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2016 A&WMA Annual Conference Preview
New Orleans: Unmasking the Industrial Renaissance

Later this month, the Air & Waste Management Association’s (A&WMA) Annual Conference & Exhibition (ACE) returns to New Orleans for the first time since 2006. From museums to restaurants, to world-famous festivals, there is no place quite like New Orleans. Whether you are visiting the city for the first time or a regular visitor, there’s no shortage of things to discover. The following pages offer a preview of what attendees can expect inside the Crescent City and during A&WMA’s 109th ACE.

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by Evan J. Granite, Elliot Roth, and Mary A. Alvin

This article highlights recent research analysis by the U.S. Department of Energy’s National Energy Technology Laboratory on the recovery of rare earth elements from coal and coal byproducts.

Moving from a ‘Risk’ to ‘Impact’ Paradigm is Critical to Achieve Environmental Justice
by Shankar Prasad and Shannon Murphy

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DQS Inc. is committed to providing resources for a smooth transition to ISO 9001:2015 and ISO 14001:2015

If you’re heading to the A&WMA Annual Conference, stop by the panel discussion “ISO 14001:2015 Revision - Implementation Challenges and Experiences” on June 23 at 8am where our DQS Inc. ISO 14001:2015 Program Manager Gary McRae will be a panel speaker!

Visit our website for a free 2015 Revision Roadmap to guide your transition along with various other resources to aide your transition. Contact us for more information at dqsus.com or 800-285-4476.
The latter part of this month marks the midway point of the year, and our Annual Conference in New Orleans. I can’t believe how time flies. Many people like to take stock of the previous 12 months as the holidays approach, think about what they have accomplished, and maybe look back with a little regret about missing some things they felt certain to accomplish. My preference is to do that now, in June, while there is still time to course-correct, reprioritize, and meet goals.

For me, this is a challenging year. Combining work responsibilities, my involvement with A&WMA, and those people that I call family, it can be difficult at times to make everything work. I’m certainly not someone who should be giving advice on the topic, so I’ll focus on a pep talk instead, and then I will ask you all to fit in one more thing.

My daily schedule starts a little before 5:00 a.m. with a trip to gym. After working out, I head home for breakfast, get cleaned up, and I am typically in my office by 8:00 a.m. Some days, I am lucky enough to sneak lunch at my desk, or better still, run to our free employee dining room. Most days in the office wind down by 6:00 p.m., with me arriving home by 6:30 p.m. We do our best to eat dinner as a family, and then I help with homework until around 9:00 p.m. The kids go to bed by 9:30 p.m. I say hello to my wife and usually chat from 9:30–9:45 p.m. Then I try and fit in time for A&WMA and me. If you receive an e-mail from me at weird hours of the day or night, this is why. Typically, I’m in bed and ready to sleep by midnight. Then, I start over at 5:00 a.m.

The point of this isn’t to seek sympathy, although it will gladly be accepted for both me and my wife, but rather it is say that no matter how hectic your day, there is always time for something. I make phone calls during commutes. I rarely watch television. Conference calls are spent multitasking. But I know I am not much different than most of you, and I find time to fit in the high-priority items. We all have competing pressures, but we can all find time to do what needs to be done.

With that said, I’m going to ask each of you reading this message to contribute something to A&WMA. Why not submit a program idea, volunteer to speak at a Section or Chapter event, offer to host a student information session, run a webinar, write an article, or offer to present at an A&WMA event? We are an organization of contributors. Most of our members are not members simply because they enjoy our products and services, most of them are members because they like to engage and be part of something bigger. It truly changes the member experience.

Do it for the organization—support this group that you enjoy. Beyond that, do it for you. It is fulfilling and changes the experience of being part of the Association. The best part is that I bet most of you had some promise to yourself made last year during the holidays to volunteer more or be better about giving back. At the cost of my pride, I’m asking you to give back to us.

Find me at ACE in New Orleans, tell me you want to be involved. E-mail me, e-mail any Board member at any level, but find a few minutes in your day to give back to this Association. Don’t look back on 2016 in December wishing that you had and regretting you didn’t.
The connections that link environment, energy and health are as historic and direct as the 446 bridges that crisscross Pittsburgh, the city with more bridges than anywhere else in the country. The 2017 Air & Waste Management Association’s Annual Conference & Exhibition (ACE) will examine how leaders in industry, government, academia, and non-governmental citizen groups work together to improve community health and protect the environment. The Pittsburgh area is a great example of the amazing improvements in environmental quality and health that can occur when these groups are bridged together. Industry in this region has evolved to a diverse portfolio of energy suppliers, manufacturing plants, medical facilities and technology companies that are harnessing energy in sustainable and innovative ways.

Come join us as we advance the science of air and waste management and recognize the many bridges to environment, energy and health.
Later this month, the Air & Waste Management Association’s (A&WMA) Annual Conference & Exhibition (ACE) returns to New Orleans for the first time since 2006. From museums to restaurants, to world-famous festivals, there is no place quite like New Orleans, Louisiana (NOLA). Whether you are visiting the city for the first time or a regular visitor, there’s no shortage of things to discover. The following pages offer a preview of what attendees can expect inside the Crescent City and during A&WMA’s 109th ACE.
Bonjour! My name is Paul Algu. I am a native New Orleanian and member of the Local Host Committee for ACE 2016 being held this year in my hometown. From June 20-23, the best of New Orleans will be on display for A&WMA and I am excited to share my favorite spots to eat, drink, and celebrate in the Crescent City with you. Here are my top-five must-do activities when you come to New Orleans…

That’s all I have for now! As Vitality Committee Chair for A&WMA’s Young Professionals Advisory Council (YPAC), I will be publishing videos on the YP blog as we get closer to the conference, explaining some of the unique traditions we have in Louisiana, like why we eat red beans and rice on Mondays and say that we’re going to “make groceries.” When you visit, don’t be afraid to ask locals about “ya mama and ‘em” or why we can’t park on the neutral ground. We’ll be more than happy to tell you. Stay tuned to the YP Blog, YP Twitter (@airwasteyp), and the YPAC Newsletter for more updates from the Big Easy as #ACE2016NOLA draws closer!

1. Beignets—
   They’re fluffy, they’re famous, and they’re number one on my list of New Orleans must-dos. Whether at Café du Monde in the French Quarter or Morning Call in City Park (both are open 24 hours), there is never a bad time to enjoy three heavenly pillows of fried doughy goodness.

2. Visit the National World War II Museum—
   Consistently rated as one of the top museums in the world, the National World War II Museum opened in 2000 as the National D-Day Museum and was designated as America’s National World War II Museum in 2003. Boasting a six-acre campus with eight exhibit spaces, thousands of artifacts and oral histories, two restaurants, and a 4-D movie experience, the National World War II Museum is a must-see attraction for anyone who is planning a visit to New Orleans.

3. Sample local cuisine—
   New Orleans is not your typical American city. Hundreds of years of French, Spanish, British, and American influences commingling in a rich delta has lent itself to a haven for some of the best cuisine in the world. Do not be afraid to try everything! There are restaurants to suit every palate and budget and many are within walking distance from the conference hotel, the Hyatt Regency New Orleans. From gumbo file to filet mignon, and everything in between, we’ve got you covered.

4. Experience the Audubon Nature Institute—
   There’s an old saying in New Orleans to go down to the Audubon Zoo because “they all asked for you,” and by “you” we mean the whole family! Be sure to sample Roman Candy and climb Monkey Mountain, two things kids in New Orleans consider a rite of passage. In addition to the zoo, the Audubon Institute operates the Aquarium of the Americas and the Audubon Insectarium, making it the perfect way for families to spend a day in our fair city.

5. Ride a streetcar—
   You may know it as a trolley or cable car, but in New Orleans we call them streetcars. And for about a dollar and change they will take you across the city. Be forewarned, like many things in New Orleans, the pace is much more leisurely than some visitors might expect, but many locals will swear the quintessential New Orleans experience is a streetcar ride through stately oaks as over 300 years of local history waits for you to experience it.

Paul Algu is an environmental scientist with RTP Environmental Associates Inc. in New Orleans.
The Technical Program at ACE 2016 in New Orleans offers something for everyone. Whether you are looking for information on the status of the Clean Power Plan, figuring out how to comply with the latest MACT standard, wondering how to permit a new facility in an ozone non-attainment area, or train your young professionals on industrial processes, you’ll find it at ACE.

The 2016 Technical Program received more than 400 abstracts, resulting in 11 concurrent tracks held over three days, covering topics as diverse as new source review, zero waste systems, thermal treatment technologies, near-road air quality, mercury emission control technologies, fugitive dust, fenceline monitoring, atmospheric chemistry, and local climate action planning. A complete list of track sessions is available from the ACE website.

This year’s program also includes the 2016 Mini-Symposium, “Industrial Growth and Environmental Stewardship”. The mini-symposium will consist of a single track of sequential paper and panel sessions addressing issues facing industry on maintaining environmental progress while accommodating industrial growth, in line with the Annual Conference theme, “Unmasking the Industrial Renaissance.” Sessions on current U.S. Environmental Protection Agency (EPA) priorities, new source review updates, permitting in ozone non-attainment areas, permitting problems and solutions, and innovative permitting approaches, as well as panels on risk management plans and trends in citizen air quality measurements will be included.

For students and young professionals in attendance, there will be three panels, held under an umbrella title, “What’s That Thang?” This is a popular session from the Louisiana Section’s Annual Conference, where industry representatives explain how their processes work and vendors discuss common control devices and how they work. Industry representatives will give an overview of the industry/process, discuss common emission sources and regulatory challenges, and give a brief look at the future of that industry. Industries covered will include power generation, specialty chemicals, air separation, natural gas processing, and oil refining.

Whether you’re a seasoned professional or a young professional, an air head or a waste guru, the 2016 ACE Technical Program has something for you.

Karen Brignac is the environmental compliance manager in PPM’s Baton Rouge office. With more than 30 years of environmental experience both in industry and consulting, she is the Immediate Past-Chair of the Louisiana Section and Technical Program Vice-Chair for ACE 2016.
The 2016 ACE Technical Program will include an Oil & Gas Track that will focus on multimedia environmental issues and challenges in the exploration, production, and midstream sectors of the oil and gas industry in the United States. This track will include presentations by environmental regulatory agencies, oil and gas operating companies, environmental interest groups, environmental consultants, and attorneys, and will consist of 10 panel sessions that will begin on Tuesday afternoon (June 21) and run through Thursday afternoon (June 23).

1. **Oil & Gas Keynote**—This panel will include John Blevins (Director, EPA Region 6, Compliance Assurance & Enforcement Division), Michael Celata (Regional Director, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region), Thomas Harris (Secretary, Louisiana Department of Natural Resources), as well as invited speakers from an oil and gas industry association and a state environmental agency, and will provide a high-level overview of the current environmental issues in the oil and gas industry.

2. **Offshore Oil & Gas Air Quality**—This panel will include Greg Southworth (Offshore Operators Committee), Holli Ensz (Bureau of Ocean Energy Management), Ralph Morris (Ramboll Environ), Brian Boyer (BTGap), as well as invited speakers from EPA and other federal agencies. Topics will include air quality programs in the Gulf of Mexico and Atlantic Seaboard, the offshore oil and gas industry, permits, and compliance.

3. **Onshore Oil & Gas Air Quality Testing and Measurements**—This panel will include Mark McMillan (Colorado Air Pollution Control Division), Jeff Voorhis (HY-BON/EDI), Landon Phillips (DataWing Aerial Analytics), Jon Morris (Providence Photonics), and Nathan Linhardt (Waldemar S. Nelson & Co). Topics will include the Colorado emissions testing program, finding and reducing natural gas leaks, optical gas imaging, use of unmanned aerial vehicles (drones), and stock testing.

4. **EPA/National Oil & Gas Air Quality Issues**—This panel will include Bruce Moore (EPA Office of Air Quality Planning and Standards), Ramón Alvarez (Environmental Defense Fund), Anthony Marchese (Colorado State University), Jim Kibler (AGL Resources), and Ramesh Narasimhan (ERM). Topics will include issues pertaining to methane emissions, Quad-O standards of performance, ozone NAAQS, and greenhouse gases.

5. **Oil & Gas Waste and Water Management**—This panel will include George King (Apache Corporation), Dan Mueller (Environmental Defense Fund), and Barbara Denson and Ryan Leatherbury (Weston Solutions), as well as an invited speaker from an oil and gas company and a former state regulator. Topics will include an overview of water and waste management regulations, naturally occurring radioactive materials (NORM), water management in hydraulic fracturing, and baseline water sampling programs.

**New for 2016:** Oil & Gas Track

by Michael O. Waguespack
A&WMA Critical Review
Hungry for more information relating to this topic? Then consider starting your day on Tuesday by attending the 46th Annual A&WMA Critical Review Presentation, entitled “Air Emissions from Oil and Gas Operations in the United States” by Dr. David T. Allen, University of Texas, Austin.

6. Offshore Oil & Gas Environmental Assessments and Compliance—This panel will include Evan Zimmerman (Offshore Operators Committee), Alex Alvarado (Project Consulting Services), as well as invited speakers from the Bureau of Ocean Energy Management, Bureau of Safety and Environmental Enforcement, and National Oceanic and Atmospheric Administration. Topics will include offshore oil and gas operations, environmental assessments, environmental compliance, and protection of sensitive areas.

7. Midstream Oil & Gas—This panel will include Richard Leonhard (Project Consulting Services), James Eberwine (R. Christopher Goodwin & Associates), Anica Haynes (Geosyntec), as well as invited speakers from a midstream operating company and the U.S. Army Corps of Engineers. Topics will include the midstream oil and gas industry, typical projects, ecological and cultural features of these projects, and permits.

8. Oil & Gas Hydraulic Fracturing—This panel will include Charlotte Batson (Tuscaloosa Energy), Carla Kinslow (Rimkus), Lisa Jordan (Tulane Environmental Law Clinic), as well as invited speakers from the oil and gas industry and state regulatory agencies. Topics will include a description of the hydraulic fracturing process, viewpoints of the industry and a state regulator, community outreach activities, and the opposition to the use of this technology.

9. Oil & Gas in Wetlands—This panel will include Amy Powell (U.S. Army Corps of Engineers), Clay Bryant (Project Consulting Services), Andrew Harrison (Harrison Law Firm), Mike Benge (Delacroix Corporation), and Ken Nelson (Waldemar S. Nelson & Co.). Topics will include Sections 10 and 404 jurisdictional waters, Section 408 permits, compensatory mitigation, landowner insights, and the challenges of designing and constructing in the wetlands.

