to process yeasts and sugars, said Michelle Aniol, the city's community development manager. *"Food production here in Michigan is more of a cottage industry,"* Aniol said. *"So this test of the [EcoVolt] system can have implications that could be utilized throughout the rest of the state - at [cost] levels that can be more affordable for communities and businesses to grow, but get their waste within the permitted limits for discharge."* 🍷

By: Kristine Wong

March 14, 2016

Source: <https://www.theguardian.com/sustainable-business/2016/mar/14/californian-craft-brewer-beer-recycled-water-environment>

## Leachate Treatment Mini-Tech - May 18th

Keystone SWANA is hosting a half-day Landfill Leachate Treatment mini-tech seminar on May 18, 2017 at Waste Management's Grand Central Facility in Pen Argyl, PA. Speaker and topics include:

- ◆ Mr. Rohan Menon – Senior Industrial Wastewater Process Engineer at Geosyntec Consultants, Inc.
- ◆ Leachate Management Current and Future Challenges
- ◆ Leachate Treatment Technologies (Proven vs. New Emerging)
- ◆ Overview of operations at the Grand Central Leachate Treatment Plant

The mini-tech seminar will begin at 10 a.m. and run through 12 p.m. The mini-tech seminar will be followed by a tour of the Grand Central Leachate Treatment Plant that consists of major unit processes such as metals/suspended solids removal clarifier, sequencing batch reactor (SBRs), and membranes. Participants should bring safety vests, hard hat, safety glasses, and wear closed-toed shoes. Lunch will be provided.

### When:

May 18, 2017

from 10:00 AM to 12:00 PM

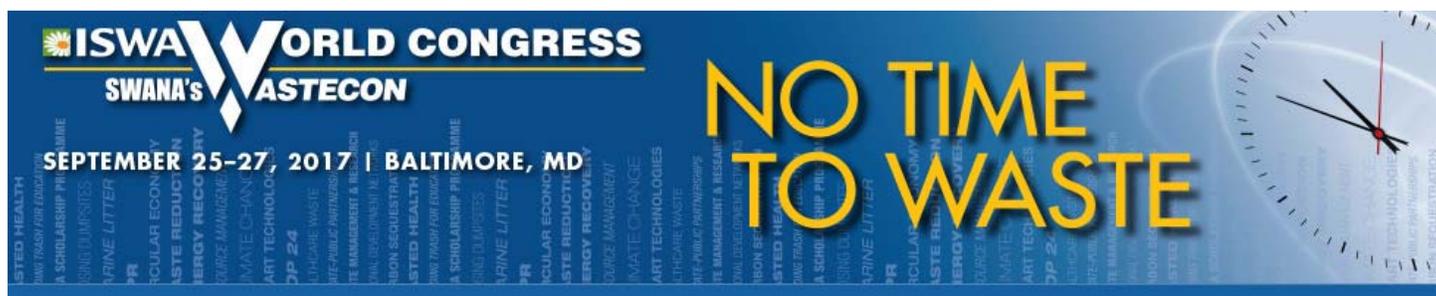
### Where:

Grand Central Landfill,

1963 Pen Argyl Rd

Pen Argyl, PA 18072

Register online at <http://www.keystoneswana.org/>. 🍷



“WASTECON” continued from Cover

make this the best WASTECON ever by collecting and sending us **Leads, Leads, and More Leads!** We are looking for leads in the following categories:

- ◆ Potential attendees – Non- SWANA members with an interest in the conference (e.g., solid waste professionals, regulators, or educators).
- ◆ Potential exhibitors – Companies that provide a service or commodity related to solid waste management. (Consider companies that may not realize they have something to offer to the industry, e.g., stormwater management companies.)
- ◆ Potential sponsors – Companies with interest in promoting their name to a regional and international audience other than or in addition to exhibiting on the show floor.

Please forward any leads to Steve Lippy ([s.lippy@verizon.net](mailto:s.lippy@verizon.net)). **Remember, the more attendees, exhibitors and sponsors, the better experience for all!** 🍷

For more information on WASTECON / ISWA world Congress, please visit [www.WASTECON.org](http://www.WASTECON.org)

For more information on exhibiting, please visit <https://swana.org/Exhibit/WASTECON.aspx>

For information on sponsoring, please visit <https://swana.org/Exhibit/WASTECON/SponsorshipOpportunities.aspx>

Article By: Steve Lippy - Chair, -Publicity Committee

WASTECON Local Committee

SWANA Mid-Atlantic Chapter

Edited By: Alison D'Airo

#### What

WASTECON / ISWA World Congress

#### When:

September 25-27, 2017

#### Where:

Baltimore Convention Center  
One West Pratt Street  
Baltimore, MD 21201



Opening Session of 2015 ISWA World Congress: Over 1,260 participants were present from over 90 Countries.

- Photo from: ISWA.org

## From the Blue Box to Waste Free Ontario



Canadian provinces, like their state counterparts, have experienced stagnant recycling rates for a decade. In response, provincial governments are exploring ways to jump start a new era of material recovery and waste diversion. None of the conceptual solutions are more ambitious than those found within a recent law enacted by the Legislative Assembly of the Province of Ontario in June 2016. Nearly six months after *Waste Free Ontario Act*, (WFOA) attained Royal Assent, we explored its current status and implementation updates at the Canadian Waste to Resource Conference.

WFOA is a mechanism to launch the true legislative initiatives incorporated within it. These additional laws include the Resource Recovery and Circular Economy Act 2016 (RRCEA) and the Waste Diversion Transition Act 2016 (WDTA). The first establishes a supervisory authority with oversight of administration and enforcement. It also suggests a host of programs, goals and objectives for implementation. The latter repeals the longstanding *Waste Diversion Act of 2002* and is tasked with developing the mechanisms under which the change from existing policies and programs to those proposed will appear seamless to Ontarians.

The need to revise or repeal the *Waste Diversion Act of 2002* was widely supported. Frustrated municipal government officials were screaming for relief from the battle for fair and timely compensation under the Blue Box program. Widely considered as a trade off to thwart deposit legislation on refillable containers, the blue box program was supported by the soft drink industry, who in 1987 seeded the system with \$20 million which grew to \$45 million when joined by other packagers and retailers. Under the *Waste Diversion Act of 2002*, these groups promised to pay 50 percent of the net costs of municipal residential curbside recycling collection. On the surface, it sounded like a good deal. Instead, determining the net cost became a contentious process, a problem common to other legislated producer funded programs. Arbitration resulted between the parties.

Dissatisfaction with the blue box program financials, public concern for climate change, and the emerging philosophy for a circular economy set the stage. With liberal leaning legislators in place, the timing was finally right to push for change.

That doesn't mean passage of WFOA was any less challenging. In fact, two failed attempts preceded the passing of the current legislation. Stakeholders expressed strong views and concerns for the skeletal nature of this enabling legislation. Provincial officials believe the law could establish Ontario as the 21st century leader in North American environmental policy. Groups like the Ontario Waste Management Association (OWMA) are more cautious. They point to the extensive list of unknowns, which remain to be vetted in a small window of time before other political priorities conflict or cause the abandonment of the regulatory process. Other stakeholders fear the law cannot be implemented effectively, if at all.

One of the major tenets of the legislation is a leap from the previous convoluted 50% monetary reimbursement



pected to be supported by some type of producer funded mechanism. For existing programs, a shift in the organization responsible for overseeing those functions may be the sole change.

Municipalities are hopeful that the new system will cover all of their operating costs without event. Municipal officials, processors and other service providers, however, fear the early service frameworks developed by policy makers are advancing without sufficient input from field experts. Based on the law, producers may act independently, in groups, or negotiate other arrangements to manage their brand/product obligations. The number of potential producers coupled with the freedom to design collection systems for a vast array of materials is what drives successful EPR programs. Without sufficient criteria and constraints, municipal officials warn that inadvertent service disruption and fragmentation could occur. The absence of draft guidance for several transitional elements has heightened these concerns. Collaboration, communication and cooperation between producers, municipalities and service providers could minimize the glitches.

To say WFOA, RRCEA, and WDTA are lacking definition and clarification is an understatement. The vague and abstract language offers broad latitude for development of the programs and policies suggested by law. The words, or lack of words in many instances, only hint at the depth, power and control which could result from overly aggressive regulations. There is also danger that regulations that lack clarity could replicate the problems inherent with the Blue Box reimbursement program. If you are exposed to laws and regulations on a consistent

program toward full producer responsibility for paper and packaging. In addition, programs for other consumer goods like tires, which already have a stewardship system, as well as those yet unmanaged are ultimately expected

to be supported by some type of producer funded mechanism. For existing programs, a shift in the organization responsible for overseeing those functions may be the sole change. basis, you recognize that ambiguities and unintended consequences commonly occur from poorly or inadequately worded phrases. Still, the critical mass of undefined roles, responsibilities, and financial obligations in WFOA is disquieting.

