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Environmental Management

PRACTICAL AND CURRENT INFORMATION FOR ENVIRONMENTAL, HEALTH AND SAFETY PROFESSIONALS

ARIZONA

SELECTING AN ENVIRONMENTAL CONSULTING FIRM

KEY EVALUATION POINTS *PG 6*

STAYING SAFE FOR THE HOLIDAYS!

BY CHUCK PAULAUSKY, CHMM *PG 12*

2016 JEMA CALENDAR: FREE INSIDE!

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27
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9 AM TO 3 PM (WEDNESDAY)

(REGISTRATION BEGINS 8:30 AM)

AGENDA

MORNING:

WELCOME & INTRODUCTIONS, Dr. Nick Hild
DESIGN OF A PERMIT, Kale Walch (Pinal County AQ)
PERMITTING PROCESS, Anu Jain (Pinal County AQ)
TOPIC TBD, Speaker TBA, (Honeywell Aerospace)
COMPLIANCE INSPECTIONS, Bob Farrell (Pinal County AQ)
ENFORCEMENT PROCEDURES, Josh Dezeuw (Pinal County AQ)
TOPIC TBD, Mitch Klein, (Snell & Wilmer)

LUNCH / NETWORKING:

Lunch break & networking opportunity.

AFTERNOON:

"MAKING \$ BEING GREEN, RISK VS REWARDS, & HOW TO
MAKE LIFE MISERABLE" Mark Salem (Salem Boys Auto)
NONATTAINMENT DUST RULES, Kale Walch (Pinal County AQ)
PROPOSED EXCEPTION EVENTS RULE MODIFICATIONS,
Amanda Reeve (Snell & Wilmer)
PARTICULATE MATTER AND OZONE UPDATE,
Director Mike Sundblom (Pinal County AQ)
ROUNDTABLE / DISCUSSION & CLOSING REMARKS, Dr. Nick Hild

One-on-One Sessions: Introduced last year, these
popular One-on-One Help Sessions with Regulators will be
available again this year. Meet privately with regulators for
facility-specific permit compliance assistance (about 20
minutes, as needed). Limited availability - request a session
when you register to reserve your spot.

*Check the Alliance website for agenda updates.
Bring all your questions with you!*

WHO SHOULD ATTEND?

If your facility has an Air Quality permit in the Pinal County area or you are a consultant working with a regulated source in this area, this seminar is for YOU! Seminar speakers include professionals with industry experience applicable to your situation, and experienced regulators. See agenda (at bottom, left) or visit our website for more details, or call if you have questions about attending. All are welcome. **LUNCH and REFRESHMENTS included.**

LOCATION:

The Historic 1891
Florence Courthouse
135 North Pinal Street
Building "A"
The Ironwood Room
Florence, Arizona

*Detailed map & directions
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**SAVE
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The Environmental Professionals of Arizona (EPAZ) is hosting the 12th Annual Gatekeeper Regulatory Roundup Conference. The Conference is a great opportunity to learn the latest regulatory updates, share industry specific information, and network among your peers. **INVITED SPEAKERS include:** Arizona Department of Environmental Quality Director and Division Directors.

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ABSTRACTS (Due by COB January 4, 2016) Topics include, but not limited to: **Regulatory & Technical Updates for Industry, Municipalities, and Medical Facilities:** **AIR** including air quality investigations, compliance, & enforcement, dust control & mitigation, air modeling, CAA; **WASTE** including industrial & medical RCRA solid/hazardous waste management and compliance, emerging remediation and pollution prevention strategies; **WATER** including water, wastewater, and storm water management and treatment for industrial facilities and municipalities, updates on new effluent limitation guidelines (ELGs), NPDES, CWA & SDWA; **EMERGENCY RESPONSE, EPCRA, & OSHA/H&S** including State and Local emergency response planning and engagement, expansion of TRI reporting, asbestos and LBP compliance and enforcement, facility emergency management, developing and evaluating safety performance indicators and trends; **NEPA/ESA. Industry Focus - Semiconductor:** Air, Water, Waste, and H&S topics related to the semiconductor industry. **Detailed agenda with final topics to be provided after submitted abstracts are evaluated.**

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SELECTING AN ENVIRONMENTAL CONSULTING FIRM

KEY POINTS FOR EVALUATION

This article addresses key points to consider in evaluating and selecting an environmental consulting firm. Although primarily written with hazardous waste cleanups in mind, the review process can equally be applied to use in evaluating an environmental consulting firm in any situation.