10. Oil & Gas Environmental Litigation—This panel will include Betsy Daschbach (Jones Swanson), George Arceneaux (Liskow & Lewis), Anthony Marino (Slattery Marino), as well as an invited state legislator and invited attorney. Topics will include oil and gas legacy litigation, land loss litigation, offshore environmental litigation, and a legislative perspective on this litigation.

Each of these panel sessions will include a question and answer session. We anticipate that the Oil & Gas Track will attract environmental professionals working inside this industry, as well as many professionals who are interested in learning more about the oil and gas industry and its environmental issues and challenges. Our panelists will provide various perspectives on these issues and they are excited to participate in this conference. We hope that many of you will attend these sessions…and ask questions!

Michael O. Waguespack, P.E., is a senior environmental engineer with Waldemar S. Nelson and Co. in New Orleans.
ECI, or Environmental Challenge International, is a student team competition in which students prepare and present an optimal solution to a complex “true-to-life” environmental problem. Student proposals should include an understanding of current environmental issues, be representative of the conference location, and may require a multi-disciplinary solution. The competition is open to all undergraduate students, graduate students, Ph.D. candidates, and recent graduates in the environmental field. Teams consist of 3 to 5 members. Conference attendees are invited to watch (and perhaps even participate) as the teams present their solutions to this year’s problem during A&WMA’s Annual Conference.

The Environmental Problem
The town of Quaintville is located in a beautiful coastal parish in Louisiana. For decades, it has drawn those who seek deep blue skies, the clear and calm waters of the Gulf of Mexico, and the sweet sounds of nature. Recently, the town was even named one of the top places to vacation and eat in Vittles and Vino magazine. What was once a quiet town is now seeing more and more tourism because of its pristine natural beauty and burgeoning elegant culinary scene. However, not all are welcoming of tourism. Many believe it’s simply a fad and will soon fade and many of the “old” locals want to ensure that the town can sustain the recent influx of high-priced rentals and the slowly escalating prices of goods.

Many of those who live in Quaintville are, or have been, employed within the fossil fuel industry that has slowed down in recent years. Many thought they’d soon have to leave the area or relocate to regions where their skills can be utilized so that they can make a living. Just recently, the Mayor of Quaintville announced that ReFuel, an energy company, has expressed interest in constructing and operating a natural gas liquefaction (NGL) facility in Quaintville. Those who once feared the likelihood of having to leave their beautiful quaint town are fully supportive of what could provide steady employment with well-paying jobs that would utilize existing skilled labor and provide a sustainable industry.

The proposed project is located within 20 miles of a Federal Class I area, and would require an approval be obtained by the Federal Land Manager. The proposed site is located in an old dock and warehouse area, which was used by an oil well drilling company to refurbish drill pipe and has long been abandoned. ReFuel currently owns and operates another facility in the area and has experienced issues with the local and national non-governmental organizations (NGOs). The local NGOs have organized to oppose the construction of the NGL facility in Quaintville, citing that the project is not needed to meet regional energy demands. The group is opposed to exporting fuel to a foreign country and considers NGL facilities to be major emitters of greenhouse gases.
The Louisiana coast and the town of Quaintville is one of the most pristine natural estuaries in the nation. An area that was once plagued by industry has rebounded and is home to some of the most diverse species in the area. Species that were once threatened now thrive, land that was once bleak and industrial is now blossoming with beauty, and thousands travel to the area each year to experience this amazing natural setting.

A key component of this project is that the company has to consider whether it is more economically and environmentally beneficial to have power provided from the electrical grid or by constructing power turbines on site. Using the grid will require that additional transmission facilities be built to bring the power to the site. The coastal parish is currently in attainment with the 75-parts per billion (ppb) ozone standard. However, as of October 2015, the ozone standard was lowered to 70 ppb and the area monitors are hovering just below 70 ppb. If the monitors show an average ozone reading about 70 ppb, the area could be designated as nonattainment, and then emission reduction credits will need to be obtained and lowest achievable emission rate technology will have installed.

There are mixed emotions among the town’s residents. Many are savoring the new hip opportunity to create an eclectic artsy community thriving on the area’s natural beauty and culinary uprising. Conversely, those who have lived in the area and have reaped the rewards of the other fossil fuel industries want to maintain that existing lifestyle and see it as a sustainable future for generations to come. The Mayor of Quaintville, knowing that it is an election year for him and two of the five council members (who are all employed within the fossil fuel industry), isn’t sure what decision might make the most sense to sustainability of Quaintville, and importantly, his re-election success.

**The Student Team Assignment**

The Mayor of Quaintville and the divided council has hired you, a team of renowned and unbiased environmental consultants, to identify and educate them on alternatives that will minimize environmental impacts of the ReFuel NGL plant. More importantly, they are looking to you for guidance regarding whether they should support the project at all and if there is a way for the NGL plant to exist without impacting the natural environment and the potential up-and-coming culinary scene. The mayor and council want a solution that is environmentally and socially responsible, while also promoting economic growth within Quaintville that meets their voters’ desires. *em*

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*Michael D. Vince* is president of Clear Skies Environmental, LLC, Port Allen, LA.
The energy supply infrastructure in the United States has been changing dramatically over the past decade, leading to changes in air emissions from oil and natural gas supply chain sources. In many source categories along these supply chains, small groups of devices or sites, referred to as super-emitters, contribute a large fraction of emissions. Effective emission reductions will require technologies for both identifying super-emitters and reducing their emission magnitudes.
In the 46th Annual A&WMA Critical Review, Dr. David T. Allen addresses changes in greenhouse gas, criteria air pollutant, and air toxics emissions from oil and gas production activities that are a result of recent changes in energy supplies and use in the United States. The full-length review appears in the June 2016 issue of the Journal of the Air & Waste Management Association (JA&WMA). A brief summary appears below. (All references herein are found in the full-length review.)

**Emissions from Oil and Gas Operations**

The energy supply infrastructure in the United States has been changing dramatically over the past decade. Increased production of oil and natural gas, particularly from shale resources using horizontal drilling and hydraulic fracturing, recently made the United States the world’s largest producer of both natural gas and oil. The U.S. Energy Information Administration has projected that increased domestic production of oil and gas will persist for decades and that the United States may become a net energy exporter over the next two decades.

As production of oil and gas in the United States has increased over the past decade, estimated magnitudes of emissions of criteria air pollutants, specifically Volatile Organic Compounds (VOCs) and nitrogen oxides (NOx), reported through the U.S. Environmental Protection Agency’s National Emission Inventory (US EPA, 2015a), have increased significantly. Between 2005 and 2011, the year of the most recent National Emission Inventory, VOC and NOx emissions from petroleum and related industries increased by 400 percent and 90 percent, respectively, due to both increased activity, as well as more comprehensive reporting. In contrast, estimated emissions of greenhouse gases, primarily carbon dioxide and methane, from the oil and natural gas sector have been decreasing over the same period (US EPA, 2015b), due, in part, to a different distribution of sources and emerging emission regulations in oil and gas production activities.

**Bottom-Up, Top-Down Emission Assessments**

The accuracy and completeness of inventories of air emissions from oil and gas supply chains has been the focus of multiple measurement and analysis studies over the past four years, and the understanding of these emissions has progressed significantly since a special two-part series, dedicated to air emissions from shale oil and gas exploration and production, was published in *EM* in March and June 2012. Some studies use atmospheric concentrations of pollutants to infer emissions (using atmospheric models and assumptions), in a process referred to as a “top-down” analysis. For example, the difference between average concentrations of a pollutant upwind and downwind of a region made by an aircraft can be used, with the ventilation rate of the region, to estimate regional emissions. Top-down emission estimates can have uncertainties due to incomplete atmospheric mixing, variable mixing heights, and changes in emissions or winds during the time between upwind and downwind measurements.

Other studies have estimated emissions by multiplying an average emission measurement for a device or operation by the number of times that emission occurs on the national scale. Generally, the emission measurement is referred to as an emission factor (EF), and the data used to scale up the emissions is called the activity factor (AF). Emissions are calculated as:

\[
EF_i \times AF_i = ER_i
\]

where:
- \(EF_i\) = emission factor for region \(i\)
- \(AF_i\) = activity factor for region \(i\)
- \(ER_i\) = resulting emission rate total for region \(i\)

Emission inventories estimated in this way are often referred to as “bottom-up” emission estimates. Bottom-up emission estimates can have uncertainties due to inaccurate activity data, inaccurate emission factors, malfunctioning or improperly operated equipment, and missing sources.
A variety of comparisons have been made between bottom-up and top-down measurements and recent reviews have concluded that bottom-up inventories underestimate or omit sources of methane emissions. For example, Brandt, et al. (2014) report that missing or underestimated sources of methane emissions in the U.S. national emission inventory total 14 Tg/yr (7–21 Tg/yr), which is approximately 50 percent (25–75 percent) of the total anthropogenic emissions for the United States.

In general, these differences have been attributed to missing or under-estimated emissions from oil and gas operations. To identify the causes of these underestimates, a number of field studies have been performed, and an emerging consensus from these studies is that a small group of sources contributes a large fraction of emissions. Collectively, these sources have been referred to as “super-emitters”.

**Super-Emitters**

The concept of a “super-emitter” classification in emission inventories is not new. It has been known for decades that the highest emitting 10 percent of the passenger car fleet in the United States contributes roughly 50 percent of passenger vehicle emissions (Stedman, 1989; National Research Council, 2001). The situation for many source types in the petroleum and natural gas supply chains is analogous. For example, approximately 50,000 gas wells in the United States vent during a process known as liquid unloading; a small fraction of these venting wells, perhaps 3–5 percent, likely account for half of unloading emissions (Allen, et al. 2015b). Similarly, multiple studies (Prasino, 2013; Allen, et al., 2015a; Gibbs, 2015) have found that a small sub-population of the devices that use gas pressure to control process units on oil and gas production sites (pneumatic controllers, the largest source of methane emissions in the petroleum and natural gas supply chains) dominates emissions. Allen, et al. (2015a) estimated that 20 percent of pneumatic controllers in a national sampling of natural gas sites account for 95 percent of pneumatic controller emissions, and Gibbs (2015) found that 3.5 percent of controllers accounted for 73 percent of controller emissions at sites sampled in Oklahoma.

The causes of super-emitters in the oil and gas supply chains are not fully understood, but analogies with vehicle emissions can again provide some insights. Large numbers of vehicle tests have revealed that, while there are some vehicles that are more likely than others to become “super-emitters,” the way in which a vehicle is operated and maintained often plays a critical role (National Research Council, 2001). Similarly, in the petroleum and natural gas supply chains, there are some...
sources that are more likely than others to become super-emitters, but operational practices also play a role. For example, in the source category of liquid unloadings, mature wells with low reservoir pressure and high rates of liquid production are more likely to have high unloading emissions, leading to a geographical concentration of unloading emissions. In contrast, high emissions from pneumatic controllers and compressors (Allen, et al., 2015a; Harrison, et al., 2011) have been attributed to devices not operating as designed, and are distributed throughout the United States.

Another way in which super-emitters have been defined is facility or site based, rather than equipment based. Studies of site-by-site emissions have pointed to a skewed distribution of emissions among sites, with a small number of sites accounting for a large fraction of emissions. For example, Mitchell, et al. (2015) made measurements downwind of natural gas gathering and processing facilities and normalized methane emissions by total gas throughput at the sites. Across all sites, emissions averaged 0.20 percent of throughput for gathering facilities, however, some facilities had emissions that were in excess of 10 percent of gas throughput, and 30 percent of the facilities accounted for 80 percent of the emissions. Zavala, et al. (2015a) reported that 15 percent of the natural gas supply chain sites with the highest normalized emissions, in the Barnett Shale region (North-Central Texas), accounted for 77 percent of the region’s methane emissions.

Super-emitters can play an important role in reconciling top-down and bottom-up emission inventories, as illustrated by analyses performed in the Barnett Shale oil and gas production region. In 2013, a large number of investigators performed coordinated aircraft and vehicular measurements of methane emissions in the Barnett Shale oil and gas production region, providing one of the richest datasets available for comparing top-down emission estimates and bottom-up emission inventories. A top-down estimate of emissions from oil and gas operations was approximately one third larger than a bottom-up analysis of emissions for the region (Karion, et al., 2015; Lyon, et al., 2015). When super-emitters were accounted for, however, the top-down and bottom-up emission estimates converged (Zavala, et al., 2015b).

While many of the most recent measurements and analyses of emissions along the oil and natural gas supply chains have focused on methane emissions, top-down emission estimates greater than bottom-up inventories have also been reported for VOCs. Some of these studies (e.g., Zavala, et al., 2014) have been in oil and natural gas production regions, in locations analogous to many of the methane emission studies, but the most extensive studies of VOC emissions from petroleum and natural gas supply chains have been done in the Houston-Galveston region of Southeast Texas, where petroleum refining and chemical manufacturing sources are extensive.

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**Give Credit Where Credit is Due**

Nominate Someone for A&WMA’s Honors and Awards

Nomination deadline: November 1, 2016

**2017 Awards:**

- Frank A. Chambers Excellence in Air Pollution Control Award
- Fellow Grade of Membership
- S. Smith Griswold Outstanding Air Pollution Control Official Award
- Charles W. Gruber Association Leadership Award
- Honorary A&WMA Membership
- Richard Beatty Mellon Environmental Stewardship Award
- Outstanding Young Professional Award
- Lyman A. Ripperton Environmental Educator Award
- Richard C. Scherr Award of Industrial Environmental Excellence
- Richard I. Stessel Waste Management Award

Go to [www.awma.org/about-awma/honors-awards](http://www.awma.org/about-awma/honors-awards) for descriptions and criteria.
Beginning with measurements done in 2000, it had been observed that ratios of hydrocarbons to NOx in industrial plumes were consistently factors of 2-15, and in some isolated instances even a factor of 50 or more higher than the ratios reported in the inventories (Daum, et al., 2001). These findings led to multiple years of efforts to identify the sources of missing or underestimated emissions. In some cases, highly elevated hydrocarbon-to-NOx ratios, compared to ratios in the emission inventories, can be due to emission events associated with process start-ups, process shut-downs, process upsets, and other causes (Murphy and Allen, 2005).

In addition to large episodic emission events, continuous or nearly continuous sources of under-estimated emissions have been identified as sources of the discrepancy. For example, most refineries and large chemical manufacturing operations...
Well Completion Flowback
Completion is the process of making a well ready for continuous production. Specifically, after drilling and fracturing, before natural gas production can begin, the well must be cleaned of sand and liquid of various types that had been injected into the well. The recovery of these liquids is referred to as a flowback, and gas, including methane, can be dissolved or entrained in the flowback liquids. Some of the methane in the liquids can be sent to sales or emission control devices, but some can be emitted. The animation presented here shows the steps associated with a completion flowback in which equipment has been put in place that reduces methane emissions, compared to a completion in which all of the methane in the flowback is allowed to vent into the atmosphere. There are multiple equipment configurations possible for reduced emission completions (REC). This animation shows the steps associated with one type of REC.