Even with its growing pains, Waste Free Ontario is a progressive platform for any jurisdiction to consider. Whether it stands as a rock of ages or falls like a house of cards is dependent on keeping things simple, convenient, realistic and understandable. ▼

By: Michele Nestor, Nestor Resources

November 16, 2016

Source: <http://www.waste360.com/national-waste-recycling-association/blue-box-waste-free-ontario>



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# Bureau of Labor Stats Updates Industry Data

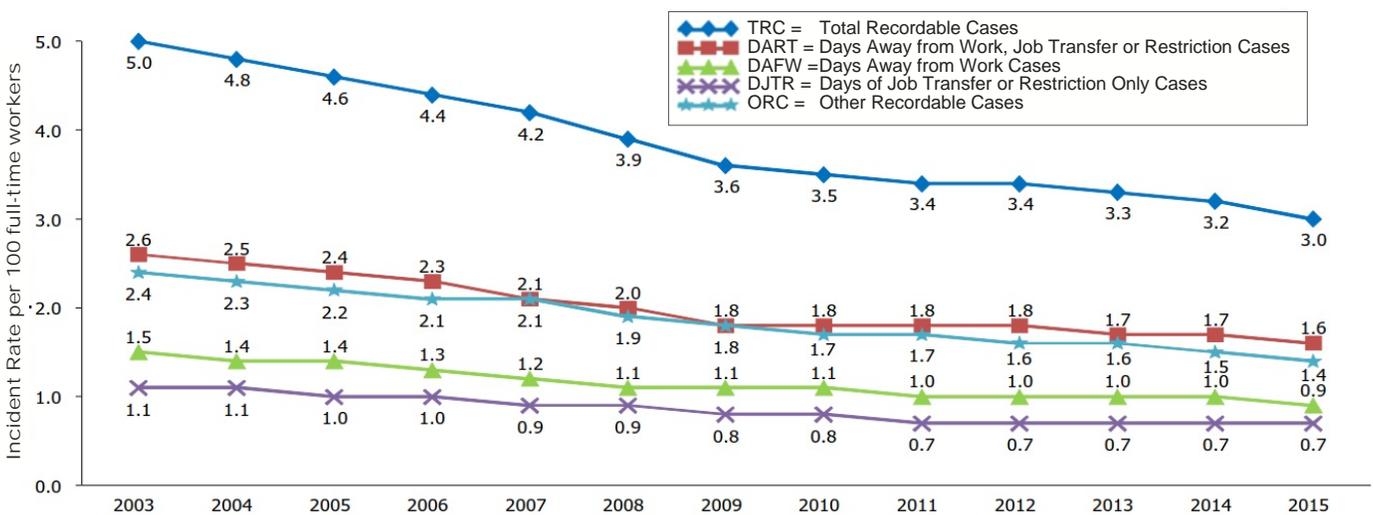
The U.S. Bureau of Labor Statistics (BLS) released the 2015 final figures for industry and occupational fatality data on December 16, 2016. In its 2015 Census of Fatal Occupational Injuries Summary, BLS detailed that refuse and recyclable material collectors, as an occupation, ranked fifth among American workers, with a total of 33 fatalities in 2015, up from 27 in 2014 and tied with 2013.

A National Waste & Recycling Association (NWRA) analysis of the final data shows that a majority of this increase was attributable to an increase in fatalities in the private sector. For the refuse and recyclable material collectors, fatalities increased in the private sector to 24 up from 18 the prior year. Fatalities in the public sector for this occupation held steady at 9. Both the private and public sectors are one fatality over their five-year average. The incidence rate moved upward to 38.8 fatalities per 100,000 workers from 35.8 in 2014. BLS also analyzes data by industry, and in the industry defined as Solid Waste Collection in 2015, decreased by 10 percent to 36 fatalities, 27 in the private sector and 9 in the public sector. The data shows that the Refuse and Recyclable Material Collectors occupation account for three-fourths

of the fatalities in the Solid Waste Collection industry. The private landfill industry, after not having any fatalities in the past two years, incurred 9 fatalities in 2015. Private material recovery facilities incurred 3 fatalities in 2015 up from zero fatalities the prior year.

Both private and public sector waste and recycling operations had 50 fatalities in 2015, up from 40 in 2014 and driven up mainly by fatalities at the landfill. The last time this number was 50 or higher was in 2008 when 54 fatalities occurred. Nationally, across all industries tracked by BLS, including government, fatalities rose slightly (0.3%) in 2015 to 4,836. For all private industries, fatalities fell to 4,379 in 2015 from 4,386 the previous year.

NWRA, which represents private industry waste and recycling companies nationwide, has spearheaded a comprehensive industry-wide series of initiatives in concert with its member companies aimed at reducing fatalities, injuries and accidents. In March 2016, NWRA led a Safety Summit with leading safety professionals in the private waste and recycling industry, and adopted a three year strategic plan designed to reduce the rates of



Nonfatal occupational Injury and Illness Incidence rates by case type, private industry, 2003-2015

fatalities, injuries and accidents through industry wide measurement, collaboration and process improvement.

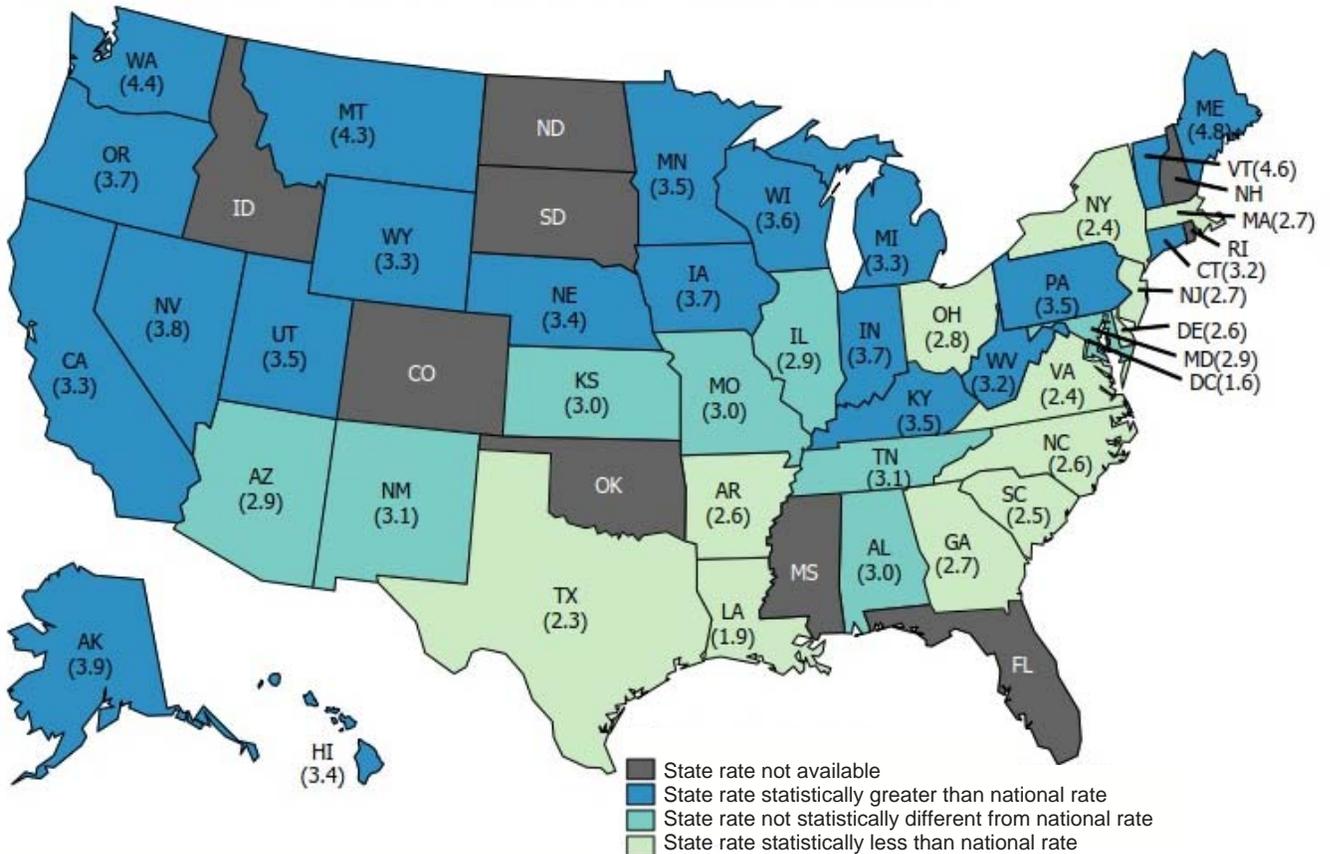
An NWRA data task force, formed during the Summit, is now engaged in the work of improving current data metrics used with the industry as part of its long term plan to reduce fatalities, injuries and accidents. *“Today’s release of BLS industry and occupational fatality data supports our urgency to improve safety performance nationwide with a special emphasis on front-line workers,”* said NWRA Interim-CEO Kevin Kraushaar. *“Safety is a top priority for NWRA and with that, our members are committed to sharing best practices and working together on a road map that we expect will save lives, reduce injuries and lower incident rates.”*

Just this week, NWRA carried out the third in its ongoing national series of safety professional development

events. This series is aimed at sharing knowledge, strategies and best practices with members and non-members to improve safety cultures, have participants learn from case studies and from one another while seeking to further elevate safety programs.