Environmental investigation and cleanups can be major projects, but they don't have to be major headaches - not if you do your homework in selecting an environmental consulting firm.

There is no magic formula for assuring that the consultant or contractor you hire will be a perfect match for your type of job. It may be frustrating and expensive to discover that a consultant who has excellent credentials and experience with one environmental problem may have little experience with another.

When you are looking for an environmental consulting firm, consider:

- Site investigation and cleanup is often a complex process.
- Investigations and cleanups can range in cost from a few thousand to several million dollars.
- Investigations and cleanups can take anywhere from a few months to several years to complete.
- Cheaper is not always better.

Asking questions and checking

references will go a long way toward assuring that you get the right consultant to help you get the job done right the first time.

INVESTIGATIONS AND CLEANUP: AN ENGINEERING PROJECT

As environmental consultants frequently point out, designing a cleanup is very different from designing a building. With a building, you generally start with fairly accurate estimates of cost, completion times, and work and materials needed. The end product is designed and understood before the building is started.

This is seldom the case with cleanup projects. Few details are known at the beginning of the project. It is generally best to complete a stage, evaluate available information and options, then move on to the next stage. The extent of the cleanup problem and the work needed becomes clearer in increments rather than at the outset. Unfortunately, this may also apply to the cleanup price tag. Total costs usually cannot be accurately or approximately estimated early in the project.

GETTING STARTED

Compile any readily available information about the site, (or your project, if this is not a site cleanup) including potential sources of contamination and company records on hazardous substances used or stored. Prepare a brief written description of the historical use of the site, current use, and the work you think needs to be done. A little time spent here can help you select the right consultant and may save you time and money during the project.

DOWN THE ROAD

Many projects continue beyond the initial investigation stages and are often more than "simple" cleanups. Projects often expand in scope as more information becomes available. Since it is time-consuming to find and hire the consultant you want, it is useful to know from the outset whether your consultant is able to do only the initial stages of a project, or could carry the project through if the scope is expanded. In other words, hiring a consultant who is able to do only one component of the investigation may result in a more expensive and time-consuming process than hiring one who is able to handle a complete cleanup project. Don't hesitate to change contractors if yours is incapable of continuing a project.

A "hands-on" approach in overseeing the consultant's work is a good idea. Ask to have reports and contracts explained in lay terms. Make sure all work that occurs follows a detailed work plan subject to your review and approval. Your own understanding of your facility or property may enhance your consultant's understanding, leading to a higher quality and more accurate finished project.

HIRING A CONTRACTOR: GENERAL GUIDELINES

SPECIFIC PEOPLE VS. A FIRM

It is important to know which people from a consulting firm will be assigned to your project and what their role will be. The firm may have demonstrated its capability, but it is also important that



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qualified and experienced staff are assigned to your project. Checking references for the firm as well as for individual staff assigned to your project can pay off. Also, pay attention to subcontractors and vendors the consultant may propose to hire and how they will be used on the project.

STAFF AVAILABILITY

The firm selected to do your work needs to demonstrate not only that it is capable, but that it will have qualified staff available during the time period in which your work must be completed.

TIME NEEDED

Consulting firms should be asked to estimate the time needed to complete the work required.

AGENCY AND REGULATORY EXPERIENCE

Environmental firms should be asked to demonstrate experience and success in addressing hazardous substance regulations and in working with regulatory agencies.

COSTS

A wide selection of contract types is available in order to provide flexibility in acquiring the services you need.

The contract type you choose depends on the type and scope of your project.

Research the various contract types, discover the advantages and disadvantages of each, and choose the type that best fits your needs. Whichever method you and your consultant agree to, be sure you set up clear, specific criteria by which to evaluate and compare cost estimates.

Knowing what the charges are and how they are determined are crucial to cost-control. Your bill should match the contract and provide top-to-bottom detail. Check that charges are legitimate, correct and timely. Tell the consultant that you want a billing schedule and want bills at regular intervals, and then examine each carefully.

Below are two types of contracts consultants generally used to charge you for cleanup work performed.