Image courtesy of Dr. Allen and the University of Texas at Austin.

have large capacity flares designed to combust emergency blowdowns. In many cases, these flares are also used to combust relatively small flow rates of vent gas on a continuous or near-continuous basis. In full scale tests of flare operation, Torres et al. (2012a,b) found that large capacity flares, operated at low flow, have narrow operation ranges in which high combustion efficiency and low smoke formation are both achieved. If a flare operates outside this narrow operating range, excess emissions can result.

Summary and Recommendations
Moving forward it may be necessary to move away from single emission factors for source categories in the oil and gas supply chain (see Equation 1) and to utilize separate emission factors (and activity counts) for super-emitters. Emissions could then be estimated using the approach shown in Equation 2:

\[ EF_{i,\text{super-emitter}} \times (f) \times AF_i + EF_{i,\text{non-super-emitter}} \times (1-f) \times AF_i = ER_i \]  

(Equation 2)

where:

- \( EF_{i,\text{super-emitter}} \) = emission factor for super-emitters in region i
- \( EF_{i,\text{non-super-emitter}} \) = emission factor for non-super-emitters in region i
- \( AF_i \) = activity factor for region i
- \( f \) = fraction of the activity factor attributed to super-emitters
- \( ER_i \) = resulting emission rate total for region i

Because super-emitters can be relatively small percentages of sources, accurately characterizing the fraction of super-emitters in the population (f) and the average emission rate for the super-emitters may necessitate large sampling programs to determine emission factors. Challenges moving forward will be understanding the causes of super-emitters and reducing their emission magnitudes. Work done to date suggests that equipment malfunction and operational practices can both be important. As improved emission estimates, accounting for super-emitters, are being developed, ongoing top-down measurement studies will continue to be important in evaluating the performance of existing inventories. em

Reference
As young professionals (YPs) transition through the various phases of their career, learning how to navigate the ever-changing, fast-paced workday can present new challenges, lessons, and opportunities for personal and professional growth. The most successful professionals have walked the same paths and navigated their way to successful careers with the mentorship and guidance of professionals before them. For YPs working their way toward successful careers, learning from other professionals helps them advance their careers quickly and avoid some of the hard lessons.

The 2016 Annual Conference & Exhibition Local Host Committee hopes you will join us for the 1st Annual Executive Forum Luncheon to be held on Wednesday, June 22, 2016. This new event will provide attendees with a unique opportunity to learn from successful professionals on how to grow their careers. Topics will include: What certifications have been most helpful to advancing your career? What are your thoughts about work–life balance? What was a defining moment in your career? What do you look for in someone to promote? And what’s the best advice you have been given? It is seldom that you get a chance to directly ask a professional how they were able to navigate certain issues within their career.

A panel of distinguished professionals from different parts of the environmental field will provide invaluable insight into the highlights of their careers. Representatives from industry, consulting, legal, and the regulating perspective will help show the differences among the specific areas. Each member of the panel will discuss their individual approaches on how to handle major decisions, reaching goals, working in changing industrial climates, and helpful advice for YPs or those wishing to make a career change. This will be followed by questions from the floor.

The panelists will provide examples of different career paths and opinions of how to develop and achieve career goals, and an experience that encourages professional and personal growth. Invited speakers include Michelle Gehring (Coterie Environmental), Chris Nelson (3M Company), Michael Vince (Clear Skies Environmental — Former State Regulator), and Greg Johnson (Liskow & Lewis). This event will allow professionals the chance to share their experiences and offer encouragement to aspiring YPs. It will also allow YPs the unique opportunity to realize that so many before them have had similar challenges and questions, and they have gone on to achieve greatness.
This forum luncheon format has been held with great success at Association Section and Chapter events, but this is the first time it will be held in conjunction with the Annual Conference. It is sure to be a highlight for those able to attend. Do not miss your chance to experience this new event, start building new relationships, and learn strategies for moving your career forward and developing into the best “you,” professionally and personally. Perhaps in 20 years’ time when you are asked “what was the defining moment in your career?” you will think back to ACE 2016 in New Orleans and recall sitting in a room with four panelists who changed your path and encouraged you to be the best “you.”

This event will be held on Wednesday, June 22, 2016. Advance registration is required, and luncheon is included.

Jessica Miller is the air permitting renewals coordinator at ExxonMobil’s Baton Rouge, LA, complex. With more than six years of environmental experience both in industry and consulting, she is also Chair of the Louisiana Section YP Group and the YP Program Chair for A&WMA’s 2016 Annual Conference.

Jennifer Tullier is an environmental scientist at CK Associates in Baton Rouge, LA. With more than 15 years of environmental consulting experience, she is also Vice-Chair of the Louisiana Section, Immediate Past-Chair of the Young Professional Advisory Council, and General Conference Vice-Chair for A&WMA’s 2016 Annual Conference.
This article highlights recent research on the analysis and recovery of rare earth elements from coal and coal by-products.

What Are Rare Earths?
Rare earths are chemical elements found within the Earth’s crust that are vital to many modern technologies, including consumer electronics, computers, communications, health care, clean energy, transportation, and environmental mitigation. A rare earth element is one of a set of 17 chemical elements in the periodic table, specifically the 15 lanthanides, as well as scandium and yttrium.
Coal is a valuable resource. The United States has an estimated 250-year supply of coal, and generates between 30 and 40 percent of its electricity through coal combustion. Approximately 1 billion metric tons (Gt) of coal is mined annually in the United States, although the 2015 total will likely be closer to 900 Mt. Most of the coal that is mined is burned for power generation, but substantial quantities are also employed elsewhere. Coal has a positive impact upon many industries, including mining, electricity generation, rail transportation, manufacturing, chemical, steel, activated carbon, and fuels.

Everything that is in the Earth’s crust is also present within coal to some extent, and the challenge is always to utilize abundant domestic coal in a clean and environmentally friendly manner. In the case of rare earths, these valuable and extraordinarily useful elements are present within the abundant coal and coal by-products (e.g., ashes, coal preparation wastes, mine by-products, and gasification slags) produced domestically and worldwide.

All of these coal combustion materials can be viewed as potential sources of rare earth elements. Most of the common inorganic lanthanide compounds, such as the phosphates found in coal, have very high melting, boiling, and thermal decomposition temperatures, allowing them to concentrate in combustion and gasification by-products. Furthermore, rare earths have been found in elevated concentrations in the strata above and below certain coal seams.

The U.S. Department of Energy’s National Energy Technology Laboratory (NETL) recently initiated research for the determination and recovery of rare earths from abundant domestic coal by-products. The NETL Rare Earth EDX Database is a resource for rare earth information relating to coal and coal by-products. Users can download datasets containing specific information on samples and detailed reports related to rare earth analyses. Many other research organizations have also initiated efforts for the determination and recovery of rare earths from unconventional sources such as coal by-products.

Much of the recent research on coal utilization in the United States has focused on the capture of pollutants, such as acid gases, particulates, mercury, and greenhouse gases like carbon dioxide. The possible recovery of rare earth and other critical elements from abundant coal and coal by-products is an exciting new research area, representing a dramatic paradigm shift for the coal industry.

Additional data are needed on the rare earth contents of coals and coal by-products in order to determine the most promising potential feed materials for extraction processes. Future work will focus on the characterization of coals and coal by-products, and the separation/partitioning methods for rare earth recovery. Recent publications pertinent to rare earth element characterization and recovery are provided [here](mailto:).
Moving from a ‘Risk’ to ‘Impact’ Paradigm is Critical to Achieve Environmental Justice

This article discusses a new approach to replace cumulative risk assessment.
Traditional risk assessment (TRA) as currently practiced in environmental and other related regulatory programs at the federal, state, and local levels is designed primarily to evaluate health risks from a single contaminant or source at a time, often in one specific medium (e.g., air or water). In some cases, groups of related contaminants can be considered together, or aggregated as with cross-media or cross-source exposures.\textsuperscript{1,2} Some community groups and scientists have criticized this approach as failing to adequately consider the totality of health risks facing an individual community.\textsuperscript{3}

TRA is based on the concept of establishing risk thresholds that are considered either “safe” or —when there is no evidence and health status of the people living in a community.\textsuperscript{6} In such situations, the TRA method has a limited ability to quantify the resulting cumulative risk because it requires extensive characterization of the chemicals present, the routes and levels of exposure, and the dose-response relationship for hundreds of chemicals for which data are neither currently available nor likely to be generated in the foreseeable future.

In addition, the methodology does not exist to fully integrate geographic (e.g., proximity to sources), intrinsic (elderly, sex, health status), and extrinsic (socioeconomic status) factors into TRA.\textsuperscript{9} These limitations have significantly contributed to the continued existence of disproportionately burdened or disadvantaged and unhealthy communities across the country, even in locations where the overall regional environmental quality may have steadily improved.\textsuperscript{10}

Hence, recently in California, in addition to TRA, a community- or place-based cumulative impact (CI) assessment approach has been adopted and applied to some resource allocation programs aimed at investing in and rebuilding healthy communities. This approach substitutes the traditional concept of “risk” with the broader concept of “impact”.\textsuperscript{11}

**Impact vs. Risk**

Many use the terms risk and impact synonymously, suggesting that they describe the same outcome. However, the term risk means a probability of an injury or loss, while impact in this

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**What Is Environmental Justice?**

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

*Source:* U.S. Environmental Protection Agency
context refers more broadly to stressors that reduce the potential for health and quality of life. In the two hemispheres of human and environmental health, risk assessment suggests a quantitative approach to evaluating injury or loss, whereas impact assessment implies integrating both quantitative factors and those less readily measured or estimated, but that are known to be important to adverse outcomes.\textsuperscript{1,12}

Over the past decade, as can be seen on their respective web sites, some agencies have mapped cumulative risk primarily from air emissions.\textsuperscript{13} These include cumulative air emission risk analysis by Minnesota Pollution Control Agency, multiple air toxics exposure study by South Coast Air Quality Management District, and community air risk evaluation by Bay Area Air Quality Management District. Collectively, these efforts demonstrate a shift toward a “cumulative” methodology that integrates a multi-source, multi-chemical paradigm to estimate risk. This shift has advanced the field of risk assessment and served as a valuable foundation upon which to expand and develop the concept of cumulative impact that also considers changes in the quality of life.

The limitations of TRA to ascertain cumulative impact (CI) in any particular area or community affected jointly by pollutants in air, water, and soil have hindered agencies at the local, regional, and state levels in initiating area-specific actions to improve the health and resilience of a community, and have contributed to an atmosphere of mistrust between many regulatory agencies and communities. Regulators often focus on risks from individual chemicals, sources, or policies; communities also may focus on individual sources or chemicals, but firmly in the context of what they perceive as an unacceptable backdrop of exposures and illnesses. This set of discrepancies is at the heart of the environmental justice movement.\textsuperscript{10}

\textbf{CalEnviroScreen}

To bridge the divide between TRA and community concerns, multiple institutions are pursuing alternate approaches to evaluate CI.\textsuperscript{15-17} Community-scale CI assessment approaches use scientifically justifiable, quantitative, and semi-quantitative methods that permit comparisons between communities or geographic areas. One such approach—CalEnviroScreen developed by CalEPA’s Office of Environmental Health Hazard Assessment—facilitates the relative ranking of communities across the state, thus providing a snapshot of existing conditions across a wide variety of stressors.\textsuperscript{15}

The CalEnviroScreen model integrates 19 indicators representing: exposure to air pollution, pesticides, and drinking water contaminants; environmental effects resulting from the presence of different types of noxious sources (e.g., solid waste and cleanup sites, hazardous waste facilities) in the vicinity; and sensitive populations and socioeconomic factors (e.g., asthma, low birth weight, poverty, unemployment) in the area. The two sets of maps illustrated in Figures 1 and 2 from the Bakersfield area in central California and San Bernardino area in southern California show the distribution of the census tracts in the top 10 percent, representing the most burdened for each of the four components and how these tracts shift when combined together to show those tracts that score higher for the CI.

In the first set of maps of the Bakersfield area (Figure 1), there are 106 census tracts in total. Among these, 31 tracts score in the top 10 percent for exposure (A), 3 for environmental effects (B), 26 for sensitive population (C), and 24 for socioeconomic factors components (D). However, as seen in the fifth map in the series (E), 29 tracts score in the top 10 percent for the CI when the scores of these tracts are combined according to the model used in the CalEnviroScreen. In the second series of maps of the San Bernardino area (Figure 2), the corresponding numbers are 175, 56, 5, 34, 38 and 53 tracts, respectively.
The scoring system also allows comparisons between communities with the same or similar score to better understand the relative contributions of individual indicators, representing factors that influence the CI in a community. This ability to prioritize or rank communities based on CI indicators enables assessors to more effectively represent the complex relationships between health outcomes, psychosocial stressors, and environmental exposures. The momentum to include CI assessment in the decision-making process is building across the country and newer approaches are being developed and introduced.

Utility of the CI Approach

In California, census tracts that are in the top 25 percent of the CalEnviroScreen scores are designated as “disadvantaged communities” for purposes of resource allocation or investment. The California Legislature used the CI framework to incentivize investment in disadvantaged communities with a specified percentage of the greenhouse gas reduction fund generated by the cap-and-trade program. This approach is noteworthy and represents a model that could be followed elsewhere. CI assessment at a local or regional level is also viewed as critical since most of the growth planning, siting, and permitting decisions take place at this level.

Some examples of actions that are being guided by CI considerations in communities include:

- Placing alternate buffer zone restrictions for new buildings such as homes, daycare centers, hospitals, or schools from sources such as agricultural fields, refineries, oil and gas operations, landfills, freeways, or ports.

- Modifying permit conditions such as by restricting the days and timing or methods of pesticide application near sensitive sites to reduce pesticide drift exposure and public concerns.

- Focus efforts to ensure compliance with existing regulations in communities with CI issues, including compliance assistance for businesses, improved public complaint tracking systems, multi-agency coordination, and targeted enforcement.

- Investing in job growth, transit assistance, affordable housing or health care in communities that score high for the socioeconomic factors and sensitive population components.

- Establishing alternate area-specific risk thresholds for new and existing sources.

Besides state-level efforts, such actions can also be pursued at a city level through city ordinances or through local governments because of the scale of variability involved, the number of factors contributing to CI in a given area, and the higher level of jurisdictional, as well as independent authority that can be exercised. Some business groups have argued that the identification of disadvantaged or unhealthy communities based on CI could lead to “redlining” those areas and could potentially lead to their economic isolation. However, this opinion has never been voiced nor endorsed by any of the community groups. In fact, many of the communities have asked for such delineation so that a multitude of actions such as those listed above can be pursued at the local level.