NWRA is the standard developing organization for ANSI standards in the waste and recycling industry. Throughout 2016, the ASC Z245 has begun the process of creating a standard on Landfill safety. The numbers released [in December] demonstrate how the proactive efforts around the ASC Z245 are making the industry safer.

Over the past three years, NWRA and its chapters nationwide have successfully championed “Slow Down to Get Around” legislation, which is now the law in ten states and under consideration in several more. These laws require that motorists slow down when waste and recycling col-



Note: Total recordable case (TRC) incidence rate per 100 full-time workers

State Nonfatal occupational Injury and Illness Incidence rates , private industry, 2015

- Bureau of Labor Statistics

## Save the Date: Safety Summit - March 15th

Keystone SWANA is hosting a full-day Safety Summit on March 15, 2017 at the Best Western Premiere in Harrisburg. Speakers and topics include:

- ◆ Radiation Safety and Equipment Considerations for Landfills - Bonnie J. Meilner, LAURUS Systems
- ◆ Safety Management - Matthew Taylor, CSP
- ◆ Spotter Training/Traffic Control at the Working Face - Steve Burn, SECCRA
- ◆ Personal Landfill Gas Protection - Scott Messier, SCS Engineers
- ◆ Lone Worker Safety Program - John Aliveto, CSP, Montauk Energy
- ◆ Dale Glacken, OSHA, Harrisburg Area Office
- ◆ Marc Buckley, Northeast Area Safety Manager, Republic Services
- ◆ And More!

This is a great opportunity to earn those CEUs!

### When:

March 15, 2017  
from 9:00 AM to 3:30 PM

### Where:

Best Western Premiere  
800 East Park Drive  
Harrisburg, PA 17111

Register online at <http://www.keystoneswana.org/>. 

lection vehicles are stopped and workers are getting on and off, just as motorists are required to slow down in construction work zones, or stop for school buses, or pull over for emergency vehicles.

NWRA and its members have undertaken numerous initiatives that represent a comprehensive approach to improving safety for workers in the waste and recycling industry, including:

- ◆ Hosting safety seminars in cities nationwide for haulers, processors and other stakeholders in the waste and recycling collection process;
- ◆ Development of safety manuals for use by drivers and workers in the industry;
- ◆ Creation of the first-of-its-kind Driver Certification program for waste and recycling collection vehicle operators;
- ◆ Temporary worker safety training;
- ◆ Safety Monday — A bi-lingual poster sent each week to member companies with important practical tips to prevent accident and injury;
- ◆ Commercial vehicle safety inspection briefings and demonstrations;
- ◆ Online safety webinars and education sessions at industry conferences to promote sharing of best practices; and,
- ◆ NWRA serves as the ANSI standards-setting body covering the safe design, manufacture, maintenance and use of equipment used in the waste and recycling industry. 

By: Nicole

December 16, 2016

Source: <https://wasterecycling.org/blog/2016/12/16/u-s-bureau-of-labor-statistics-updates-industry-fatality-data-2/>



## Centre County Skips Switch to Single Stream

After fielding questions from residents and public officials about why single-stream recycling isn't offered in the county, the Centre County Recycling & Refuse Authority decided to hire a consultant to look into the benefits and drawbacks of switching. MSW Consultants studied the associated costs and repercussions of the authority moving from its current source-separated method of curbside recycling to single stream.

Single-stream recycling is a collection system where recyclables (such as cardboard, paper, metal, glass, plastic bottles) are put in the same container at the curb. The container is tipped into the truck and then separated at the processing facility.

The study, which took more than a year to be finalized into a report that the authority received in October, looked at three aspects: single-stream collection of recyclables, single-stream processing of recyclables and the current rate structure, said Ted Onufrak, executive director of the authority. The trend in the industry during the past 25 years has been more automation, said Joanne Shafer, the authority's deputy executive director and recycling coordinator.

When the report was completed, the authority's board decided to continue with source-separated recycling rather than switching to single stream, Onufrak said. The authority serves about 26,000 households and almost 1,000 businesses. Single stream is "more about perception than reality," he said. The way the authority collects recycling now, the only thing people have to separate is their bagged paper. "But still, it's our guys that are separating all the material," Onufrak said.

The study found that the advantages of single stream would be a reduction in collection costs because only one

person would be needed to operate the collection truck, rather than the two it takes now, he said. In addition, worker compensation rates are lower and crews can make more stops per day. It's perceived that more people will participate in the recycling program, Shafer said. But, the authority's participation rate is already in excess of 90 percent.

The drawbacks to switching to single stream, however, were significant enough [in this instance] not to make the switch. Costs associated with the switch would include buying new automated trucks, upgrading from recycling bins to larger containers and about \$3 million to convert the processing facility, Onufrak said. With conversion to

single-stream collection and processing, the only case where there would be a financial savings to the customer would be to switch to biweekly recycling collection. Though, biweekly collection might be something the authority looks into anyway to avoid increasing the amount customers pay each month, Onufrak said.

***Our goal is to maximize recycling, waste reduction and other alternatives to disposal so that eventually we have ... zero landfill waste,"***  
***-Joanne Shafer***  
***Recycling Coordinator***

The revenue from selling recyclables brings in about \$1.4 million — \$2 million when the markets are strong, he said. But, the markets are low, which means the authority is losing revenue that subsidizes its programs. "While we certainly need to be ... fiscally responsible, we're not profit driven. So we do have a goal, countywide, of zero waste in about 35 years ... . Our goal is to maximize recycling, waste reduction and other alternatives to disposal so that eventually we have ... zero landfill waste," Shafer said.

Contamination with single stream is another issue. The average contamination rate, by weight, nationally for single-stream programs is 16 percent, Shafer said, meaning that 16 percent of what people put out for recycling ends up being thrown away - whether it's soggy paper, broken

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*The Keystone is always accepting advertisers in support of the SWANA Keystone Chapter Scholarship Awards!!*



**For additional information or an application visit [KeystoneSWANA.org](http://KeystoneSWANA.org) or contact Alison D'Airo Phone 717-737-8326 x 2325**

**Note of interest**—sponsors to either the Road-E-O or the annual Fall Conference will receive a free advertisement in an upcoming issue of the Keystone SWANA newsletter.

glass or something that's not even recyclable. The authority's contamination rate is zero for residential pickups because crews can leave behind items that aren't recyclable, she said. It only increases to 2-3 percent when adding in drop-off locations.

To switch to single stream would also result in dropping glass from the recycling program, Onufrak said. "I mean, who wants to quit recycling glass," he said. Onufrak said the authority processed 13,000 tons of recycling last year - of that, 2,500 tons were glass.

Even aside from contamination, having one bin for recyclables that doesn't get sorted through until it's at the processing facility creates problems for educating people on what's recyclable and what isn't, Onufrak said. "We've educated a whole generation of people in Pennsylvania to recycle and that recycling is a good thing," Shafer said. "I'm not sure that taking that awareness away by saying put it all in a bin that looks like a garbage bin is a good thing."

When it comes down to it, recycling is a process that goes beyond putting items in a bin at the curb, Shafer said. "The recycling process doesn't stop when the resident puts something out in the bin. It stops when the recycling is processed and sent to a manufacturer to make a new product," she said. "... So it might feel good to put it in the bin, but it doesn't do any good if we have to pull it out and throw it away anyway."

It seems that this is one case where a switch to single-stream would be a step backwards. Of course in a location where recycling rates are lower, or there is no recycling collection at all, single-stream has proven to be a great way to reduce the amount of recyclable materials that end up in the landfill. ▼

*By: Sarah Rafacz*

*December 7, 2016*

<http://www.centredaily.com/news/local/article119607898.html>

## Some Cool Facts About the Habitat ReStore

Habitat for Humanity ReStores are celebrating 25 years of helping more families build decent, affordable homes in communities across the Globe. These non-profit home improvement stores and donation centers sell new and gently used furniture, appliances, home accessories, building materials and more to the public for a fraction of retail price. The Keystone SWANA would like to share with you some of the stats about these ReStores.

If you took all the doors sold at the **Lexington Habitat ReStore** in 2015 and laid them end to end, they would stretch over seven 'Kentucky' miles. That is as long as 25 Empire State Buildings stacked on top of each other (About 31,250 feet).