1. TIME-AND-MATERIALS

One contract consultants use is the time-and-materials contract. This type of contract provides for payment of a fixed rate for each hour of direct labor, direct cost of materials, and in some instances, payment of materials handling costs. The consultant's overhead costs, general and administrative expenses, and profit are all incorporated in the fixed hourly rate. Thus, the greater number of hours spent on the job, the greater the profit to the contractor, subject only to a negotiated ceiling on the total cost.

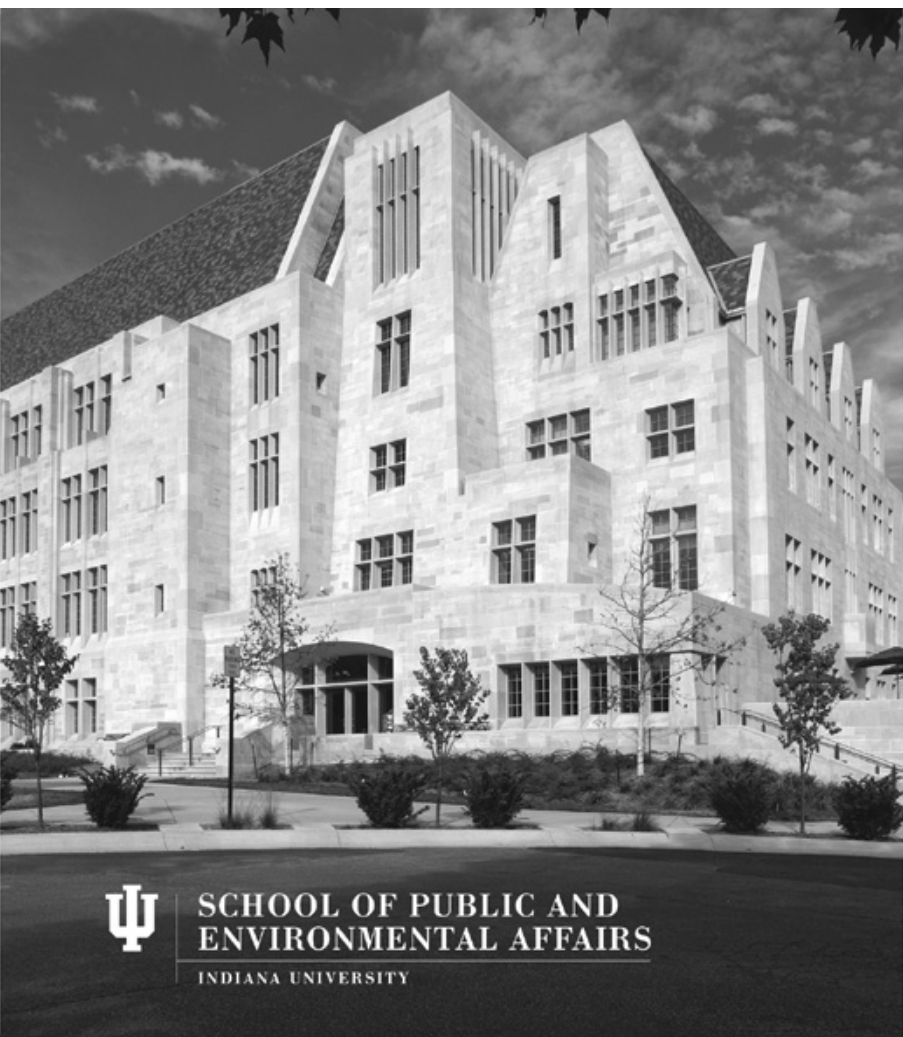
A time-and-materials contract only buys you hours of service, not a completed cleanup. This type of contract is often negotiated if you are uncertain of the type, extent or duration of the work needed, or are unable to anticipate costs with any reasonable degree of confidence.

2. FIXED PRICE

This method is generally used for small projects or when the scope can be clearly defined. One price covers the whole job from start to finish, including staff-hours, equipment, and all fees and services. You control costs by letting the contractor know that you won't pay for work beyond the scope of the contract unless you specifically agree to it. BE CAREFUL that contractors don't take shortcuts in completing the work.

WHERE TO LOOK FOR CONSULTING FIRMS

Probably the best sources for selection information are other companies in your industry, or related industries, who have conducted investigations and cleanups. Other companies, property owners, or attorneys who have participated in cleanup projects may also help you identify appropriate consulting firms. *Continued on page 8*



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SELECTING AN ENVIRONMENTAL CONSULTING FIRM

CONTINUED FROM PAGE 7

Environmental professional organizations, banks, and the telephone book also provide listings for environmental consultants.