Irrespective of the debate on precisely how it should be integrated into decision-making, CI assessment provides an additional layer of information beyond TRA, leading to more informed decision-making. Although the two tools are complementary in being the twin scientific bases for shaping healthier communities in any neighborhood, achieving environmental justice will depend primarily on reducing cumulative impacts.

Acknowledgment

The authors are thankful for the support provided by Walker Wieland in creating the maps used in Figures 1 and 2, the valuable comments of Dr. Gina Soloman, Deputy Secretary for Science at CalEPA, and to the late Dr. George Alexeeff who had the vision to initiate and lead the cumulative impacts program for over seven years.
References


In Next Month’s Issue...

Reducing Carbon Emissions from Power Generators
The July issue will look at the current state of alternative approaches and technologies for reducing carbon dioxide emissions from power generation.

Also look for...
Asian Connections
Washington Report
Canadian Report

…as well as a summary of the 2016 Coordinating Research Council’s Air Quality Research Needs Workshop
How to Deliver a Killer Software Demo

Software demos are a key piece of the due diligence puzzle, and can make or break a sale. Sitting through several daylong demonstrations of environment, health, and safety (EH&S) software solutions is demanding, even for a seasoned professional. Why is one software demo day informative and enjoyable, and another exhausting? You might be surprised to learn that the success of the demo has little to do with the software!
I am completing an EH&S software evaluation and selection assignment. My client's existing custom-developed software is built using older technology tools and does not meet today's needs, or projected future needs. Hence, the client decided to investigate several enterprise and mid-tier integrated EH&S solutions.

Like many companies, my client does not allow “sole source” software selection and requires multiple vendor quotes. This means gathering information on software and company capabilities, interviewing reference customers, and, of course, participating in comprehensive software demos as part of the selection process. The team received software demos from four vendors, each with very different offerings and capabilities. The demos ranged from informative and enjoyable to exhausting.

**Demo Killers**

There are many ways to kill a demo, even with a great software product. The following list of “demo killers” can quickly move your software solution at the bottom of the prospective client list.

**Don’t Prepare**

Assume that the software speaks for itself. The only thing we need to know is when and where to show up. And don’t worry about checking the Wi-Fi or Internet connections; we always have a portable Wi-Fi “hotspot” we can use.

**Dismiss Key Needs**

Hey, the software is fantastic, and our customers love it, so let’s give our standard demo. We will show the same features and capabilities that we always do. If a prospective customer requests to see specific software features, ignore this request, because each prospect thinks that they are special—but they are not. They just seek attention.

**Go Off Script**

Don’t stick to the demo script or feature list that the customer provided. If we get through the script, fine. But we have some really cool features that our customers like, and we are proud to show you—whether you need them or not.

**Talk Too Much; Do Not Listen**

We have a long list of software features and capabilities, plus a fantastic team. Our customers love us—or we think they do—and we have only a short time to do an information “core dump.” If you ask a question, we provide a 15-minute response that does not answer your question; we must stick to our selling points. And did we mention how configurable, flexible, extensible, [insert other adjectives here], and wonderful our software is?

**It’s Not about the Audience**

The audience is here to see our fantastic software, and this is our time to shine! There is no need to capture their attention, or to engage in a *dialogue*—a conversation among two or more persons; an exchange of ideas or opinions. It’s OK if we lose control and allow multiple, overlapping conversations. If people work on their computers or smartphones, or leave the room… we will plow through our demo.

**Scroll Too Quickly; Move the Cursor a Lot**

To make good use of time, we scroll quickly through the software so that the audience cannot see the features important to her/him. We shake the mouse to make the cursor jitter, as it’s much more annoying than using a laser pointer or an oversized cursor.

**Bash the Competition**

To make our company stand out, we make disparaging remarks about the competition, mentioning them by name. We are “the leading EH&S software provider,” so who cares what we say about others?

**Apologize**

Our apologies will offset a poor demo, imperfect software, lack of preparation, slow Internet connections, and poor time management.

**Killer Demos**

The software vendor and the prospective client must work together in advance of the demo to position both parties for success. Here is an approach to pull off a “killer demo.”

**Prepare**

Ask important questions before the demo, such as

- What drives the needs for this software?
- Does the company have EH&S software in place now?
- What are the company's primary concerns?
- Who will use the software? What are their roles?
- How many people will attend the demo?
- Who are the key decision-makers? Will they attend the demo?
- What benefits does the company expect to gain from the software?

**Focus on Needs**

Shape the demo around users’ needs and priorities. This
requires that the customer prepare a set of EH&S software business requirements, with user consensus on needs and priorities.

**Avoid the Standard Demo**
Standard demos show that you did not consider the customer’s needs. Take a *standard approach* instead.

**Don’t Change a Thing… Except…**
Demonstrate the software in its standard, “out of the box” form—without integration, customization, or significant configuration—unless otherwise instructed by the customer. An exception is minor personalization to add the customer’s branding.

**Show a Day in the User’s Life**
Simulate the user’s day-to-day experience. For example, show how an EH&S “power user” creates monthly discharge monitoring reports, emission inventories, detailed incident reports, or injury and illness reports. Show how a casual user makes an initial report of an incident or near miss, or completes an assigned task. Show how a site manager or a corporate EH&S manager views key performance indicators on a dashboard.

**Stick to the Script**
Ask if the customer will provide software scripts and/or demo data. If they do, then make sure that the scripts align with stated business needs and priorities. Demo the software to best showcase its capabilities while addressing each script.

**Start at the End… Then go Backwards**
First demo reports, dashboards, and workflows that show how a user interacts with the software. Then demo key data entry forms. Examine a workflow. Run a few data queries. But demo software configuration, workflow configuration, report, and dashboard creation only if the users would do this day-to-day.

**Consider Decision Criteria**
Know the customer’s software selection criteria, and address them through the demo and dialogue.

**Talk about Resource Needs**
Address how many EH&S and IT resources the customer will need for implementation and after the software goes live. Be prepared to provide references.

**Have IT Experts Available**
Summarize the software’s architecture, hardware, and software needs; installation options; and implementation. Have IT experts present or on call during the demo to answer IT questions.

**Distinguish Yourself**
Address how your software will enhance the customer’s business. Be positive about capabilities and transparent about how you use other parties to deliver software and services. Boast about your successes, and back up statements with evidence. Do not make negative or false statements about the competition.

**Make a Strong Delivery**
Strong delivery is essential to success.

- **Know your audience**—anticipate and address their needs.
- **Be enthusiastic and engaging**—control the content and flow, and encourage dialogue.
- **Have a strong opening**—capture the audience in the first two minutes.
- **Make a compelling case**—benefits the customers will gain, and what sets you apart.
- **Respect the clock**—arrive in plenty of time to set up and finish early.
- **Get trained**—learn how to speak to a group and how to demo software.

**Conclusion**
A well-delivered demo can make up for software shortcomings, while a poorly-delivered demo can destroy the chance of selling even the best software. Though the discussion of “demo killers” seems exaggerated, these behaviors persist in the EH&S software market. A much better approach is for the software vendor and prospective customer to organize a “killer demo” through preparation, focus, speaking to business and IT issues, and strong delivery. em

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Corrective Action Plans

As we’ve discussed in the past two columns, we’re facing a new world as environment, health, and safety (EH&S) managers. We’re seeing new approaches to project valuation and we’re looking at new expectations for project management skillsets. In this column, we consider the U.S. Environmental Protection Agency’s (EPA) Next-Generation Compliance Strategy and how that strategy defines our approach to managing environmental compliance.

**Next-Gen**
On October 7, 2014, EPA published a plan that outlined its Next-Generation Compliance Strategy (Next-Gen). The Next-Gen program’s elements reflect EPA’s declining budget, incorporate the principles of continuous compliance demonstration, and raise public awareness about environmental compliance in the community (see below).

1. **More Effective Regulations and Permits.**
   Although the goal is to create regulations that are easier to understand and implement, Next-Gen rules and permits also include “self-reinforcing” drivers for regulated entities to better monitor and evaluate their own performance.

2. **Advanced Emissions/Pollutants Detection Technology.**
   New measurement methods and technologies will be incorporated in regulations with the goal of providing emission data in real-time or near-real-time.

3. **Electronic Reporting.**
   EPA policy defaults to electronic reporting for new regulations and EPA is updating existing regulations to include electronic reporting.

4. **Increased Transparency.**
   The combination of real-time or near-real-time measurement data, coupled with electronic reporting and subsequent posting to publicly accessible websites, provides transparency about a facility’s emissions or environmental releases.

5. **Innovative Enforcement.**
   EPA plans to focus on the most serious violators first and use creative approaches to drive compliance quickly.

EPA is now moving ahead with Next-Gen, as evidenced by the requirements for dust monitoring plans in the Coal Combustion Residuals rule, a proposed rule that establishes electronic reporting for all emission sources subject to New Source Performance Standards, and the recently promulgated Refinery Sector Rule (RSR).
The RSR provides an excellent example of EPA’s use of self-reinforcing drivers. It requires facilities to develop a corrective action plan (CAP) if fenceline monitoring for benzene indicates that the action level is exceeded. Although the requirement to submit a formal CAP is limited to the fenceline monitoring requirements of the rule, the rule uses the term “corrective action” almost 150 times when describing what a facility must do if a monitored parameter deviates from an established limit. Clearly, corrective action planning and corrective action implementation are important aspects of this rule. They are particularly important with respect to the fenceline monitoring aspect of the rule because presumably a refinery cannot be cited for an action level exceedance if it is following its established CAP.

Understanding the Principles of Corrective Action Planning

In the world of Next-Gen compliance, CAP development and implementation are critically important, requiring the affected facility to properly determine the cause of a problem, implement an effective solution, and document that it is complying with its CAP. As EH&S project managers, we need to understand the principles of corrective action planning and implementation so that we can successfully manage projects and operations that are affected by EPA’s Next-Gen strategy.

Development of a CAP begins with root cause analysis (RCA), a topic we have discussed previously. Once we have a clear and accurate understanding of why or how a problem happened, we can develop a CAP that addresses the root cause of the problem and prevents it from reoccurring. CAPs can vary widely in complexity and detail, but typically share the following basic elements:

1. **Clear description of the problem as determined by root cause analysis.**
2. **Summary of planned action to correct the problem.**
3. **Identification of the individuals responsible for implementing the planned corrective action.**
4. **Description of the operational changes, resources, and training requirements to achieve or perform the corrective action.**
5. **Schedule for completing the corrective action.**
6. **Plans for monitoring the effectiveness of the corrective action.**
7. **Documentation of corrective action completion.**

Corrective action planning is thoroughly understood by quality management professionals and the review of corrective action logs is an important component of any quality system review or audit. Some of the more common problems that are identified by quality system auditors include a failure to perform an adequate RCA, resulting in an inadequate CAP; a failure to provide training that informs employees of changes in practices or operations that are required to support the corrective action; and a failure to monitor and document corrective action effectiveness.

Corrective action planning reaches a new level of importance within the framework of EPA’s Next-Gen strategy, where enforcement decisions can be made based on a facility’s documented adherence to the CAP that it developed. As EH&S project managers, we must be able to apply project management principles to develop realistic CAPs, document operational changes and training that support the CAP, evaluate progress against plan, monitor the effectiveness of the corrective action, and document completion of the corrective action.

**References**

5. U.S. Environmental Protection Agency. 40 CFR Parts 60 and 63, Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards; Final Rule; *Federal Register* 2015, 80, 75177-75354.
Financial Statement
for the Year-Ended December 31, 2015
(Unaudited)

There were many changes which happened to the Association in 2015. We hired a new Executive Director, we gained a better handle on our finances, we improved the timeliness of our monthly reporting to know where we stand quicker and with more confidence, and we changed the format in which the membership receives our flagship magazine, EM. With all of these changes we ended the year with a $136,709 surplus thanks to an outstanding job by our leadership team, our Executive Director and Staff maintaining a tight reign on all of our expenses.
While we turned the corner on five consecutive years of budget shortfalls in 2015, the financial health of the Association is still one of continuing concern. There have been a couple of unexpected significant contributions to our financial picture that developed late last year and during the first half of 2016 which have improved our financial standing. However, they are not recurring contributions and we therefore need to continue to be cautious and control expenses for the rest of 2016 to continue to move toward a more sustainable Association.

Revenue and Expenses
As mentioned earlier … overall the Association realized a profit of $136,709 in 2015. Expenses versus revenue during the first quarter of 2016 have been on the positive side of the ledger. The areas that contributed the most to our success in 2015 by providing a significant greater than budgeted contribution were the Journal $33,400, conferences other than the Annual Conference & Exhibition $5,377, education webinars $17,160, administration costs $157,092 and investment income $9,198. Those major significant areas that did not perform at or above budgeted contributions were EM magazine ($32,099), membership ($17,300), and the Annual Conference & Exhibition ($19,748). Your A&WMA Leadership and Staff are working on all of those under performing areas to turn them around in 2016.

Scholarship Fund
The key objective for the Scholarship Fund is to grow in order to pay scholarships using investment returns and contributions. The Scholarship Fund received $3,384 in donations during 2015 – thank you to all who donated! The Fund is currently at $651,127 which is a ($34,036) decrease from 2014 because of an underperformance in the investments and no named scholarship contributions. For 2016 the Scholarship Trustees approved awards of up to $50,000 in scholarships. Donations to the A&WMA Scholarship Fund can be made at www.awma.org. Donations of $100 or more are credited in the annual A&WMA Honors & Awards brochure.

A&WMA Fund Balance
In 2006, A&WMA reached a five-year goal to have a fund balance of $1.5 million. Over the last several years, market volatility, the results of the recession, and declining membership continue to impact the Association. Continued decreasing attendance at conferences including the Annual Conference & Exhibition has had a major impact as well. All of these factors have all but depleted our reserve funds. During 2016 your leadership will be working diligently to put more money back into the reserve fund to ensure the future of the Association, as was accomplished in 2015.

Moving Forward
Last year was a turn-a-round year following five years of declining reserves, declining revenue and excess expenses. The future of the Association continues to look better under the current leadership than it has in many years. I am cautiously optimistic that your current A&WMA Leadership along with Stephanie Glyptis, as our Executive Director, and her staff, will bring an even larger contribution to our bottom line during 2016.
The governing bodies of The Institute of Professional Environmental Practice (IPEP) and the American Board of Industrial Hygiene (ABIH) announce a new collaboration in 2016 to bring their respected credentials, the Qualified Environmental Professional (QEP)/Environmental Professional Intern (EPI) and the Certified Industrial Hygienist (CIH), to a wider audience of professionals.