In 2015, Habitat ReStores diverted more than 124,000 tons of goods from local landfills.

The Habitat **Metro Denver ReStore** recycles nine tons of metal every week.

**Habitat Philadelphia** opened its South Philadelphia ReStore in June 2015 and within five months of opening the ReStore has generated \$100,000 for the affiliate's work.

*"There are so many great things about the ReStore. You're going green, helping Habitat and having fun along the way. It's a treasure hunt, a great place for good stuff, and not just for good bargains."* – **Portland/Metro East Habitat ReStore** manager Danny Dunn, who says his entire apartment is furnished with ReStore finds.

**Full of Finds:** *"The coolest thing we probably have ever gotten was a full kitchen from the 1960's. It was purchased by a movie studio who wanted to use it in their set. They donated it back, so we got to sell it twice. A customer drove down from Canada and purchased the whole thing. It was sold for more the second time than the first."* - Deborah Maruca Hoak, ReStore director at **Habitat Metro West/Greater Worcester**.

There are 875 ReStore locations in the United States, equaling more than 11 million square feet of shopping opportunities. Proceeds are used to help build strength, stability and self-reliance through shelter in local communities around the World. To find a location near you visit [habitat.org/restores](http://habitat.org/restores). 🏠

Submitted by Robert F. Hasemeier, P.E.  
Habitat.org



- Photo From: Habitat for Humanity

## Steve Tucker Loses Battle with Cancer



R. Stephen Tucker, 63, of Montoursville, formerly of Bridgeport, W. Va., lost his fight with cancer in the early morning hours of Feb. 20 2017. He passed at Geisinger Medical Center in Danville, after saying goodbye to loved ones.

Steve, or "Tuck," as he was often called, was the former director of Lycoming County Resource Management Services, where he worked to manage people through strong relationships. Throughout his life, he worked to positively impact people through his attitude and infallible optimism. An avid outdoorsman, his favorite times were spent with sons, daughters and grandkids while hunting, fishing and camping. He loved to hunt the big woods of his home state in search of shy mountain bucks, cook burgers around the campfire or simply take off for parts unknown with his wife.

A devout Christian, faithful husband of 40 years, loving father and grandfather and loyal friend and hunting partner, he is survived by his wife, Karen; daughters, Katie (Joe Edmondson) and Mary (Robert Miller); sons, Dan

(Amy Tucker) and Nathan (Lauren Tucker); 10 beautiful grandchildren with one on the way; sister and brother-in-law, Debbie and Rick Walsh, of Elkins, W. Va.; mother and father-in-law, Ruth and Richard Hauser, of Loy-alsock Township; and many others.

The funeral service was held on Thursday, Feb. 23, 2017 by Pastor Joel E. Henderson. ▼

From the Sun-Gazette

February 22, 2017

Source: <http://www.sungazette.com/obituaries/2017/02/r-stephen-tucker/>

The staff at The Keystone have removed the article that was slated to appear here in order to provide timely delivery on the passing of Lycoming County Resource Management Services; Stephen Tucker. In an effort to continue providing you with important regional Solid Waste News we have included this brief highlight from the original article below:

"Governor Chris Christie signed a bill on January 9, 2017 that will overhaul how e-waste is to be handled going forward in the state of New Jersey. The legislation (S-981) was signed by governor Christie without any comment. He had previously pocket-vetoed a similar bill last year." ▼

Source Article By: Tom Johnson

January 10, 2017

Source: <http://www.njspotlight.com/stories/17/01/09/preventing-the-e-waste-stream-from-becoming-a-flood/>

## SWANA Road-E-O Winners

The 2016 Mid-Atlantic Regional Road-E-O was hosted by the Northern Tier Solid Waste Authority with the help of the Wayne Township Landfill back in June, but we didn't forget about those winners...even if it did take us a little while to mention them.

The Mid-Atlantic Road-E-O has been a summer tradition for years and it brings about some fun and friendly competition amongst the solid waste professionals that operate

their machines. Being at the top of your game is more than just for fun, it also means a chance at winning the international title, as the top two in each category headed to Georgia to compete for bragging rights, and an international Road-E-O victory!

So how did the competition stack up this year? Take a look below at our local winners, then see who went the distance to take home an International Title for 2016! 🏆

<b>Rear Load</b>	
Cody Roe	Northern Tier Solid Waste Authority
John Zell	Republic Services - West Grove
Phil Vinsek	Northern Tier Solid Waste Authority
<b>Wheel Loader</b>	
Cole Alexander	Clinton County Solid Waste
David Swift	Republic Services - Farmington Transfer Station
Marshall Montieth	Maryland Environmental Services
<b>Articulated Dump</b>	
Robert Lee	Northern Tier Solid Waste Authority
Chase Weise	Clinton County Solid Waste
Chris Budman	Lycoming County Solid Waste
<b>Transfer Trailer</b>	
Eric Dixon Sr.	Clinton County Solid Waste
Robert Lee	Northern Tier Solid Waste Authority
Randy Clayton	Lycoming Solid Waste
<b>Roll-Off Truck</b>	
John Zell	Republic Services - West Grove
Cody Roe	Northern Tier Solid Waste Authority
Phil Vinsek	Northern Tier Solid Waste Authority

Landfill Compactor	
Chrissy Kortze	Republic Services - Conestoga
Cody Alexander	Clinton County Solid Waste
Marshall Montieth	Maryland Environmental Services
Dozer	
David Swift	Republic Services - Farmington Transfer Station
Dave Kessling	Clinton County Solid Waste
Verlan Bauman	LCSWMA



Winners of the 2016 Mid-Atlantic Road-E-O

International Rankings		
Phil Vinsek	Northern Tier Solid Waste Authority	1st Place in Rear Loader
Cody Roe	Northern Tier Solid Waste Authority	1st Place in Roll-Off and Rubber Tire Loader
Eric Dixon Sr.	Clinton County Solid Waste Authority	3rd Place in Tractor Trailer
Dave Kessling	Clinton County Solid Waste Authority	2nd Place in Dozer
Chase Weise	Clinton County Solid Waste Authority	1st Place in Articulated Dump Truck

## Drone Mini-Tech: Too Cool for School

In October, Northern Tier Solid Waste Authority hosted a Drone Demonstration Mini-technical Seminar followed by a tour of the Northern Tier Greens Greenhouse. Merlin Brenner from Remote Intelligence, Wellsboro, PA, presented to more than 25 attendees about how drones can be used for topographic mapping and volumetric (airspace) analysis. Despite the rain and flooding which prevented some participants from being able to attend, we were able to see the drone in action. In a word, it was: **COOL!** No doubt there will be more applications besides imagery and surveying for drones in the future, including perhaps landfill surface emissions monitoring. Following the drone demo, we were treated to a hearty



Photo of the Mini-Tech Attendees  
Captured by the Remote Intelligence Drone

- Photo From: Remote Intelligence

meal, which was much appreciated on such a cold, wet, dreary day. Thank you Northern Tier Solid Waste Authority!

We thought we were done with the cool part of the Mini-tech. A tour of the Northern Tier Greens Greenhouse, which use a portion of waste heat from the landfill gas to energy facility, proved us wrong. Northern Tier Greens is a 14,400 square foot hydroponic greenhouse used primarily for growing lettuce and herbs without the use of



Greenhouse Tour by Leigh Twoey, from NTSWA

chemicals. Leigh Twoey, NTSWA's Education Coordinator, told us about the trial and error over the years to fine-tune the operation to the point that 2016 will likely be the first year finishing "in the black", with positive projections for the future financial viability of this innovative project.