Site owners should apply the same careful selection criteria to any consultant firm regardless of recommendations from other sources.

SUGGESTED QUESTIONS

Sample questions for interviewing consulting firms and their references are listed below to help you select the firm best suited to your environmental work.

QUESTIONS FOR A CONSULTANT

1. What is your firm's experience in performing this specific work and the subsequent work it might lead to? Request a list of similar projects completed with references.
2. What treatment methods or technologies has the firm used or recommended? Have you completed any groundwater or soil cleanups?
3. Which portions of the work does the firm sub- contract? Are subcontractor activities competitively bid? Ask for names of subcontractors and check their experience.
4. What is your firm's experience working with and satisfying regulatory agency requirements? Request a list of projects completed in Washington State with references.
5. Which staff will be assigned to my project? Ask for current resumes. Ask the firm to specify staff roles, and request references for at least the staff person who will be designated the project manager.
6. What will the availability of assigned staff likely be over the potential life of the project? Ask if the firm will provide additional staff assistance if needed to get the job done.
7. Is the firm's field staff trained in safety procedures as required by the Washington Industrial Safety and Health Act (WISHA)?
8. How do you propose to plan cost-effectively so that all short-term work will complement any potential long-term work? Ask the firm to prepare a proposal for the work to be conducted, a detailed cost estimate for the work proposed and a "ball park" estimate for subsequent work required.

9. Do the firm and its subcontractors have environmental liability insurance?

10. How will the investigation and cleanup work affect activities at my site; i.e., employee work schedules, relations with customers and neighbors? Ask the firm to briefly describe its recommended approach to the work.

QUESTIONS FOR A CONSULTANT'S REFERENCES

1. Was your project similar in size and nature to mine?
2. Did the consultant meet the stated work and project deadlines?
3. Did the consultant keep you informed of project developments and aware of all available cleanup options?
4. Did any problems arise during your work with the consultant and were they satisfactorily resolved?
5. Did the consultant work effectively with regulatory agencies, local officials and/or your attorney?
6. Were you satisfied with the work performed by the consultant?
7. Did the final costs seem in line with the original estimate?

SOME THINGS TO WATCH FOR

- Cost estimates significantly lower than those of competing firms. Just because they're the cheapest doesn't necessarily mean you get the best quality work. You may end up paying for expensive mistakes or for improvements on poor quality work.
- Hard-sell approaches.
- Minimizing or maximizing potential technical or legal problems.
- Strong biases for or against certain cleanup remedies.
- Conflicts of interest.
- Overly optimistic time lines.
- The firm's familiarity with applicable regulations.

MAKING THE FINAL DECISION

Request proposals from at least three (3) firms or individuals who best fit your requirements. Proposals should include a scope of work, staff resumes, estimated work schedules, anticipated costs and related fees, estimated total project costs with an itemized fee schedule, and references.

Know what you're paying for! Get an explanation of the rates charged, a description of the tasks, and a list of junior-, mid- and senior- level staff who will perform each task. It's a good way to match rates to services and to weigh the strengths and weakness of each contractor.

Read the fine print. Make sure you understand the payment terms, including interest charges on outstanding bills. Don't get locked into an overestimated bid and don't automatically choose the lowest bidder.

Before you sign on the dotted line, have a clear understanding of how long the work will take and how much it will cost. Double check, IN WRITING, the price, timetable, terms and conditions of payment, the contractor's cited experience and capability, and the explanation and purpose of technical work.

You should then have sufficient information to make a good decision about which consultant to hire.

ACKNOWLEDGEMENTS

This article was provided courtesy of Barb MacGregor and the Washington State Department of Ecology, Toxics Cleanups Program. Additionally, WSDoE acknowledges credit to the Oregon Department of Environmental Quality, "whose brochure on this subject provided much of text for this Ecology Report."

The Washington State Department of Ecology, Toxics Cleanup Program, can be contacted at PO Box 7600, Olympia, Washington 98504-7600.



Empty 55 Gallon Drums at a Phoenix Facility

SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT



Nicholas R. Hild, PhD.

HISTORY LESSONS FOR TODAY'S ACTION "PLAN"

On April 22, 1970, the first Earth Day celebrations were held on college campuses across the country. At that time, our nation's concerns were primarily focused on the growing recognition that our surface waters were so polluted by industrial and domestic wastewater discharges, that something drastically needed to be done.