Independent governance of each organization’s credentials will remain intact, although the organizations will be sharing operations and management services, allowing a greater portion of existing operational resources to be allocated to innovation and outreach. IPEP operations and staff leadership will move from Pittsburgh, PA, to ABIH headquarters in Lansing, MI.

Many environmental professionals are responsible for issues of worker health and safety on the job, and many industrial hygienists must account for the environmental impact of processes inside and outside of facilities in order to provide informed and proper care for workers. The leadership of both organizations recognized the synergies in their respective practice fields and has resolved to bring that spirit to the operations and outreach of both organizations moving forward, resulting in improved public recognition of credentialed-practitioners and better public protection.

For more information, contact IPEP Executive Director Diana Kobus at diana@ipep.org.

We are excited about the start of this collaboration and the possibilities that it opens up for our practitioners to improve the practice of environmental professionals around the world.

— J. Crossend Schonberg, QEP, IPEP Chair

www.ipep.org

Accredited by www.cesb.org
The infrared cameras that the oil and gas industry use to make invisible hydrocarbon emissions visible are on the brink of becoming more widespread as regulators promote their use under proposed rules and settlements. They can’t detect how much or what kind of emissions—such as the potent greenhouse gas methane or ozone-forming volatile organic compounds—are pouring from oil storage tanks, pipelines, or industrial facilities, but they can draw attention to potential violations and hazards by making a plume obvious.

Companies say they have been using the cameras as a screening tool for years, which has helped them detect leaking natural gas that can then be captured and sold. But the cameras have limitations that would be exacerbated under unforgiving rules or consent decrees, critics say. Not only are the cameras costly at $120,000 a piece, but questions have been raised about data accuracy and frequency of use.

There is wide acceptance that infrared cameras for leak detection are “the wave of the future—it’s the iPhone era for compliance,” said Brooks M. Smith, an environmental and natural resources law partner at Troutman Sanders. But companies’ voluntary use of such technology is “a far cry” from a requirement under a rule or settlement, said Smith.

The cameras also are a tool for environmental groups to raise public awareness of leaks. EarthWorks used the camera to show images of the massive methane leak at a Southern California Gas Co. storage facility in Aliso Canyon, near Los Angeles, which displaced thousands of people and released an estimated 94,500 tons of methane. em

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Co-sponsored by: The Electric Power Research Institute (EPRI), the U.S. Environmental Protection Agency (EPA), the U.S. Department of Energy (DOE), and the Air & Waste Management Association (A&WMA)

With an industry-directed focus and streamlined format, the MEGA Symposium will provide a forum for sharing successes and challenges of complying with regulations for fossil-fueled electric generating units, as well as provide technology options for compliance with the Clean Power Plan. This year’s topics include:

- ELG and waste water treatment
- Byproduct and ash handling
- Managing variable load
- Carbon management and CO2 control
- SOx, NOx, and particulate
- MATS controls

Registration is open! Make your plans to attend now at [http://megasymposium.org/registration](http://megasymposium.org/registration). Get your company in front of 800+ attendees with an exhibit or sponsorship. [http://megasymposium.org/exhibition](http://megasymposium.org/exhibition)
Dozens of companies, including Duke Energy Corp., DTE Energy Co., and Vectren Corp., have joined a voluntary U.S. Environmental Protection Agency (EPA) program to slash their methane emissions, the latest in an all-out Obama administration effort to curb releases of the potent greenhouse gas.

The 41 founding members of the Natural Gas STAR Methane Challenge Program agreed to implement a series of best management practices to cut methane emissions within five years, submit annual data on their efforts to EPA, and have that information posted online.

“If you really care about reducing methane, let’s praise the champions and challenge others to join them in moving forward,” Administrator Gina McCarthy told the Global Methane Forum in announcing the program. “Let’s challenge every company to take similar action.”

Methane is a short-lived greenhouse gas that is between 28 and 36 times more potent than carbon dioxide when measured over a 100-year period, according to EPA. The voluntary program, which also includes companies like Xcel Energy Inc., CenterPoint Energy, and Exelon Corp., is the latest in a multi-pronged Obama administration effort to slash methane emissions. Overall, the strategy aims to reduce oil and gas sector emissions between 40 percent and 45 percent from 2012 levels by 2025.

A coalition of environmental groups argued that a federal appeals court should vacate various portions of the U.S. Environmental Protection Agency’s (EPA) implementation rule for the 2008 ozone standards, including the agency's decision to revoke the previous standards (S. Coast Air Quality Mgmt. Dist. v. EPA, D.C. Cir., No. 15-1115).

The environmental petitioners argued that EPA's decision to revoke the 1997 ozone standards of 84 parts per billion (ppb) is irrational because timely attainment of that standard is still a legal objective under the U.S. Clean Air Act (CAA). The decision to revoke those standards allows nonattainment areas to meet their CAA obligations by maintaining existing pollution control measures, even if those measures won't bring the area into attainment according to the deadlines established by Congress, the environmental groups said.

“Timely attaining the 1997 standard is as important today as it was before the revocation,” the petitioners said. “Delaying health protections by waiving consequences for areas that fail to attain these levels by the congressionally-mandated attainment deadlines is inconsistent with Congress’s objectives.”

The implementation rule established various requirements for state plants to bring nonattainment areas into compliance with the 2008 ozone standards of 75 ppb, set under President George W. Bush. In addition to revoking the 1997 standards, the rule also altered how states can fulfill reasonable further progress requirements for moderate and serious nonattainment areas, a policy change that the South Coast Air Quality Management District alleged is based on an inaccurate EPA interpretation of a court decision.

Advocates Want Clinton-Era Ozone Standards Retained
Briefing in legal challenges to the U.S. Environmental Protection Agency's (EPA) carbon dioxide emissions standards for new and modified power plants will run through the end of October, meaning a federal appellate court may not hear argument over the rule until early 2017 (North Dakota v. EPA, D.C. Cir., No. 15-1381).

The U.S. Court of Appeals for the District of Columbia Circuit issued its briefing schedule for challenges to EPA's carbon dioxide new source performance standards, ordering the petitioners to file their opening briefs by July 15 with EPA's response due by Sept. 23. Final petitioner briefs would be filed by Oct. 21.

Petitioners will file three separate briefs: one from 24 states opposed to the rule; a separate brief from North Dakota, which has said its issues are separate from those pursued by other states; and then a third brief from the non-state petitioners, including several industry and union groups opposed to the carbon dioxide standards. Intervenors supporting the petitioners will file their briefs July 25 while the EPA's supporters' briefs are due Sept. 30.

The order did not set a date for oral argument, but the court said argument is typically scheduled at least 45 days after briefing is completed, meaning the earliest the D.C. Circuit would be likely to hear the case would be Dec. 14. The D.C. Circuit's order sets a quicker schedule than was sought by the petitioners, but a slower review than the agency had requested.

**OIG Urges EPA to Lock Financial Assurances in Place**

The U.S. Environmental Protection Agency (EPA) is jeopardizing taxpayer dollars, public health, and environmental protections by failing to lock in place financial assurances from companies that operate Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) sites, the agency’s Office of Inspector General (OIG) said in a report.

EPA rebuffed the report’s conclusions as overblown, but OIG officials contend EPA is overseeing and managing the two statutes with “data quality deficiencies and a lack of internal controls” that have resulted in $6.1 billion in non-existent or insufficient financial assurances out of a total $9.1 billion required sum.

EPA is also managing CERCLA, also known as Superfund, and RCRA programs with $577 million in expired corporate assurances, the report says.

“This management alert report provides recommendations to immediately address this time-critical issue; our evaluation on financial assurance instruments continues and could result in additional matters being reported to the agency,” Inspector General Arthur Elkins told EPA Assistant Administrator of the Office of Land and Emergency Management, Mathy Stanislaus, and Cynthia Giles, assistant enforcement and compliance administrator, in a letter that accompanied the report.
Clean Power Plan Opponents Want Two Days of Argument

Opponents of the Clean Power Plan are asking a federal appellate court to schedule two days of arguments over the rule, but they were unable to reach consensus on which issues most deserved the judges’ attention (West Virginia v. EPA, D.C. Cir., No. 15-1363, responses filed 4/28/16).

Opponents of the carbon dioxide standards for power plants (RIN 2060-AR33), including several states, utilities, and industry groups, are asking the U.S. Court of Appeals for the District of Columbia Circuit for at least five hours of argument on the Clean Power Plan spread out between June 2 and 3 in proposed argument formats filed April 28.

However, the challengers were at an impasse over which arguments to spotlight before the judges and how to allocate time, with the Competitive Enterprise Institute and other advocacy groups seeking additional time for argument over EPA’s cost and benefit analysis of the rule that was not included in the format suggested by states and utilities.

Separately, EPA and its supporters said the argument should only take three hours.

Opponents Divide Time
States and utilities opposed to the Clean Power Plan are asking the D.C. Circuit to divide the argument time into six topics over the two days sought.

“Petitioners believe that a full morning session is warranted on each of the two consecutive days the Court has set aside due to the myriad issues presented, their complexity, and their importance,” the groups said.

The first day would hear argument over whether the Clean Power Plan impermissibly forces utilities to shift generation away from coal-fired power to cleaner alternatives such as natural gas and renewable energy, which was a key component of their briefs to the court.

Additional arguments that first day also would cover whether EPA is barred from regulating carbon dioxide from power plants under Section 111(d) of the U.S. Clean Air Act given those units are already subject to hazardous air pollutant standards under Section 112 and argument about whether the rule encroaches on state authority to regulate the power sector.

On the second day, argument would cover whether aspects of the rule were properly subject to notice and comment before finalization, whether the controls required of utilities meet the Clean Air Act requirement that they be adequately demonstrated, and constitutional challenges to the Clean Power Plan.

EPA proposed a shorter argument schedule that would see
Clean Power Plan Argument

Petitioners’ Proposed Argument Format

Day 1

Generation Shifting: 60 minutes sought, to be argued by West Virginia Solicitor General Elbert Lin and Peter Keisler of Sidley Austin LLP.

The Clean Air Act Section 112 Exclusion: 50 minutes sought, to be argued by Lin and Allison Wood of Hunton & Williams LLP.

State Authority: 30 minutes sought, to be argued by North Dakota Special Assistant Attorney General Paul Seby and Keisler.

Day 2

Was the Rule Properly Noticed: 40 minutes sought, to be argued by Texas Deputy Solicitor General Matthew Frederick and Thomas Lorenzen of Crowell & Moring LLP.

Are Control Technologies Adequately Demonstrated: 40 minutes sought, to be argued by Wisconsin Solicitor Misha Tseytlin and F. William Brownell of Hunton & Williams LLP.

Constitutional Arguments: 20 minutes sought, to be argued by David B. Rivkin of Baker & Hostetler LLP and Harvard Law Professor Laurence Tribe.

EPA’s Proposed Argument Format

Core Statutory Arguments: 60 minutes sought, to be argued by Justice Department attorney Eric Hostetler, New York Assistant Attorney General Michael J. Myers and Kevin Poloncarz of Paul Hastings LLP.

The Clean Air Act Section 112 Exclusion: 30 minutes sought, to be argued by Justice Department attorney Amanda Berman and environmental attorney Sean Donahue.

Tenth Amendment Issues: 20 minutes sought, to be argued by Berman and Myers.

Procedural Issues: 20 minutes sought, to be argued by Justice Department attorney Chloe Kolman.

Other Record Issues: 60 minutes sought, to be argued by Poloncarz and Justice Department attorneys Norman Rave and Brian Lynk.

five topics argued in three hours. EPA is proposing that the court hear argument over core statutory challenges to the rule, the Section 112 exclusion, Tenth Amendment challenges, procedural challenges to the Clean Power Plan, and other record-based issues.

Cost, Benefit Argument Sought

In addition to that proposed schedule, the Competitive Enterprise Institute and other groups are asking the D.C. Circuit to include an additional 20 minutes on the second day of argument to debate EPA’s cost and benefit analysis of the Clean Power Plan.

“Most of the issues on which the other petitioners propose to forgo oral argument turn on fact-specific details in the record and concern the legality of specific aspects of the rule,” the institute and other groups said. “By contrast, EPA’s fundamentally flawed cost-benefit analysis raises a purely legal question—whether a regulation promulgated under CAA § 111(d) is arbitrary and capricious when its costs far exceeds its domestic benefits.”

For More Information

Petitioners’ proposed argument format is available online at http://src.bna.com/exQ.

The Competitive Enterprise Institute and other advocacy groups’ proposed argument format is available online at http://src.bna.com/exS.

The EPA’s proposed argument format is available online at http://src.bna.com/exT.

—By Andrew Childers, Bloomberg BNA
Officials from participating states in the Regional Greenhouse Gas Initiative (RGGI) plan to spend the next several months evaluating potential modifications to the program, including the possibility of allowing trading with states that are not participants in the regional cap-and-trade program.

RGGI officials indicated the participating states anticipate complying with the Clean Power Plan using a mass-based emissions standards approach. Consequently, Lois New, director of the Office of Climate Change in the New York Department of Environmental Conservation, said during a stakeholder meeting in Boston on April 29 that the program is seeking input on the minimum compatibility requirements under which RGGI states could opt to trade allowances with states that choose not to become participants in the RGGI program.

The first question is, RGGI said in a request for stakeholder comment, should RGGI states consider allowing trading with states that do not become participants in the RGGI program? And if so, what program design features and other conditions should be aligned with RGGI program elements in order for RGGI states to be able to trade with those other states?

“There is a whole suite of things to consider,” New told participants, that includes distribution of allowances, treatment of newly constructed emission sources and allowance tracking systems, among other issues.

RGGI also said it welcomes the possibility of additional states becoming participants in the Northeastern trading program, and that in order for a state to join it would be required to adopt a regulatory program and conduct business that is consistent with the RGGI model rule and related administrative processes.

The current RGGI member states are Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.

Expanding Efforts

In welcoming the RGGI member states and other stakeholders, Judith Judson, commissioner of the Massachusetts Department of Energy Resources and a RGGI director, said that since the program’s inception, carbon pollution from the power sector across the region has been reduced by 40 percent, while the RGGI auctions have generated $2.4 billion for the member states.

The stakeholder meeting held in Boston is part of review process underway by participating states to consider the program’s successes, impacts and design elements and to determine how RGGI should proceed.

RGGI Executive Director Nicole Singh told participants the organization hopes to issue a program review report and information regarding potential modifications by September.

During the discussion period, several participants, including officials from the Sierra Club and other environmental, health and clean energy organizations, called on RGGI to adopt 5 percent annual carbon reductions between 2020 and 2030, citing a recent study by Synapse Energy Economics Inc., that said the 5 percent figure is necessary for states to meet their energy sector carbon-related goals.