I, and some fellow attendees, were quite happy to purchase some produce on our way out the door, in ahead of the next round of rains. In my opinion, the greenhouse tour is well worth the drive to Pennsylvania's Northern Tier. You should check it out! 🍷

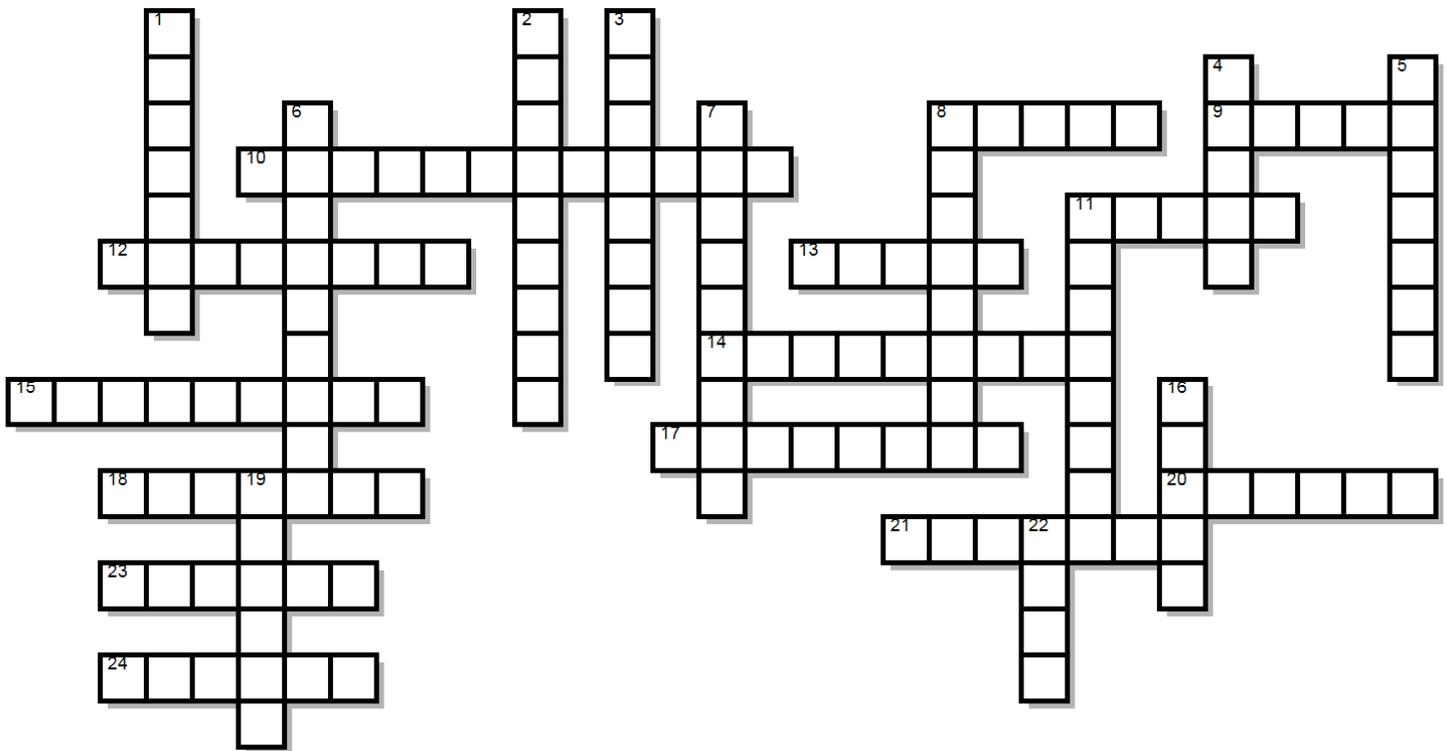
By: Denise Wessels, SCS Engineers



Merlin Brenner, Remote Intelligence Demonstrating Drone Setup before Launch.

# Just For Fun - The Keystone Crossword

## The Winter Edition



See Page 22 for Solution

### ACROSS

8. Publicity Committee Chair & local WASTECON Rep.
9. 'E' in DME
10. Responsible Party for e-waste recycling costs in NJ
11. Min. years planned for NWRA's Safety Plan
12. 'D' in DME
13. Up-Coming Safety Summit month
14. Recycled material used by CA. brewery
15. Remote Intelligence hometown
17. Lbs. collected by Call2Recycle in 2016 (in millions)
18. Avg. contamination rate of recyclables nationwide
20. Wastewater additive from C.U. Boulder
21. First state requiring battery recycling funding from producers.
23. Percentage of Centre County Recyclers
24. Habitat ReStore: Metal Recycling Masters

### DOWN

1. Canadian Province w/ new waste laws
2. Habitat ReStore: Home to Double Dipped Kitchen
3. BluePrint Waste Assessment Company
4. Barrels of water needed per barrel of beer made
5. Brewery architect Russ \_\_\_\_
6. Host City of WASTECON 2017
7. Habitat ReStore: Door Empire
8. Mini-Tech treatment product
11. Too low percentage of people that slow for waste collectors
16. BLS ranking for refuse/recycling workers
19. Percent increase over 2015 total for Call2Recycle
22. NYSD teaming partner for DME trucks

## Brewery Waste-To-Energy from Boulder CO



University of Colorado Boulder engineers have developed an innovative bio-manufacturing process that uses a biological organism cultivated in brewery wastewater to create the carbon-based materials needed to make energy storage cells. This unique pairing of breweries and batteries could set up a win-win opportunity by reducing expensive wastewater treatment costs for beer makers while providing manufacturers with a more cost-effective means of creating renewable, naturally-derived fuel cell technologies.

*"Breweries use about seven barrels of water for every barrel of beer produced,"* said Tyler Huggins, a graduate student in CU Boulder's Department of Civil, Environmental and Architectural Engineering and lead author of the new study. *"And they can't just dump it into the sewer because it requires extra filtration."*

The process of converting biological materials, or biomass, such as timber into carbon-based battery electrodes is currently used in some energy industry sectors. But, naturally-occurring biomass is inherently limited by its short supply, impact during extraction and intrinsic chemical makeup, rendering it expensive and difficult to optimize. However, the CU Boulder researchers utilize the unsurpassed efficiency of biological systems to produce sophisticated structures and unique chemistries by cultivating a fast-growing fungus, *Neurospora crassa*, in the sugar-rich wastewater produced by a similarly fast-growing Colorado industry: breweries.

*"The wastewater is ideal for our fungus to flourish in, so we are happy to take it,"* said Huggins. By cultivating their feedstock in wastewater, the researchers were able to better dictate the fungus's chemical and physical processes from the start. They thereby created one of the most efficient naturally-derived lithium-ion battery elec-

trodes known to date while cleaning the wastewater in the process. The findings were published recently in the *American Chemical Society journal Applied Materials & Interfaces*.

If the process were applied on a large scale, breweries could potentially reduce their municipal wastewater costs significantly while manufacturers would gain access to a cost-effective incubating medium for advanced battery technology components. *"The novelty of our process is changing the manufacturing process from top-down to bottom-up,"* said Zhiyong Jason Ren, an associate professor in CU Boulder's Department of Civil, Environmental and Architectural Engineering and a co-author of the new study. *"We're biodesigning the materials right from the start."*

Huggins and study co-author Justin Whiteley, also of CU Boulder, have filed a patent on the process and created Emery, a Boulder-based company aimed at commercializing the technology. *"We see large potential for scaling because there's nothing required in this process that isn't already available,"* said Huggins.

The researchers have partnered with Avery Brewing in Boulder in order to explore a larger pilot program for the technology. *"This research speaks to the spirit of entrepreneurship at CU Boulder,"* said Ren, who plans to continue experimenting with the mechanisms and properties of the fungus growth within the wastewater. *"It's great to see students succeeding and creating what has the potential to be a transformative technology. Energy storage represents a big opportunity for the state of Colorado and beyond."* ▼

By: University of Colorado at Boulder  
October 7, 2016

Source: <http://phys.org/news/2016-10-brewery-wastewater-energy-storage.html>

## Office Recycling - Business as Usual?

For years, municipalities around the country have banned or restricted landfilling of office-generated waste, but that regulatory push has flown under the radar. Many businesses are uninformed of the laws and have no programs in place to manage waste. This presents an opportunity for forward looking solid waste management companies. It's not just an opportunity to pick up and haul recyclables, but also a chance to step in as educators and advisors.

The Center for EcoTechnology, a nonprofit facilitating business, government, and residential waste reduction services, has seen a flurry of activity in the business sector. *"A lot of employers want recycling programs for employee engagement. Their [people] recycle at home and want to recycle at work, so there's that internal component,"* says Lorenzo Macaluso, Center for EcoTechnology's, director of client services. *"But we have also seen an external component, where shareholders require companies to have sustainability practices; it's a way they are evaluated. Recycling is a measurable way to show their efforts."*



- Photo From: Our Shoreline Community Association

### Reaching the decision makers.

A property may be owned by one entity, managed by another and have many tenants. So when a hauler wants to win a contract, there can be hoops to jump through just to reach the right decision maker. Macaluso has seen this conflict resolved in one of two ways. Some motivated businesses contract with niche providers, and pay a premium for pickups. But more often waste management companies have a series of conversations with the main players, typically the property management team, to explain regulations and benefits.

*"It's providing the right information to the right decision makers, but finding them is challenging in large property management groups,"* he says. *"They are typically in another state and do not know what's happening on the ground. Though once you've made that connection you can implement a lot of change in one shot."*

### Leading customers to what they need.

Businesses want to do the right thing and often assume haulers are providing the necessary services. But this can be a problematic assumption. *"They say I want to recycle and the hauler drops off a cardboard bin, but the customer has a kitchen and a lot of mixed waste. You can end up with the wrong container type, the wrong pick up schedule; they may have needed dual-stream so now the waste becomes unrecyclable,"* says Macaluso. *"So communication over specific needs and service options is critical when deciding how to package services. ... We can usually make it cost neutral or close. It takes ... a savvy hauler who can ... determine need, navigate changes in service levels and provide a good quote."*

### Republic serves as recycling partner to thousands of businesses

*"In our experience, really successful programs are simple,"* says Peter Keller, vice president of recycling and sustainability at Republic Services. *"They need to be*

## Hauler Dies in Hit-and-Run in Lancaster

Vince Nalencz, an employee of Eagle Disposal working early Monday November 21 died shortly after arriving at Lancaster General Hospital after being hit by a vehicle in the 2500 block of Willow Street Pike North in West Lampeter Township. The driver of the vehicle did not stop. The incident occurred at 5:20 a.m. The 24-year-old was a resident of Media, Pa. and was collecting trash at the time of the accident, police said.