Despite the fact that the Rivers and Harbors Act of 1899 had allowed the Corps of Engineers to keep shipping channels open most of the time, it had little real effect on the deteriorating state of the Great Lakes or any of the major rivers like the Mississippi and Missouri, which were the drinking water sources for literally millions of people. By the late 1960's, with more than a little help from environmental activists who were vocalizing environmental issues while protesting U.S. involvement in the Vietnam war, (then) President Nixon went on record advocating for cleaning up our nation's waters.

In June of 1969, coincidentally with Ohio's Cuyahoga River being on fire for the twelfth time in 17 years, Nixon pushed Congress to pass the Environmental Quality Act (EQA) which established the Federal Environmental Protection Agency. In doing so, he noted that he wanted to be known as 'the Environmental President' who got our polluted waters and air cleaned up (State of the Union, 1969).

Interestingly, two years later, when the Water Quality Act Amendments of 1972 (WQAA) reached the (environmental) President's desk, he vetoed it, saying that it's far reaching requirements would cripple industry and cost thousands of jobs, if it was allowed to become law. Of course Congress reminded him that his priority two years before was exactly what the new legislation was aimed at and the veto was over-riden by a two-thirds majority in the Senate to become the most far reaching piece of Federal environmental legislation (up to that time) ever promulgated.

It is not clear that 45 years of water legislation has yet met the WQAA (PL 92-500) goal of "...eliminating the discharge of pollutants into navigable waters of the U.S. by 1985." (or even yet in 2015), but in the, then, EPA Administrator Ruckelshouse's words when he met LA County Wastewater administrator in 1985 to discuss their Pacific Ocean discharge permit, "...we are much further along in meeting those goals than we would have been, had we not chosen to pass and enforce the 1972 WQAA..."

Yet, today, there remains much work to be done to totally eliminate pollutant discharges to surface waters even though a majority of our nation's waterways have been cleaned up. Yet, if our

Congress had not acted and promulgated the WQAA, what would our nation's rivers and lakes be like today?

It's a fair question, considering that that the '72 Water Act contained "technology-forcing" language with accompanying funding for research and development of advanced treatment technologies that could actually clean up polluted wastewater to the level the legislation demanded. It was the first federal pollution control legislation that literally demonstrated that the nation had its highest priorities on cleaning up our environment, at whatever monetary cost, for the benefit of generations to come.

Thus, from the early 1970's until now, our nation has had a history of progressively attacking our most pressing environmental problems, even when it wasn't always politically popular---far-reaching federal legislation such as RCRA, CERCLA, the Pollution Prevention Act and CAAA of 1990 were examples of that commitment---and the people's will to ensure our nation's environmental future would always be better than previous generations had experienced.

Fast forward to Earth Day 2015, where, instead of water being our most pressing environmental issue, we now are facing global climate change issues that were not even on our radar in 1970. And many of those seem politically unsolvable---at least unsolvable at a reasonable cost to taxpayers---in a global economy. Complicating this dilemma is a partisan and unpredictable congress that seems to be demanding a classical "guns or butter" economic evaluation before committing to any legislation that deals with climate change.

And yet, today, we stand at a critical point in history---as we did when we made the commitment in 1972 to clean up the nation's waters--- where what we decide to do about reducing our carbon footprint has become political fodder for the next administration to deal with: the WQAA of 1972 has become the 2013 Clean Power Plan, primarily because of its potential to impact the nation's electrical power generation industry and the coal and oil producing states (and companies) that supply them---jobs or the environment---guns or butter; it's up to us.

The EPA has said that power plants, especially those that burn coal, emit more than a third of total domestic greenhouse pollutants, including carbon dioxide and methane (epa.gov/carbon). So, in September of 2013, the EPA issued the EPA Clean Power Plan that focuses on a phased-in reduction of carbon emissions from power plants, over the next fifteen years. In August of 2015, the second phase of the Plan proposed carbon reduction standards for power plants aimed at reducing emissions by 32% by the year 2030. As with the WQAA of 1972, this Plan for reducing greenhouse gas emissions has received predictable push-back from a politically-sensitive congress and several states.