In addition, Amanda De Vito Trinsey, an associate with the New York firm of Couch White LLP, urged RGGI to expand its efforts into the transportation sector as a parallel initiative.

In a statement issued as the RGGI stakeholders meeting took place in Boston, a coalition of 58 environmental, health and clean energy organizations called on New York Gov. Andrew Cuomo (D) to push for an extension of RGGI cap reductions that will require an annual 5 percent reduction in carbon pollution from power plants.

For More Information

Program review materials for the April 29 RGGI meeting are available online at http://www.rggi.org/design/2016-program-review/rggi-meetings.

—By Martha W. Kessler, Bloomberg BNA
Six Metropolitan Areas Expected to Attain Ozone Levels after Extension

Six areas will be able to demonstrate attainment with the 2008 ozone standards after receiving a one-year compliance extension from the U.S. Environmental Protection Agency (EPA), state and local air quality officials told Bloomberg BNA.

The one-year extension, which pushed back the attainment deadline for certain marginal nonattainment areas from July 2015 until July 2016, allowed states to consider 2015 air quality monitoring data for the purposes of determining compliance with the 75 parts per billion (ppb) ozone standards. Air regulators said that extra year will allow nonattainment areas, including Washington, DC, Philadelphia, Pittsburgh, Cleveland, St. Louis, and Eastern San Luis Obispo County, CA, to show that they meet the standards.

Some of those areas, including Philadelphia and San Luis Obispo County, are likely to be designated as nonattainment areas under the more recent 2015 ozone standards of 70 ppb next year. However, demonstrating compliance with the 2008 ozone standards will help those areas avoid being redesignated from a marginal nonattainment area to a moderate nonattainment area, which would have placed additional pollution control planning requirements on regulators.

EPA Administrator Gina McCarthy April 11 signed a final rule giving eight marginal nonattainment areas a one-year extension under Section 181(a)(5) of the U.S. Clean Air Act based on positive trends in 2014 air quality data.

The other two nonattainment areas that received a one-year extension, the Houston–Galveston–Brazoria region, TX, and Sheboygan, WI, are not expected to be able to demonstrate attainment in 2016, state air officials said. Andrew Keese, a spokesman with the Texas Commission on Environmental Quality (TCEQ), told Bloomberg BNA in an e-mail that EPA is expected to formally reclassify the Houston area as a moderate nonattainment area in late 2016 or early 2017.

David Bizot, a spokesman with the Wisconsin Department of Natural Resources, told Bloomberg BNA in an e-mail that once Sheboygan is reclassified as a moderate nonattainment area, it will have until July 20, 2018, to show attainment with the 2008 standards.

New Data Drove Compliance

Compliance with the ozone standards are determined based on a three-year average of the fourth-highest eight-hour concentration measured each year. For many metropolitan areas, dropping 2012 data from consideration in favor of 2015 data resulted in a significant drop in their three-year ozone averages, known as design values.

For example, based on 2012–2014 data, the Washington, DC, metropolitan area had an ozone design value of 76 ppb. The ozone design value for Washington, DC, for 2013–2015 is 70 ppb, “quite a bit below” the 2008 standards, Stephen Walz, director of the Department of Environmental Programs at the Metropolitan Washington Council of Governments, told Bloomberg BNA.

Data provided to Bloomberg BNA by the Philadelphia Public Health Department also illustrate the significant effect of the one-year extension on that area’s ability to meet the ozone standards. The fourth-highest eight-hour concentration recorded by a monitor in Camden, NJ, which is part of the four-state Philadelphia–Wilmington–Atlantic City nonattainment area, was 92 ppb, which is well above the 2008 standards. In 2015, that number dropped to 72 ppb, helping the Philadelphia nonattainment area come into compliance.

However, due to variability in annual ozone regions, the one-year extension didn’t help all areas. Keese of the TCEQ said dropping 2012 data and adding 2015 data did not alter the area’s design value.
“There have been numerous periods where the ozone design value in the Houston–Galveston–Brazoria area has dropped by 5 ppb or more in one year,” Keese said. “However, compliance is demonstrated with measurements over a three consecutive year period, and 2015 would have needed to have had ozone levels similar to 2014 to comply with the standard.”

Planning Under Way in Some Cities
It will take more than a design value of 75 ppb or lower in order for Washington, DC, Philadelphia and the other areas to actually be redesignated by EPA as attainment under the 2008 ozone standards.

In order to be redesignated, areas must develop and submit for EPA approval a maintenance plan that provides for the area to continue to attain the standards for at least 10 years. Some areas are already beginning work on that process.

Tom Bastian, a spokesman for the Missouri Department of Natural Resources, told Bloomberg BNA in an e-mail that Missouri air regulators are already working on a formal redesignation request and a maintenance plan covering the St. Louis–St. Charles–Farmington nonattainment area, which saw its design value drop from 78 ppb in 2012-2014 to 71 ppb in 2013–2015.

Officials in the District of Columbia, Virginia, and Maryland also are eager to start working on the necessary documentation to be redesignated, Walz of the Washington Council of Governments said.

“We’re not going to wait to start work on a maintenance plan,” Walz said.

Areas May Not Meet New Standards
While the one-year extension helped several cities come into compliance with the 2008 ozone standards and avoid being redesignated as a moderate nonattainment area, several municipal officials said that achievement ultimately may not change much because of the new, more stringent ozone standards issued in 2015 by EPA. EPA said it anticipates that final area designations under the 2015 ozone standards of 70 ppb will be issued by Oct. 1.

Larry Allen, air pollution control officer for the San Luis Obispo County Air Pollution Control District in California, said the process for redesignating the eastern portion of that county will be little more than a bureaucratic exercise because the county is likely to be labeled as a marginal nonattainment area under the 2015 standards. Allen told Bloomberg BNA that based on 2013–2015 data, eastern San Luis Obispo County has an ozone design value of 73 ppb, which would violate the 2015 standards.

While designations under the 70-ppb ozone standards will be based on data from 2014–2016, EPA has instructed states to base their designation recommendations on quality-assured data from 2013 to 2015.

“We’re going to be designated nonattainment for the new ozone standard,” Allen said, though he was confident that ozone levels will continue to fall over the next few years. “We would expect that within the next few years, we’ll come into attainment of even the new federal standards.”

San Luis Obispo isn’t the only area that may ultimately end up back in nonattainment status for the 2015 ozone standards. Melissa Wade, a spokeswoman with the Allegheny County Health Department, told Bloomberg BNA in an e-mail that Pittsburgh “may very well” be a nonattainment area under the 2015 ozone standards.

Even Washington, DC, which now has a design value of 70 ppb and would currently meet the 2015 standards, could still end up as being in nonattainment. Walz of the Washington Council of Governments said the DC area’s attainment status under the 2015 standards will depend on how it fares in 2016.

“It really is going to depend on what happens this summer,” Walz said. “We’ll hope that many of the actions that have been in place to reduce ozone levels continue to show the results this year.”

No Permitting Benefit for Philadelphia
Jeff Moran, a spokesman for the Philadelphia Public Health Department, told Bloomberg BNA there is “little incentive” for the Philadelphia nonattainment area, which encompasses portions of four states, to go through the redesignation process. Philadelphia will probably be designated as nonattainment under the 2015 ozone standards, with several air monitors in the area recording design values above 70 ppb from 2013 to 2015, Moran said.

In addition, all of the states that include part of the Philadelphia nonattainment area are within the ozone transport region, a group of states in the Northeast and Mid-Atlantic that are required to install a certain level of pollution controls for ozone-forming emissions, even if all areas within the state meet the ozone standards.

“Because the area is in the ozone transport region, the pre-construction permitting rules required in ozone nonattainment areas are not replaced with the less rigorous rules for ozone attainment areas,” Moran said.—By Patrick Ambrosio,
Bloomberg BNA
Canada Scores Poorly on Conference Board’s International Environmental Report Card

Canada is not the land of pristine water, clean air, and vast untouched landscapes that tourism brochures present. The Conference Board of Canada’s annual report card on Canada’s environmental performance ranks the nation 14th among 16 developed countries, beating out only the United States and Australia. And when provinces are looked at individually and compared with developed countries, five provinces bring up the rear: New Brunswick, Nova Scotia, Newfoundland and Labrador, Alberta, and Saskatchewan.

The environmental report card is part of an annual series of measurements by the Conference Board called How Canada Performs. It is intended to rank Canada’s quality of life, and that of its provinces, against its international peers. The Conference Board measures sustainability as an element of long-term quality of life.

Canada’s position remained fundamentally unchanged from 2015’s report card, when it ranked 15th among 17, again ahead of only the United States and Australia. Italy was dropped from the 2016 report card.

The report card, How Canada Performs, is available online at http://www.conferenceboard.ca/hcp/default.aspx.

—By Mark Sabourin, EcoLog

Ontario Ministry of Labor Consulting on New Occupational Exposure Limits

The Ontario Ministry of Labor (MOL) is consulting on new occupational exposure limits (OELs), based on changes recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) in 2014 and 2015.

Consultation on the annual revised limits recommended by the ACGIH is the foundation of the MOL’s OEL update process. Through this process, the MOL has updated OELs for more than 200 hazardous substances since the process was introduced in 2004. This is the MOL’s eleventh consultation under the OEL update process.

OELs restrict the amount and length of time a worker is exposed to airborne concentrations of hazardous biological or chemical agents.

Proposed changes based on the 2014 ACGIH recommendations include:

• Addition of specific listings for two substances in regulation: Ethyl isocyanate and Peracetic acid

Proposed changes based on the 2015 ACGIH recommendations include:

• Addition of specific listings for two substances to regulation: Phenyl isocyanate and Cyanogen bromide

• Revisions to exposure limits or listings for six substances currently regulated: Acetone, Lithium hydride, Methyl formate, Oxalic acid, 1,2,3-Trichloropropene, and Triethylene diamine.

A complete listing of the MOL’s proposed changes is available online at http://www.labour.gov.on.ca/english/about/consultations/oels/table.php.
The Ontario Ministry of the Environment and Climate Change (MOECC) has posted two draft industry standards on the province's Environmental Bill of Rights (EBR) Registry for public comment until June 7, 2016.

One is a technical standard for the petrochemical industry for benzene and 1,3-butadiene, and the other is a technical standard for the petroleum refining industry for benzene and benzo[a]pyrene.

The standards have been prepared by the MOECC at the request of the two industry sectors in anticipation of the coming into effect of new air standards for these substances on July 1, 2016. The new air standards are made under Ontario's Air Pollution Regulation—Local Air Quality (O. Reg. 419/05).

Industries with concerns that some of their facilities may not be able to comply with a new standard due to technical or economic reasons may request the MOECC to develop technical standards for them.

A technical standard requires facilities who register for it to implement the best available technical practices to limit air pollution as much as is feasible, even though this may not meet the air standard. Facilities who comply with the technical standard will be considered in compliance with the air standard.

The proposed technical standards are available online at ebr.gov.on.ca, EBR Registry Numbers: 012-6857 and 012-6859.—By Mark Sabourin, EcoLog

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PBO: 2030 GHG Target Can Be Met, Per Capita Income Will Suffer

Canada’s 2030 greenhouse gas (GHG) emissions target can be met, according to the Parliamentary Budget Officer (PBO), but it won’t be easy.

The PBO's analysis offers encouragement and discouragement in equal measure. It shows that, based on current trends, Canada’s emissions will rise only marginally between now and 2030. However, even a modest rise will leave Canada short of its target by 208 million tons of carbon, the equivalent of pulling all of today’s cars and trucks off the road.

Carbon pricing is the most economically efficient tool to get Canada to its 2030 target. Current carbon pricing policies planned or in place are not sufficient. In Quebec’s most recent auction, emission allowances went for C$17.64 per ton. British Columbia’s carbon tax sits at C$30 per ton, and the province has no plans to increase the rate or the tax base. The PBO's analysis concludes that to meet the 2030 target, Canada needs a carbon price at or near C$100 per ton.

That carbon price will have an impact on per capita income, the PBO warns. Put into perspective, 2014 per capita income of C$55,500 is expected to rise to C$61,800 in 2030. An effective and efficient carbon price will shave between C$600 and C$1,900 off that figure. —By Mark Sabourin, EcoLog
2016 A&WMA Annual Critical Review
Emissions from oil and gas operations in the United States and their air quality implications
by David T. Allen

Technical Papers
The air quality forecast route: Recent changes and future challenges

Greenhouse gas emissions estimation from the proposed El Fukhary landfill in the Gaza Strip

Control of ammonia and urea emissions from urea manufacturing facilities of the Petrochemical Industries Company (PIC), Kuwait

Enhancement of NO decomposition efficiency achieved with La-based Perovskite-type catalyst

The FireWork Air Quality Forecast System with near-real-time biomass burning emissions: Recent developments and evaluation of performance for the 2015 North American Wildfire Season

2016 Calendar of Events

JUNE
20–23 2016 A&WMA Annual Conference & Exhibition
New Orleans, LA

AUGUST
16–19 Power Plant Pollutant Control “MEGA” Symposium
Baltimore, MD

SEPTEMBER
20–23 A&WMA Southern Section Annual Meeting & Technical Conference
Biloxi, MS

27–30 Atmospheric Optics: Aerosols, Visibility, and the Radiative Balance
Jackson Hole, WY

OCTOBER
4–6 35th Annual International Conference on Thermal Treatment Technologies & Hazardous Waste Combustors (IT3/HWC)
Baton Rouge, LA

5–7 A&WMA Pacific Northwest Section 56th International Conference
Juneau, AK

25–26 A&WMA Ontario Section Air and Acoustic Monitoring Conference
Waterloo, Ontario

DECEMBER
7–8 Vapor Intrusion, Remediation, and Site Closure
San Diego, CA

Events sponsored and cosponsored by the Air & Waste Management Association (A&WMA) are highlighted in bold. For more information, call A&WMA Member Services at 1-800-270-3444 or visit the A&WMA Events Web site. To add your events to this calendar, send to: Calendar Listings, Air & Waste Management Association, One Gateway Center, 3rd Floor, 420 Fort Duquesne Blvd., Pittsburgh, PA 15222-1435. Calendar listings are published on a space-available basis and should be received by A&WMA’s editorial offices at least three months in advance of publication.
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The Air & Waste Management Association (A&WMA) is a nonprofit, nonpartisan professional organization that provides training, information, and networking opportunities to environmental professionals. A&WMA’s core purpose is to improve environmental knowledge and decision-making by providing a neutral forum for the exchange of information. The Association’s goals are to strengthen the environmental profession, expand scientific and technological responses to environmental concerns, and assist professionals in critical environmental decision-making to benefit society.
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2016 Honors & Awards

Each year, A&WMA recognizes deserving individuals or companies for their outstanding accomplishments in the promotion of a clean environment. These awards were established by the Association to encourage environmental professionals to serve as models for others to emulate and to otherwise further A&WMA’s mission and objectives. Please join us in celebrating their remarkable contributions.