The death highlighted the danger trash collectors face every day. It was at least the second time this year that an employee of Eagle Disposal of East Earl was struck by a vehicle while collecting trash in Lancaster County.

In July, a worker collecting trash in Millersville was tossed into the back of the trash truck when a vehicle crested a hill and struck another vehicle that had stopped behind the trash truck, pushing that vehicle into the worker. The man suffered a compound leg fracture and other injuries. The driver who crested the hill later pleaded guilty to a summary offense of failing to drive at a safe speed.

It is not known if speed played a role in Monday's fatal crash, but many drivers fail to slow down for trash collectors. A Harris Poll last year found the percentages of people who slowed down near public-service vehicles were: ambulances-77 percent, police cars-76, fire trucks-72, school buses-69 and garbage trucks-32.

This incident serves as a reminder to both the public and the collectors to always be as safe as possible. 🗑️

By Ryan Robinson  
November 22, 2016

Source: [http://lancasteronline.com/news/local/police-still-searching-for-hit-and-run-driver-who-struck/article\\_0ef4f0e2-b0e5-11e6-827a-c394ccdfbe61.html](http://lancasteronline.com/news/local/police-still-searching-for-hit-and-run-driver-who-struck/article_0ef4f0e2-b0e5-11e6-827a-c394ccdfbe61.html)

*convenient, efficient and tailored to a customer's needs. Often, they incorporate ongoing education and awareness activities that are authentic to the organization. For example, education on acceptable recyclables, how items should be recycled ... and why that matters."*

Republic offers branded BluePrint Waste Assessment to identify optimal service for the business, based on volume and material type. Through their all-in-one office model, customers place recyclables into one container for pick up and Republic sorts the materials at its facilities. Though a common model amongst waste companies is to have customers sort in centralized areas and have custodial staff take it to compactors or loading dock areas.

The National Waste & Recycling Association (NWRA) is working to pull more municipalities into the picture. *"In some communities, the program ends with residents, but 40 to 60 percent of waste is from businesses,"* says Steve Changaris, NWRA Northeast region manager. *"So we are working with communities, state regulators and waste authorities. We want to make sure they focus on business recycling and see programs set up that work,"*

### **Business opportunities expand when haulers look holistically at all types of trash.**

Food waste in particular has been a catalyst for upgrading services or beginning programs. So being able to pair food and other materials to maximize diversion has been key. *"When you have a motivated customer ... being able to provide comprehensive waste services as well as value added [such as education] gives an advantage. It's not always just price that wins the contract,"* says Macaluso. 🗑️

By: Arlene Karidis  
January 26, 2017  
Source: <http://www.waste360.com/commercial/what-goes-managing-recycling-office-properties>



## Call2Recycle Reports Growth in Collections



Leading the charge for recycling.™

- Photo From: Call2recycle.org

Call2Recycle Inc., North America's first and largest battery stewardship and recycling organization with headquarters in Georgia and Vancouver, British Columbia, reports that consumers recycled a record-setting 14 million pounds of batteries and cellphones in collections throughout the U.S. and Canada in 2016. Enhanced accessibility and consumer awareness played a vital role in driving the 12 percent increase in total weight of materials collected and responsibly recycled by the organization over 2015, adds the nonprofit organization.

This major environmental achievement marks the twentieth consecutive year of increased collections by Call2Recycle, contributing to the 129 million pounds of batteries diverted from landfills over the past 21 years. The continued year-over-year growth of the battery stewardship program is a result of strong, collaborative relationships between Call2Recycle and its robust network of committed industry stewards and collection partners, including retailers and municipalities, the organization says. Through these partnerships, rechargeable and primary battery collections in the U.S. amounted to nearly 8 million pounds in 2016 - a 12 percent increase over 2015. Collections from public, consumer-facing networks totaled more than 4.7 million pounds of batteries, a rise of 28 percent. Collections from municipalities alone saw substantial growth of 150 percent year-to-date.

*"Thanks to the support of our dedicated industry stewards and collection partners, Call2Recycle's program has achieved unprecedented success through increasing*

*consumer awareness," says Carl Smith, CEO and president of Call2Recycle. "By offering a convenient, comprehensive and flexible recycling solution for both rechargeable and primary batteries, we are winning in the effort to make it easier for people to recycle their batteries throughout North America."*

Additionally, the number of primary batteries collected skyrocketed in 2016 with a 158 percent increase. This growth was fueled in part by legislation that led Vermont to become the first state in the U.S. requiring producers to finance a collection and recycling program for single-use (primary) batteries. As the appointed stewardship organization for Vermont, Call2Recycle provides convenient drop-off locations for residents to responsibly recycle their batteries. As a result, more than 114,000 pounds of batteries have been collected statewide in 2016, an astounding 187 percent increase from the previous year.

Canadian provinces with strong participation and commitment from retailers and municipalities fostered the rise of total collection results by 12 percent compared to 2015. Most notable results were in British Columbia, Manitoba and Quebec, where Call2Recycle serves as the approved battery stewardship program. Quebec led the charge in battery collections with more than 2.4 million pounds collected, a nearly 20 percent increase. Manitoba also saw double digit growth over 2015, while British Columbia and Ontario each increased collections by eight percent.

*"We are extremely pleased with the collection results in Canada this year," says Joe Zenobio, Executive Director for Call2Recycle Canada Inc. "This success is an affirmation that Canadians are becoming increasingly aware that batteries can and should be recycled and are doing their part by taking action. This gives us the momentum we need to make an even greater positive impact on the environment in 2017."*

Providing easy and convenient recycling options to consumers through the establishment of close to 30,000 collection locations across North America, has also contributed to the organization's continued success. Today, more than 88 percent of residents in the U.S. and Canada live within 10 miles of one of Call2Recycle's public drop-off locations.

Call2Recycle Inc. says it is committed to protecting and preserving the environment through collecting and recycling consumer batteries and cellphones. Founded in 1994, the not-for-profit organization works on behalf of stakeholders to provide its battery recycling program to consumers across the U.S. and Canada through almost 30,000 drop-off locations. ▼

Recycling Today Staff

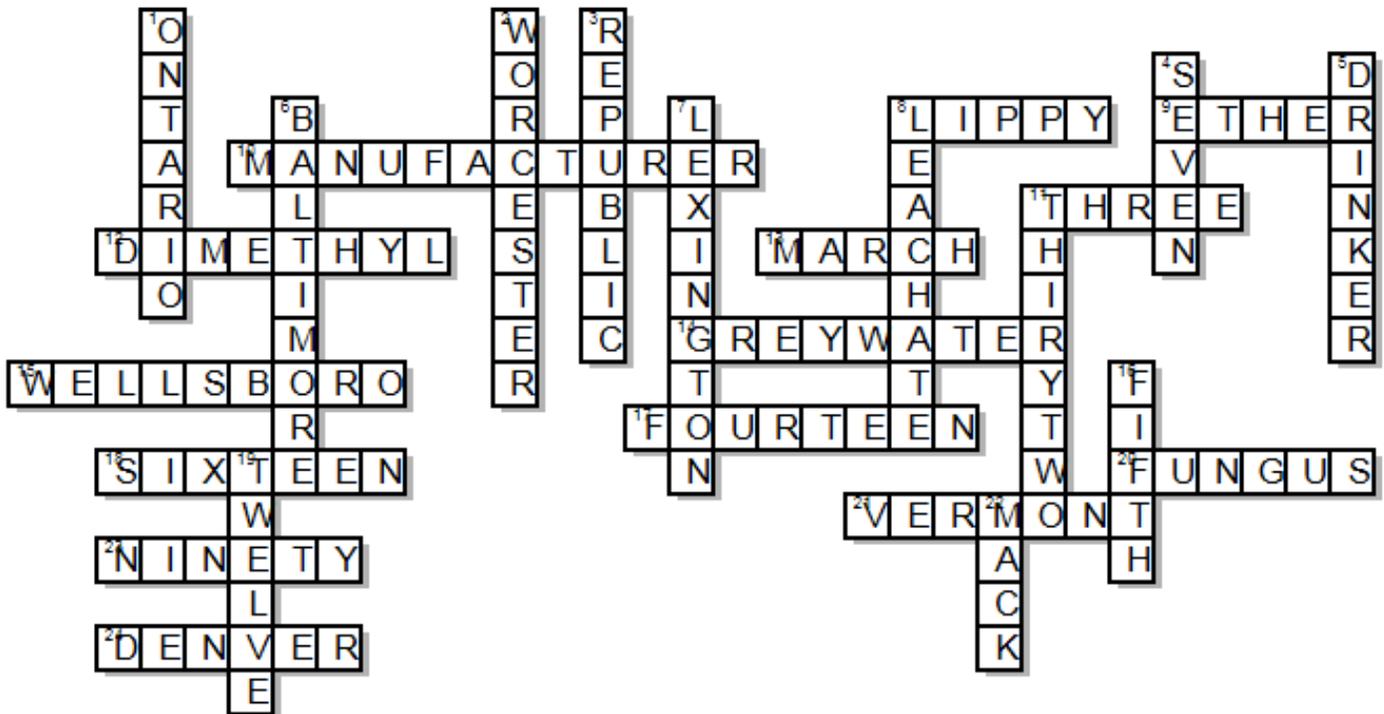
January 19, 2017

Source: <http://www.recyclingtoday.com/article/call2recycle-double-digit-growth-battery-collections/>



## Crossword Solution

How did you do?