As of October 2015, just two short months after President Obama announced that the carbon standards would be implemented in 2016, 23 states (including Arizona) had joined in a law suit that seeks to block the implementation of the standards on the basis that the new rules exceed the government's authority to reduce power plant emissions. Interestingly, the suit's language has a lot of parallels to the words spoken by President Nixon when he vetoed the WQAA in October of 1972: "...thousands of jobs will be lost and many industries (i.e. think, fossil fueled power plants and coal and oil production) across the nation will be lost if this legislation is allowed to be implemented..."

It remains to be seen if The Plan gets implemented. And, if it does, in what form those standards will be enforced. But, one thing is certain: if we don't take action to reduce carbon emissions in the U.S. now, how will we ever explain our inability to address the effects of global warming on our children's, children's, children?

Nicholas R. Hild, PhD., is an Emeritus Professor and Sustainability Scientist in the College of Technology and Innovation and the founder of the Environmental Technology Management program at Arizona State University. Dr. Hild has extensive industrial environmental engineering and management experience as well as continuing to be a consulting environmental engineer for the past 40+ years. Reach him at www.worldsleadingexpert.com or email at drnick@asu.edu.

ASSOCIATIONS PAGES

The Journal of Environmental Management Arizona invites environmental, health and/or safety organizations in Arizona to contribute news articles about their associations. Contact the editor at 480-422-4430 x42.



WWW.SAEMS.ORG

We would like to thank our generous sponsors and all who attended the SAEMS Reception for the new Arizona Department of Environmental Quality (ADEQ) Director, Misael Cabrera, P.E.. The event was held at the Arizona History Museum in downtown Tucson on November 5, 2015 and was enjoyed by all.

Tom McGovern, Vice President and Regional Manager of Psomas, and Carolyn Campbell, Executive Director for the Coalition for Sonoran Desert Protection, spoke at our September luncheon about the Pima County Bond initiatives that were voted on by Pima County residents on November 3, 2015. Also on hand at the September Luncheon were two of our 2015 University of Arizona scholarship winners - Cynthia Hernandez, an undergraduate student, and Bridget Guiza, a graduate student, who both gave brief presentations on their studies and aspirations. Our October luncheon featured Mike Conway, Chief of the Geologic Extension Service of the Arizona Geological Survey, who presented the topic Earth Fissures in Arizona.

Please consider attending a SAEMS Luncheon for informative presentations and networking opportunities. Also please note that our membership drive is underway and this year SAEMS is offering free memberships to students so they may begin networking with environmental professionals while still pursuing their educational goals. For more information regarding SAEMS and upcoming events please visit our website.



Derek Koller
President



WWW.AWMA-GCS.COM

The Air and Waste Management Association-Grand Canyon Section has had an exciting last few weeks! On October 23, we had Rich Baldauf and Vlad Isakov, from the U.S. EPA Office of Research and Development present their research on the "Influence of Solid Noise Barriers on Near-Road and On-Road Air Quality" at AMEC Foster Wheeler in Phoenix. On November 9, Steve Burr from the Arizona Department of Environmental Quality presented proposed changes to the Arizona NSR rules at the MCAQD building. Thank you Rich, Vlad and Steve!

Our final scheduled event for the year will be a Joint Holiday Mixer with EPAZ and AZAEP at Terroir Wine Pub on Tuesday, December 8, at 6pm. Admission is free, but please consider bringing a non-perishable food item to donate to St. Mary's Food Bank. You can RSVP at www.epaz.org/events.

We will not be hosting "happy hour" mixers for the remainder of the year, due to conflicts with the holidays. We are putting together our calendar for next year, and will be post meetings on our website and in this column. For more information about AWMA-GCS, please visit us at <http://awma-gcs.org>.



Mike Sonenberg, PE
Chair



AZ.ASSE.ORG

The Arizona Chapter of ASSE has had a busy few months, and we are working into what looks to be another great year. Our next monthly meeting will be our Toy Drive at Gateway Community College, SO 1440 on December 4th. Students will be presenting current research projects and we will be collecting donated toys for Toys for Tots. Free lunch with donated toy, and as always, student members are free. Visit our website: az.asse.org for more information and to register.

Save the date for a half day workshop in January, and the Arizona Safety and Health Summit and ASSE Region II Professional Development Conference, April 21st and 22nd. I look forward to seeing you soon!



Melissa Schmaltz
President



WWW.EPAZ.ORG

We are happy to announce that we have located a new venue for our annual conference! The 12th Annual Gatekeeper Regulatory Roundup will be hosted at the DoubleTree Tempe (formerly Fiesta Inn) on March 29-30, 2016.