Frank A. Chambers Excellence in Air Pollution Control Award
Charles L. Blanchard, Ph.D.

S. Smith Griswold Outstanding Air Pollution Control Official Award
Laki T. Tisopulos, Ph.D., P.E.

Lyman A. Ripperton Environmental Educator Award
Gediminas (Gedi) Mainelis

Charles W. Gruber Association Leadership Award
Tony van der Vooren Ph.D., P.Eng., OEP

Honorary Membership
Edith Mijares Ardiente
George M. Hidy

Fellow Membership
S. James Ryckman, Jr., P.E., OEP

Arthur C. Stern Distinguished Paper Award
Judith C. Chow, John G. Watson, L.-W. Antony Chen, M.C. Oliver Chang, Norman F. Robinson (posthumously), Dana Trimble, and Steven Kohl
Frank A. Chambers Excellence in Air Pollution Control Award

Frank A. Chambers (1885–1951) was a founder of the Smoke Prevention Association of America, a forerunner of the Air & Waste Management Association, and was instrumental in building the foundation for A&WMA. His pioneering ideas for smoke control were employed by many cities across the United States. The Frank A. Chambers Excellence in Air Pollution Control Award is presented annually by the Association for outstanding achievement in the science and art of air pollution control. It requires technical accomplishments considered to be major contributions, the merits of which have been widely recognized by persons in the field. The coverage is intentionally broad, since it recognizes achievement in any line of technical endeavor in air pollution control, from pure research to applied science.

A&WMA presents the 2016 Frank A. Chambers Excellence in Air Pollution Control Award to Charles L. Blanchard, Ph.D., principal of Envair, for his contributions in the area of air pollution research and development.

For more than 30 years, Dr. Blanchard has contributed to multiple areas of air pollution research, including atmospheric deposition, ozone, particles, visibility, pollutant transport, and atmospheric chemistry. In his use of data from major field studies and long-term measurement programs to inform air quality management, his work has yielded new approaches for analyzing and interpreting air quality measurements. His contributions exemplify a goal of understanding which emission control efforts improve air quality most effectively.

An early interest in water quality led Dr. Blanchard into the field of air pollution through the study of atmospheric deposition, using receptor models to identify emission sources contributing to deposition and to its impacts on surface water. After graduate school and post-doctoral programs, he worked for the California Air Resources Board to develop some of the initial findings of the California Acid Deposition Monitoring Program. He continued working as an independent consultant to quantify wet and dry deposition rates throughout California.

The potential value of the large data sets produced by major field studies and measurement programs, and the challenges posed in turning voluminous field measurements into useful information, led to further work on using data from monitoring networks to detect and quantify changes in atmospheric deposition and to attribute observed changes to emission control efforts. Applications to the U.S. National Acid Precipitation Assessment Program and the Canadian Air and Precipitation Monitoring network followed.

Between the late 1980s and early 2000s, Dr. Blanchard contributed to the study design and to the analysis and interpretation of measurements from numerous ozone field studies, including the 1990 San Joaquin Valley Air Quality Study, the 1991 Lake Michigan Ozone Study, and the 2000 Central California Ozone Study. During this time, he also worked with both the public and private sectors to develop improved understanding of the ways that ozone was responding to new controls on anthropogenic emissions of nitrogen oxides and volatile organic compounds, using long-term observations as an important complement to air quality modeling and laboratory experimentation.

Dr. Blanchard has also contributed to the analysis and interpretation of measurements from numerous particulate matter field studies and long-term measurement programs, including the 1999–2001 California Regional Particulate Air Quality Study, the ongoing Southeastern Aerosol Research and Characterization program, and studies coordinated by the Lake Michigan Air Directors Consortium. His contributions have improved contemporary understanding of the interactions of sulfate, nitrate, and ammonium in inorganic aerosol as observed over time and in different geographical regions. He has also contributed to current understanding of the sources of organic aerosol through analyses of long-term measurements and by developing a receptor modeling approach that combined gas and particle measurements.

Recognizing the importance of communicating the knowledge that has been developed by major field studies and long-term measurement programs, Dr. Blanchard has co-authored over 40 peer-review journal publications, nearly half of which have appeared in the Journal of the Air & Waste Management Association (JAWMA). Additional publications have been printed in the proceedings of A&WMA annual and specialty conferences. He has contributed to NARSTO (formerly North American Research Strategy for Tropospheric Ozone) publications on both ozone and particulate matter.

Dr. Blanchard received a bachelor’s degree in biology and zoology from Michigan State University in 1975. He completed graduate work at the University of California at Berkeley, earning his master’s degree in energy and resources in 1978, a bachelor’s degree in statistics in 1984, and a Ph.D. in energy and resources in 1986. Between 1986 and 1988, he continued his education as a visiting research fellow at the Center for Energy and Environmental Studies at Princeton University. He has been a member of A&WMA since 1988. He values K-12 education as a foundation for student achievement, and has been supporting public education by serving for more than seven years on the board of education of the community in which he resides.
A&WMA presents the 2016 S. Smith Griswold Outstanding Air Pollution Control Official Award to Laki T. Tisopulos, Ph.D., P.E., Assistant Deputy Executive Officer for the South Coast Air Quality Management District (SCAQMD).

SCAQMD is the nation's premier air pollution control agency in charge of improving air quality for a jurisdiction that encompasses more than 17 million Southern Californians. During his distinguished 28-year career with the agency, Dr. Tisopulos has made numerous contributions to the air quality management and control field which have brought dramatic improvements in air quality.

Throughout his long and multi-faceted career with SCAQMD, Dr. Tisopulos has developed a body of work that spans all aspects of the air quality field, including permitting, enforcement, planning, rule and policy development, outreach, budget preparation, and ambient air monitoring and analysis.

Of particular importance is his tireless work in developing the nation's most innovative and effective air pollution control programs, including air quality management plans, control measures, and air quality rules and regulations designed to improve air quality in one of the most challenging airsheds and densely populated regions of the United States. These programs cover the entire spectrum of pollution sources, including stationary, area, consumer products, and mobile and transportation sources.

Among his most notable accomplishments is his development of ultra-low and zero-emission control strategies for both stationary and consumer products. Water-based, zero- and near-zero emission paints, inks, adhesives, and solvents, now an everyday reality in Southern California and elsewhere, are the result of Dr. Tisopulos team's more than two decades-long effort to provide significant environmental benefits. He had similar success in exploring, identifying, and implementing refinery and chemical plant controls, area source programs, and particulate matter control strategies. Dr. Tisopulos has also worked on the inception and implementation of multiple regulatory flexibility and credit programs for stationary point and area sources, as well as traditional command and control regulations.

In addition to stationary source control programs, Dr. Tisopulos also worked on developing and implementing multiple innovative programs aimed at reducing pollution from mobile and vehicular sources. One such regulatory flexibility program that he worked on was recognized and received the Presidential Project for Excellence and Leadership (Project XL) Award by President Clinton.

In his current capacity as Assistant Deputy Executive Officer for the Science and Technology Advancement Office of SCAQMD, Dr. Tisopulos is aggressively pursuing the implementation of sophisticated optical fence-line remote sensing technologies and the employment of air quality sensors that can provide real- and near-real-time emissions information. He oversaw the recent completion of the nation's first air sensor evaluation center, the AQ-SPEC. The successful integration of such automated technologies into the monitoring arena will not only improve current monitoring capabilities, but also have the potential to dramatically improve environmental protection efforts at the federal, state, and local levels.

Many of the pioneering programs that Dr. Tisopulos has worked on have served as a template for and/or have been emulated by many other states and countries. His integrity, as well as a strong commitment to transparency and consensus-building, is among the key traits and principals guiding his work.

Dr. Tisopulos holds bachelor's, master's, and doctorate degrees in chemical engineering, as well as a California Professional Engineer License. He is an accomplished author with more than 150 SCAQMD and other peer-reviewed publications. He is a passionate supporter of A&WMA and is deeply committed to the mission of the Association, where he has been actively involved and served in multiple capacities, including Vice Chair and Chair of the West Coast Section and Director and Vice President of the A&WMA Board of Directors.
A&WMA presents the 2016 Lyman A. Ripperton Environmental Educator Award to Gediminas (Gedi) Mainelis, Ph.D., Professor of Environment Sciences at the Department of Environmental Sciences of Rutgers, The State University of New Jersey.

Dr. Mainelis's research and teaching focus on various aspects of health-related aerosols (airborne particles), including air pollution science and control, bioaerosol (airborne microorganism) sampling and detection, and exposure assessment. In recent years, he has expanded his research interests into other areas of health-related aerosols, such as exposures to and control of engineered nanoparticles due to the use of nanotechnology-based consumer products; indoor air quality in green buildings; and the use of robotic samplers to assess exposures of young children to air pollutants.

Dr. Mainelis's research on these topics has been supported by the National Institute for Occupational Safety and Health, National Institute of Environmental Health Sciences, National Science Foundation, U.S. Environmental Protection Agency, U.S. Department of Housing and Urban Development, National Cancer Institute, Health Effects Institute, U.S. Army Research Office, Lawrence Livermore National Laboratory, and private industry. His research findings have been presented in more than 70 peer-reviewed publications, more than 130 conference presentations, and several book chapters, and more than a dozen of the publications from his group have been included in the most-downloaded article lists of various journals. He has also given more than 50 invited presentations throughout the world.

Dr. Mainelis is editor of the journal, *Aerosol and Air Quality Research*, and is a recipient of the CDC/NIOSH Career Award, Twinning Fellowship from the National Academy of Sciences, and the Research Excellence Award from the School of Environmental and Biological Sciences at Rutgers University.

Dr. Mainelis is very enthusiastic about teaching, education, and working with students and postdoctoral scientists. His graduate and undergraduate courses on air pollution and air sampling have been highly rated and appreciated by both undergraduate and graduate students. In addition to classroom teaching, Dr. Mainelis is co-directing the first-ever training grant in exposure science. Since understanding exposures is an integral and necessary component of understanding health effects of air pollution, the program is critical in educating a new generation of leaders in air pollution control and prevention field. Dr. Mainelis's mentoring of young researchers in his laboratory is distinguished by individual attention to students and their thorough professional preparation. Thanks to rigorous training, graduates from his laboratory have become leaders in their chosen fields and professions. His students and postdoctoral scientists are recipients of multiple awards and recognitions from various organizations, including A&WMA.

Dr. Mainelis is also passionate and committed to transferring knowledge from his research into practice. In addition to peer-reviewed publications and presentations at various national and international venues, research and innovation from his laboratory have resulted in two granted patents and two pending patent applications. One of the granted patents provides a novel solution to control particulate matter exhaust from diesel engines.

Dr. Mainelis received his undergraduate degree in physics (5-year program, graduated *with distinction*) from Vilnius University, Lithuania, and his Ph.D. in environmental health from the University of Cincinnati, Ohio.

Lyman A. Ripperton Environmental Educator Award

Lyman A. Ripperton (1921–1978) spent his career as a practitioner in education and research for air pollution control. He left the Los Angeles County Air Pollution Control District in 1958 to assume a teaching and research position in the Department of Environmental Science at the University of North Carolina at Chapel Hill. There, he initiated an air pollution education program that developed into one of the foremost of its kind in the United States. The Lyman A. Ripperton Environmental Educator Award is presented to an individual who has inspired students to achieve excellence in their professional and social endeavors. It recognizes the ability that only a few educators possess: to teach with rigor, humor, humility, and pride. Recipients of this award are educators we would have chosen as our teachers if we had a choice. They are known by the accomplishments of their students.
A&WMA presents the 2016 Charles W. Gruber Association Leadership Award to Tony van der Vooren Ph.D., P.Eng., QEP, a fellow member and Past President of the Association.

Dr. van der Vooren has been a member of A&WMA for more than 30 years. He became active in the Association at the Section level in the mid-1980s, when a colleague, and soon to be good friend Paul Complin, tapped him on the shoulder and asked him to help out with a conference. Dr. van der Vooren found he enjoyed the Association’s community and soon became very active in the Ontario Section. He served as the Ontario Section Chair in 1993–1994 and was introduced to the International Association during the prior year at the Incoming Officers Training (now called Leadership Training Academy, LTA).

Again, at the Incoming Officers Training, he met many kindred spirits in the broader Association; both as invaluable professional career contacts and as lifelong friends, among the membership and on staff. He became active in the Sections Council (long before it was named the Sections & Chapters Council) and was Chair of the Sections Council from 1997 to 2000. Soon after that he was elected to the A&WMA Board of Directors for a three-year term.

In 2005, Dr. van der Vooren was elected President of the Association during A&WMA’s Centennial Year (2007). It was a year of promoting the Association and meeting many of the members at numerous meetings and events throughout the Association’s geographic reach. It was an extremely busy year, but personally very fulfilling, and a highlight of his “career” within the Association.

He continues to stay active in the Association, representing the Ontario Section within the Section and Chapters Council and chairing the LTA (which is held each year in the spring for approximately 40 or 50 new leaders in the Association to provide them with leadership tools and a better understanding of A&WMA). He still retains his local roots by continuing to be active within the Ontario Section, chairing the program development committee and newsletter. He does not foresee retiring from the Association any time soon!

In his professional career, Dr. van der Vooren is a senior environmental consultant at Amec Foster Wheeler responsible for air quality and regulatory issues. Amec Foster Wheeler is a leading provider of environmental services and engineering solutions to infrastructure, manufacturing, electricity, and process industries. The company has nearly 40,000 employees worldwide, with about 15,000 in North America. He has been with Amec Foster Wheeler (and its predecessor companies) for 20 years. Prior to that, he worked for SNC-Lavalin.

Dr. van der Vooren has been involved in environmental issues for more than 30 years. His expertise includes industrial air pollution control (all industrial sectors), compliance testing, regulatory review, environmental assessment (mines, industrial facilities, landfills, incinerators, contaminated sites), and impact modelling (air quality, regulatory, multimedia pathways). In this capacity, he has developed extensive expertise in air management and environmental legislation. Projects have ranged as far afield as Peru and Serbia; and in the far north above the Arctic Circle.