## NYSD Teams with Mack to Test DME Truck

Mack Trucks is reigniting interest in Dimethyl Ether, or DME, a clean-burning alternative to diesel, with a new field test to be conducted in partnership with Oberon Fuels and New York City's sanitation department. The test, using a Class 8 Mack Pinnacle tractor with a 13-liter engine, began the second week of January and is scheduled to run for several weeks of evaluation, with results to be published by mid-year.

It is the first commercial test of a DME-powered Mack. The truck maker, along with its parent company Volvo Trucks, voiced interest in the fuel several years ago, but low diesel prices dampened enthusiasm for alternative fuels and both companies canceled their planned DME engine projects in late 2014. But with growing political and social pressure for cleaner vehicle emissions, alternative fuels are catching on again. *"We believe DME shows great promise,"* said Dennis Slagle, president of Mack Trucks.

DME is a liquid fuel that doesn't require refrigeration or high-pressure compression. It can be produced from a number of feedstock's including natural gas, coal and renewable sources such as paper, wood, agricultural and animal waste; biofuel crops such as soybeans, sugarcane and corn; and even from municipal waste - an attractive idea for the New York sanitation department. It

can be used in diesel or gasoline engines, and can also be blended with liquefied petroleum gas, or LPG, for use in diesel engines as a DME-LPG blend.

The fuel is easy to handle and can be a very low carbon fuel when produced from bio-based sources, said Bill Van Amburg, senior vice president and head of truck programs at CalStart, the Pasadena-based clean transportations technologies coalition. A second benefit, he said, is that truck engines running on DME can potentially be less expensive than conventional diesel engines because their emissions treatment systems would not be as complex.

Volvo has continued DME testing projects with its customer-owned trucks and has called the fuel a potential game-changer. The fuel is approved for use nationally and meets California's tough low-carbon fuels standards. DME also recently became eligible for clean fuel tax credits in the state of Washington. Ford Motor Co. and

the German government launched a three-year, 3.5-million Euro project in late 2015 to develop and test a DME-fueled passenger car, with San Diego, Calif.-based Oberon Fuels providing the fuel.

Companies interested in DME understand that the present low prices of gasoline and diesel fuel won't last and are looking for a replacement with a predictable price that



DME powered Mack Pinnacle demonstration at the New York City Department of Sanitation yard.

- Credit: Oberon Fuels

## New to the Keystone SWANA Family

The Keystone Chapter of SWANA has seen a rise in membership, with 7 new members joining the ranks since October of 2016. The Keystone Chapter provides many benefits by fostering cooperation among solid waste professionals and by providing educational opportunities to enhance the knowledge and expertise in the solid waste management field. We would like to take a moment to thank everyone who has joined our family so far this year.

- Chris Elvanian: McNeilus
- Cory Manns: Montauk Energy Capital
- John Wood: CH2M Hill
- Sean Phillips: Montauk Energy Capital
- Ryan Longfoot: Dallas Area Municipal Authority
- Joshua Lawrence: Sierra International Machinery
- Jason Laub: ARM Group Inc.

If you are or someone you know is interested in joining the Keystone Chapter SWANA, please visit our website at <http://www.keystoneswana.org/> or contact Chanda Martino by phone at (866) 467-9262 or by e-mail at [chanda@keystoneswana.org](mailto:chanda@keystoneswana.org). 🇺🇸



SOLID WASTE ASSOCIATION  
OF NORTH AMERICA

will allow long-range cost planning, Rebecca Boudreaux, Oberon's president, told Trucks.com in an interview last year. Mack's new test with New York's sanitation department will examine if DME fuel costs in real world operating conditions can match diesel fuel costs, said Roy Horton, product strategy director at Mack Trucks.

The fuel *"has potential to be a long-term option for us, and this initial test is an important first step in the evaluation process,"* said Rocco DiRico, the sanitation department's deputy commissioner. The department operates more than 7,000 trucks and is one of Mack's largest customers.

The federal Energy Department has tested DME and found that it can reduce greenhouse gas emissions by 70 percent or more. New York City has set dual goals of reducing greenhouse gases by 80 percent by 2050 (from 2005 levels) and of recycling municipal waste so that by 2030 none is sent to landfills. Oberon's production system would permit it to establish on-site DME refineries at landfills, producing the fuel from the waste that otherwise would be deposited in the sites. 🇺🇸

By: John O'Dell

January 13, 2017

Source: <https://www.trucks.com/2017/01/13/mack-trucks-dimethyl-ether-fuel-test/>



- Photo from: ASME.org

# SWANA Keystone Chapter Calendar of Events



For more information, event registrations, and updated information please go to the Keystone Chapter's website:  
<http://www.keystoneswana.org/>

Some events to plan for include:

## FEBRUARY 2017

- Thursday, 2/2, 10 am, **Board Meeting Conference Call**
- Receive Scholarship Applications from SWANA Headquarters
- Send Scholarship Announcement to members
- Distribute winter edition of *The Keystone*

## MARCH 2017

- Thursday, 3/2, 10 am, **Board Meeting Conference Call**
- Wednesday, 3/15, 9 am, **Safety Summit** - Best Western the Central Hotel and Conference Center
- Mail exhibitors and sponsorship announcement for 19<sup>th</sup> Fall Conference

## APRIL 2017

- Thursday, 4/6, 10 am, **Board Meeting Conference Call**

## MAY 2017

- 5/1, Chapter Scholarship Application Deadline
- Thursday, 5/4, 10 am, **Board Meeting** - Wayne Township Landfill
- Nominating Committee presents Slate of Officers and Directors for election

- 5/15, Articles deadline for Summer edition of *The Keystone*
- Sunday, 5/18, 10 am, **Landfill Leachate Treatment Mini-Tech**, Pen Argyl, PA

## JUNE 2017

- Thursday, 6/1, Submission Deadline for Grant H. Flint Scholarship recommendations to SWANA headquarters
- Thursday, 6/1, 10 am, **Board Meeting Conference Call**
- Email registration announcement for 19<sup>th</sup> Fall Conference
- Review Annual Budget
- Distribute Summer edition of *The Keystone*
- **Mid-Atlantic Road-E-O**, Maryland - Date: TBD

## JULY 2017

- No Activities Planned



The SWANA Newsletter is published 3 times a year in:  
**February, June and October.**

If you would like to have your article included in *The Keystone*, please submit it by the 15<sup>th</sup> of the month prior to the scheduled release date. Any late articles will be held until the next issue.

**\*\*As a reminder articles are accepted throughout the year and while we encourage original articles they do not have to be originally written as long as a proper source is cited.\*\***

## Chapter Officers and Board of Directors

### ▶ Officers

**Bryan Wehler, P.E. P.G., President**

Sr. Engineer / COO  
ARM Group, Inc.

**Sean C. Sweeney, P.E., Vice President**

Sr. Managing Engineer  
Barton & Loguidice, D.P.C.

**Larry Taylor, P.E., Treasurer**

Executive Director  
Greater Lebanon Refuse Authority

**Michele Nestor, Secretary**

President  
Nestor Resource, Inc.

**Robert Zorbaugh, Immediate Past President**

Chief Operating Officer  
Lancaster County Solid Waste Management Authority

### ▶ Public Sector Directors

**Scott McGrath**

Environmental Services Director  
Streets Department, Sanitation Division City of Philadelphia

**Scot Sample**

Executive Director  
Northern Tier Solid Waste Authority

**Jennifer Cristofolletti**

York County Solid Waste Authority

**Mike Engel**

Assistant Operations Manager  
Wayne Township Landfill

### ▶ Private Sector Directors

**Robert Hasemeier, P.E., B.C.E.E.**

Sr. Managing Engineer  
Barton & Loguidice, D.P.C.

**Tom Lock**

Project Manager  
SCS Field Services

**Charles Raudenbush, Jr.**

Public Services Manager  
Waste Management

### ▶ International Board Member

**Robert Watts**

Executive Director  
Chester County Solid Waste Authority

### ▶ Young Professional Director

**Tessa M. Antolick, P.E.**

Project Manager  
Arm Group, Inc.

## Keystone SWANA Chapter Committee Members

### Articles and By Laws

**Sean C. Sweeney - Chair**

Phone: 717-737-8326 x 2315  
[ssweeney@bartonandloguidice.com](mailto:ssweeney@bartonandloguidice.com)

**Robert Watts**

Phone: 800-626-0067 x 227  
[bwatts@chesterctswa.org](mailto:bwatts@chesterctswa.org)

**Bryan M. Wehler,**

Phone: 717-508-0546  
[bwehler@armgroup.net](mailto:bwehler@armgroup.net)

### Audit / Budget / Financial Committee

**Larry Taylor - Chair**

Phone: 717-867-5790 x 308  
[ldt@goglra.org](mailto:ldt@goglra.org)

**Robert Watts**

Phone: 800-626-0067 x 227  
[bwatts@chesterctswa.org](mailto:bwatts@chesterctswa.org)

### Chapter Safety Ambassadors

**John B. Aliveto**

Phone: 412-747-8713  
[jaliveto@montaukenenergy.com](mailto:jaliveto@montaukenenergy.com)

**David W. Horne**

Phone: 484-796-4047  
[dhorne@chesterctswa.org](mailto:dhorne@chesterctswa.org)

### Legislative / Policy Committee

**Charles Raudenbush, Jr. - Chair**

Phone: 609-798-3003  
[craudenbush@wm.com](mailto:craudenbush@wm.com)

**Timothy T. Hartman**

Phone: 610-637-3095  
[tthartman@verizon.net](mailto:tthartman@verizon.net)

### Membership & Marketing Committee

**Jennifer Cristofolletti - Chair**

Phone: 717-845-1066  
[J.cristofolletti@yscwa.com](mailto:J.cristofolletti@yscwa.com)

**Don Birnesser**

Phone: 484-388-3807

**Michele Nestor**

Phone: 724-898-3489  
[michele@nestorresources.com](mailto:michele@nestorresources.com)

**Timothy T. Hartman**

Phone: 610-637-3095  
[tthartman@verizon.net](mailto:tthartman@verizon.net)

### Newsletter Committee

**Robert Hasemeier - Chair**

Phone: 717-737-8326  
[rhasemeier@bartonandloguidice.com](mailto:rhasemeier@bartonandloguidice.com)

**Alison D'Airo - Newsletter Editor**

Phone: 717-737-8326  
[adairo@bartonandloguidice.com](mailto:adairo@bartonandloguidice.com)

**George Barstar**

Phone: 610-547-0096  
[georgehbarstar@verizon.net](mailto:georgehbarstar@verizon.net)

**Jennifer Cristofolletti**

Phone: 717-845-1066  
[J.cristofolletti@yctswa.com](mailto:J.cristofolletti@yctswa.com)

**Michele Nestor**

Phone: 724-898-3489  
[michele@nestorresources.com](mailto:michele@nestorresources.com)

**Charles Raudenbush, Jr.**

Phone: 609-798-3003  
[craudenbush@wm.com](mailto:craudenbush@wm.com)

### Personnel & Nominating Committee

**Sean C. Sweeney - Chair**

Phone: 717-737-8326 x 2315  
[ssweeney@bartonandloguidice.com](mailto:ssweeney@bartonandloguidice.com)

**Robert Watts**

Phone: 800-626-0067 x 227  
[bwatts@chesterctswa.org](mailto:bwatts@chesterctswa.org)

**Program and Training Committee****Michele Nestor - Fall Conference Chair**

Phone: 724-898-3489  
[michele@nestorresources.com](mailto:michele@nestorresources.com)

**Denise Wessels - Mini Tech Seminar Chair**

Phone: 610-568-9034  
[dwessels@scsengineers.com](mailto:dwessels@scsengineers.com)

**Larry Taylor**

Phone: 717-867-5790 x 308  
[ldt@goglra.org](mailto:ldt@goglra.org)

**Charles Raudenbush, Jr**

Phone: 609-798-3003  
[craudenbush@wm.com](mailto:craudenbush@wm.com)

**Joe Santangelo**

Phone: 724-483-3343  
[jsantangelo@leesupply.com](mailto:jsantangelo@leesupply.com)

**Tom Lock**

Phone: 717-671-5102  
[tlock@scsfieldservices.com](mailto:tlock@scsfieldservices.com)

**Timothy T. Hartman**

Phone: 610-637-3095  
[tthartman@verizon.net](mailto:tthartman@verizon.net)

**Road-E-O Committee****Scot Sample - 2016 Road-E-O - Site Coordinator**

Phone: 570-297-4177  
[ssample@ntswa.org](mailto:ssample@ntswa.org)

**Robert Watts - Chair**

Phone: 800-626-0067 x 227  
[bwatts@chesterccswa.org](mailto:bwatts@chesterccswa.org)

**George Barstar**

Phone: 610-547-0096  
[georgehbarstar@verizon.net](mailto:georgehbarstar@verizon.net)

**Bobby Barton**

Phone: 717-871-6420  
[bbarton@lcswwa.org](mailto:bbarton@lcswwa.org)

**Charles Raudenbush, Jr.**

Phone: 609-798-3003  
[craudenbush@wm.com](mailto:craudenbush@wm.com)

**Roger Russin**

Phone: 610-775-9944  
[Roman543@aol.com](mailto:Roman543@aol.com)

**Karl Schmit**

Phone: 610-223-0922  
[kschmit@republicservices.com](mailto:kschmit@republicservices.com)

**Larry Taylor**

Phone: 717-867-5790 x 308  
[ldt@goglra.org](mailto:ldt@goglra.org)

**Lee Zimmerman**

Phone: 610-286-6844  
[Lee.zimmerman@progressivewaste.com](mailto:Lee.zimmerman@progressivewaste.com)

**Scholarship Committee****Daniel Brown - Chair**

Phone: 717-871-6420  
[dbrown@lcswwa.org](mailto:dbrown@lcswwa.org)

**Tom Lock**

Phone: 717-671-5102  
[tlock@scsfieldservices.com](mailto:tlock@scsfieldservices.com)

**Charles Raudenbush, Jr.**

Phone: 609-798-3003  
[craudenbush@wm.com](mailto:craudenbush@wm.com)

**Robert Watts**

Phone: 800-626-0067 x 227  
[bwatts@chesterccswa.org](mailto:bwatts@chesterccswa.org)

**Secretariat Subcommittee****Ellen O'Connor - Chair**

Phone: 717-845-1066  
[e.oconnor@ycswa.com](mailto:e.oconnor@ycswa.com)

**Timothy T. Hartman**

Phone: 610-637-3095  
[tthartman@verizon.net](mailto:tthartman@verizon.net)

**Bryan M. Wehler,**

Phone: 717-508-0546  
[bwehler@armgroup.net](mailto:bwehler@armgroup.net)

**Young Professionals Committee****Tessa M. Antolick - Chair**

Phone: 814-272-0455 x 2205  
[tantolick@armgroup.net](mailto:tantolick@armgroup.net)

**Kathryn Sandoe**

Phone: 717-735-0188  
[ksandoe@lcswwa.org](mailto:ksandoe@lcswwa.org)

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**Robert Hasemeier - Chair**

Phone: 717-737-8326 x 2310

Fax: 717-737-8328

[rhasemeier@bartonandloguidice.com](mailto:rhasemeier@bartonandloguidice.com)

**Alison D'Airo - Newsletter Editor**

Phone: 717-737-8326 x 2325

[adairo@bartonandloguidice.com](mailto:adairo@bartonandloguidice.com)

**George Barstar**

Phone: 610-547-0096

[georgehbarstar@verizon.net](mailto:georgehbarstar@verizon.net)

**Jennifer Cristofolletti**

Phone: 717-845-1066

[j.cristofolletti@ycswa.com](mailto:j.cristofolletti@ycswa.com)

**Michele Nestor**

Phone: 724-898-3489

[Michele@nestorresources.com](mailto:Michele@nestorresources.com)

**Charles Raudenbush, Jr.**

Phone: 609-798-3003

[craudenbush@wm.com](mailto:craudenbush@wm.com)

**Chapter members:** please freely share this info with others that you work with or who have an interest in waste news in PA. **Please remember to send Chanda Martino, Chapter Secretariat, your current email address** as all future newsletters, as well as informational broadcast faxes and other communications, will only be sent via email. Her email is: [chanda@keystoneswana.org](mailto:chanda@keystoneswana.org). If you did not receive your copy of this newsletter emailed from Chanda, *you are not on our email list for news.*



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