His graduate degrees (M.A.Sc. and Ph.D.) are from the University of Toronto, Department of Chemical Engineering and Applied Science. He is a licensed Professional Engineer in Ontario, a Qualified Environmental Professional, and a Toxic Reduction Planner License in Ontario, and is a Fellow Member of A&WMA.
Edith Mijares Ardiente, P.E., QEP

Ardiente has been a member of the Association for the past 40 years. She has provided outstanding service to A&WMA by serving in leadership positions at local, national, and international levels and has contributed significantly to the achievement of the mission and objectives of the Association. She received the A&WMA Charles W. Gruber Association Leadership Award in 2013 and was made an A&WMA Fellow in 1997.

Edith Mijares Ardiente, P.E., QEP

Ardiente retired in 2012 as Vice President, Environmental and Energy Affairs of Navistar International Corporation, one of the world’s largest commercial and military truck, school bus, and engine manufacturers. She was elected to this position in May 2000, after serving as director of environmental affairs since 1991. She was the top environmental officer of the company and was responsible for creating the environmental department, establishing corporate environmental and energy policies and guidelines, and providing technical and regulatory assistance to all Navistar locations and operations worldwide. During her tenure at Navistar, she encouraged all of the company’s environmental professionals to become members and participate in Association activities. She also held the company’s annual environmental and energy meetings concurrent with and at the same venue as A&WMA’s Annual Conference & Exhibition.

In 2005, Ardiente served as President of A&WMA, was a member of the People-to-People Program’s environmental exchange delegation to China, and was a Board member of the International Union of Air Pollution Prevention and Environmental Protection Associations (IUAPPA). During her term as A&WMA President, she made increasing Association membership as one of her priorities and visited and spoke at A&WMA Sections and Chapters in the United States, Canada, Mexico, Brazil, South Korea, China, Japan, and the Philippines.

From 1994 to 2004, Ardiente served as member of the Board of Overseers of the Illinois Institute of Technology’s Stuart School of Business and was Chair of Stuart’s Masters in Environmental Management Program. In 1993, she served as TOKTEN (Transfer of Knowledge Through Expatriate Nationals) consultant to the Philippines under the sponsorship of the Philippine Department of Foreign Affairs and funded by the United Nations Development Program. In 2006, she received a Heritage of the Filipino professional excellence award from the President of the Republic of the Philippines.

Ardiente received her bachelor’s degree in chemical engineering, valedictorian, magna cum laude, from the University of San Agustin in the Philippines. In college, she was a full university academic scholar and a Philippine National Science Development Board scholar. She received her master’s degree in environmental engineering from Northwestern University. She is a registered Professional Engineer in Illinois and a Qualified Environmental Professional.

Dr. Hidy was a member of the Association for more than 25 years. During this time, he has served as both the Chair of the Critical Review Committee and as Co-Technical Editor-in-Chief of the Journal of the Air & Waste Management Association (JA&WMA). In addition, he has contributed a large number of papers on atmospheric chemistry to JA&WMA.

In 2005, he was presented with the Frank A. Chambers Excellence in Air Pollution Control Award in recognition of his achievements and contributions to the knowledge of atmospheric aerosols in the urban environment, his pioneering leadership in the design and execution of major field experiments that have led to improvements in knowledge about secondary aerosols and regional-scale pollution phenomena, and his role in informing international stakeholders about the application of atmospheric science to develop insightful and sound air pollution management strategies.

Dr. Hidy began his career in 1962 with the National Center for Atmospheric Research and later joined the staff of the Rockwell Science Center in 1967. Until 1994, he devoted his efforts to research administration and project management of various atmospheric aerosol and environmental studies culminating in his leadership of the Desert Research Institute (1984–1987) and the Environment Division of the Electric Power Research Institute (1987–1994).

After 1994, he returned to air quality research and has contributed to this field advancing knowledge of aerosols and ozone chemistry. Dr. Hidy has been a member of the U.S. Environmental Protection Agency (EPA) Science Advisory Board, a number of committees of the National Research Council, and was a committee chair of the North American Research and Study of Tropospheric Ozone (NARSTO).
Ryckman is an environmental and civil engineer for the U.S. Air Force Materiel Command (AFMC) and the Air Force Life Cycle Management Center (AFLCMC). For nearly three decades, he worked as an environmental engineer leading the air quality management program for AFMCs Environmental Management Division at Wright-Patterson Air Force Base, OH, where he was responsible for policy formulation, planning, coordinating, budgeting, and implementing guidance to the installations, research laboratories, air logistics centers, the various product directorates, and test centers.

During this time, he oversaw the annual operating budget and provided advocacy for thousands of air quality compliance projects. Ryckman served as a member of the U.S. Department of Defense (DoD) CAA Services Steering Committee for more than 23 years, leading various Air Force Team efforts related to National Emission Standards for Hazardous Air Pollutants (NESHAP) Rulemaking (e.g., aerospace and boiler NESHAPs). He successfully led AFMC Air Quality Managers’ Working Group for many years, successfully achieving its compliance goals.

Ryckman also chaired the AFMC Air Pollution Information Management System (APIMS) Functional Users Group from the mid-1990s to 2010, guiding the system’s development for the AFMC’s 14,000 air quality compliance sites. APIMS was designated the U.S. Air Force’s Best of Breed in 1998, and is today serving 200 military bases.

Prior to joining AFMC, Ryckman served with the 2750th Air Base Wing Base Civil Engineering Office (1969–1983) and the U.S. Air Force Logistics Command’s (AFLC) Civil Engineering Directorate (1983–1992), providing civil, environmental, and engineering management services. During this period he chaired numerous AFLC environmental focused working groups and task forces, and supported the Joint DoD Logistics Commanders’ Group on Volatile Organic Compounds.

In 2012, Ryckman joined the Air Force Life Cycle Management Center’s (AFLCMC) Environment & Health Risk Management Branch and worked to reduce the environment, safety, and occupational health (ESOH) burden of the systems acquisition process through the use of innovative pollution prevention processes and business practices. In 2013, he joined the Environmental Compliance Branch, wherein he provides guidance and assistance to the AF government-owned, contractor-operated (GOCO) facilities to meet all environmental standards. He also leads the ESOHCAMP (multimedia auditing) and the Environmental Baseline Survey (EBS) programs at all GOCOs and performs as the environmental resource manager for compliance activities.

An A&WMA member since 1974 (Southwest Ohio Chapter, East Central Section), Ryckman is also a member of the Society of American Military Engineers (SAME), National Defense Industry Association, Dayton Council on World Affairs, Affiliate Societies Council of Dayton, and is a former member of the Water Environmental Federation. He was the 2012 recipient of A&WMA’s Richard Beatty Mellon Environmental Stewardship Award. He’s been an IPEP Regional Coordinator since 2005 and a member of the SAME-Kittyhawk Post Board.

Ryckman received bachelor’s and master’s degrees in engineering management from the University of Dayton. He is a graduate of the U.S. Air Force Institute of Technology’s Applied Engineering Program, U.S. Air Force Air War College Seminar Graduate Program, and Rockhurst University’s Excellence in Leadership Certificate Program. He is a registered Professional Engineer for the State of Ohio, a Qualified Environmental Professional, and holds a Systems Planning, Research, Development and Engineering (SPRDE) Systems Engineering Certification from Defense Acquisition University.

Over the past 25 years, Ryckman has actively supported the Association in various leadership capacities. He served on the A&WMA Board of Directors from 2008 to 2010 and on its By-Laws and Governance Committees. He chaired the Technical Council’s Industrial Process Division (1995–1998) and was Environmental Management Group Coordinator (1999–2002). He has organized, chaired, or co-chaired numerous specialty (EI-1) breakout sessions or workshops for federal facilities at A&WMA Annual Conferences and facilitated add-on extended EI-1 sessions at A&WMA-EPA Information Exchanges, and contributed dozens of papers since 1991. He has been a member of Public Education Division since 1997 and is the founder and a past Chair of A&WMA’s Scouting Jamboree Committee.

Ryckman served as Southwest Ohio Chapter’s Education Committee Chair, serving on its Board (2005–2016), and on the East Central Section Board (2014–2016). He’s been the Southwest Ohio Chapter’s liaison to the Affiliate Societies Council of Dayton, since 2007, which supports science, technology, engineering, and math (S.T.E.M.) outreach to youth and professional development for scientists and engineers. He has also been an active member of A&WMA’s Annual Technical Programs Committee since 1995, and was the founding Chair of the Federal Facilities Committee (EI-1; 1990–1995), and remains an active member in this and other Technical Council Committees to present.

The paper, published in 2007, addresses the question of how to introduce new measurement technology into long-term network operations, with the example being that of organic and elemental carbon quantification on aerosol samples. The newer instrumentation documented in this paper allowed for all reported carbon measurements methods to be implemented on a single platform. This platform provides different temperature fractions and optical corrections that can be summed to approximate many different methods for comparison across networks. The paper reports the results of systematic testing that identified and corrected limitations of previous analysis hardware, including uncertain sample temperature quantification, infiltration of oxygen into the inert gas stream, and undue dominance of adsorbed organics with the filter on the transmittance pyrolysis correction, while still maintaining consistency with the long-term U.S. chemical speciation databases.

2016 Sections and Chapters Awards

Each year, A&WMA’s Sections & Chapters Council recognizes outstanding individual Sections and Chapters with two prestigious awards: the George T. Minasian Award and the Chapter Cup Award.

**George T. Minasian Award**
Named for the late George T. Minasian, first chair of Sections Council, to commemorate his many years of distinguished service to the Association, this award is given to the top performing Sections recognized for outstanding achievement in serving the mission and the membership of the Association. The 2016 George T. Minasian Award is presented to:

Niagara Frontier Section
Pacific Northwest International Section (PNWIS)

**Chapter Cup Award**
Given to the top performing Chapters recognized for superior performance in providing service to A&WMA Members. The 2016 Chapter Cup Award is presented to:

East Michigan Chapter
Mississippi Chapter
A&WMA continues its tradition of recognizing members for their continuous service to the Association by acknowledging those individual members with 30+ years of service. In particular, we would like to salute five members who have dedicated 60 or more years of continuous membership. Many of those listed below have volunteered countless hours to aid the Association in providing members with training, education, technical information, publications, and networking opportunities. It is with great pride that A&WMA acknowledges their years of service and dedication.

**Member Name, Membership (in years)**

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2016 A&WMA Honors & Awards

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A&WMA takes great pride in supporting the future environmental leaders of our world. For more than two decades, the Association has awarded scholarships to the most promising environmental students on the basis of academic record, plan of study, career goals, recommendations, and extracurricular activities without consideration of sex, race, national origin, financial need, age, or physical disability. Full-time graduate students who are pursuing courses of study and research leading to careers in air quality, waste management, environmental management/policy/law, and sustainability are eligible to apply. This year, A&WMA is pleased to recognize the following 16 students chosen by the Scholarship Awards Committee with scholarship awards totaling $49,500.

Milton Feldstein Memorial Scholarship for Air Quality Research ($7,500)
Lan Jin

Dave Benferado Scholarship for Air Pollution Control and Waste Minimization Research ($4,000)
Eric Monsu Lee

Richard Stessel Memorial Scholarship for Solid and Hazardous Waste Research ($4,000)
Alireza Rajabpour Ashkiki

Jacqueline Shields Memorial Scholarship for Waste Management Research and Study ($4,000)
Syeed Md Iskander

In recognition of excellence in air quality research and study ($2,500)
Mohsen Ghafari
Amrutasri Nori-Sarma
Ashley Pierce
Mercede Ramjerdi
Jian Sun

In recognition of excellence in waste management research and study ($2,500)
Mylung Hwangbo
Nebechi Osia

In recognition of excellence in sustainable development research and study ($2,500)
Olga Kachook

Scholarship Donations
A&WMA gratefully acknowledges all of the contributions made to the Scholarship Endowment Trust Fund from April 1, 2015, through March 31, 2016, with special appreciation to the following contributors of US$100 or more.

Michael DeBusschere ............................................................... $250
Leo Stander ................................................................. $202
Peter Hess ................................................................. $200
John Koehler ................................................................. $200
Edith Ardiente ................................................................. $100
Bill Dean ................................................................. $100
Rob J. Farber ................................................................. $100
Jayme Graham ................................................................. $100
John Koehler ................................................................. $100
Richard Wales ................................................................. $100
Susan Wierman ................................................................. $100

If you are interested in making a donation to the A&WMA Scholarship Endowment Trust Fund, please contact Gerald Armstrong at garmstrong@awma.org. Contributions are tax deductible.
2016 Annual Conference & Exhibition
June 20-23, 2016
New Orleans, LA

Come together to join over 1,500 leading environmental professionals to share knowledge and advance the industry at the most comprehensive conference on environmental technology and regulation. Make your plans to attend now!

Conference highlights include:

- Keynote Speaker: A. Stanley Meiburg, Acting Deputy Administrator, U.S. EPA
- Critical Review: Emissions from Oil and Gas Operations
- Technical Sessions: Research, Compliance, Practical Solutions
- Mini Symposium: Industrial Growth and Environmental Stewardship
- Networking: Exhibit Hall, Grand Reception, YP/Student Events


Power Plant Pollutant Control and Carbon Management
“MEGA” Symposium
August 16-19, 2016 • Baltimore, MD

With a focus on industry response to new operational and environmental challenges for power plants, and a streamlined format, the MEGA Symposium returns in 2016 through the combined efforts of four key industry players – the Electric Power Research Institute (EPRI), the U.S. Environmental Protection Agency (EPA), the U.S. Department of Energy (DOE), and the Air & Waste Management Association (A&WMA).

Conference topics include: MATS Controls, Carbon Management and CO2 Control, Managing Variable Load, Byproduct Discharge Management, and SOx/NOx Particulate Controls.


Atmospheric Optics: Aerosols, Visibility, and the Radiative Balance
September 27-30, 2016
Jackson Hole, WY

This international conference will provide a technical forum on advances in the scientific understanding of the effects of aerosols on urban, regional, continental, and global-scale haze and the radiative balance. The conference will take a multipronged approach by encouraging scientific submissions (e.g., related to measurements, modeling, etc.) as well as submissions addressing regulatory and policy issues.


This conference includes an excursion to Grand Teton National Park and a night sky program. Visit the website at http://visibility.awma.org.

Save the Dates:

35th International Conference on Thermal Treatment Technologies and Hazardous Waste Combustors (IT3/HWC)
October 4-6, 2016 • Baton Rouge, LA

IT3 provides a forum for the discussion of state-of-the-art technical information, regulations, and public policy on thermal treatment technologies and their relationship to air emissions, greenhouse gases, climate change, renewable energy or alternative energy production, and sustainability.

Find more details at http://it3.awma.org.

Vapor Intrusion, Remediation, and Site Closure
December 7-8, 2016 • San Diego, CA

This conference addresses the important technical considerations involving the vapor intrusion (VI) pathway, site remediation, and advancing the process of site closure.


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