UPCOMING EVENTS:

December 8, 2015 EPAZ will be hosting a Joint Holiday Mixer with AZAEP & AWMA-GC at Terroir Wine Pub in Scottsdale.

December 10, 2015 our luncheon will feature "Director's Air Quality Update", presented by Phillip McNeely, Director, Maricopa County Air Quality Dept.

January 14, 2016 our luncheon will feature "Tier II Updates", Speaker to be determined.

EPAZ hosts monthly luncheon meetings on the second Thursday of the month from 11:30 AM to 1:00 PM at the SRP PERA Club. For the most up to date information, event details and reservations please visit our website at www.epaz.org.



Lisa Culbert
Association Manager



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The Alliance held its Annual Meeting November 10th and elected Officers of the Board for 2016, as follows: Greg Bopp (Honeywell Aerospace), Chair; Jaret Sullivan (Arlington Valley Energy), Vice Chair; Matt Conway (PING), Treasurer; and Jim Thrush, President.

The Alliance Advisory Councilors elected Beverly Westgaard, and Kale Walch, as Co-Chairs of the Alliance Advisory Council.

We are looking forward to an active 2016, and the Alliance Event Committee has already started planning for our annual Air Quality Permit Compliance Assistance Seminar to be hosted jointly with the Pinal County Air Quality Department, and will be held in Florence, AZ, on January 27th. (See page 3 of this issue for our full page advertisement.) If you are interested in participating in our educational or mentoring programs, or if you would like to learn more about Alliance membership, contact me at gregory.bopp@honeywell.com or call the Alliance office at 480-422-7392.

Greg Bopp
Chair



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FORWARD

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TRASH, CASH AND A BETTER PLANET: ARIZONA FORWARD LUNCHEON TOUTS RECYCLING THE UN-RECYCLABLE

"One man's trash is another man's treasure" is more than a saying. It's a business model for international leader and TerraCycle founder Tom Szaky. Arizona Forward's 46th Annual Luncheon will reveal how a green business transforms hard-to-recycle garbage - from used chip bags to cigarette butts - into consumer products like cutting boards, reusable grocery bags, and even yard fencing.

Founded in 2003, TerraCycle has blossomed to housing around 150 employees in 21 countries, with the reputation of recycling hundreds of tons of non-recyclable items. The program will illustrate the power of human creativity and the unexpected possibilities when we rethink current paradigms.

Szaky, dubbed a Forward Thinker by Entrepreneur Magazine, has created an innovative culture within TerraCycle, which now has products in more than 10,000 stores internationally. He's also the author of two books - Revolution in a Bottle and Outsmart Waste.

He will deliver the keynote address to 300 plus business and civic leaders on Friday, Dec. 4 at the JW Marriott Phoenix Desert Ridge and tell how he transformed a simple idea into a global award-winning business - proving it's possible to profit while improving the world.

There is increasingly less space in landfills across the world, so let's look to solutions to decrease waste and rethink what it means to be non-recyclable in today's world.

For more information: Arizona Forward, Website: ArizonaForward.org, (602) 240-2408, Email: info@arizonaforward.org



Tom Szaky, Terra Cycle Founder



Diane Brossart
President



Larry Olson, PhD.

IT'S ALL ABOUT CHEMISTRY

A TURNING POINT?

At the Rio Conference in June 1992, the United Nations Framework Convention on Climate Change (UNFCCC) was opened for signature with a goal to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." The U.S. signed and ratified the Convention along with 195 other Parties. The treaty, which entered into force in 1994, called for each Party to submit annual Greenhouse Gas Inventories, but did not provide targets or any penalties for failing to reduce emissions.

The Conference of the Parties (COP) has met each year since trying to find a way to achieve a global consensus regarding steps that might actually mitigate human causes for climate change. It has been a difficult and frustrating journey. The Kyoto Protocol in 1997 was widely covered in the press and was viewed as a significant first step by limiting emissions of greenhouse gases by Annex I (industrialized) countries. But the U.S. never ratified the Kyoto Protocol and Canada later dropped out. Even more importantly, developing countries like China and India were not included in Kyoto. These four countries alone account for more than 48% of the world's emissions. So any real solution has to be much more far reaching than Kyoto.

In the 20 years since the first COP, almost as much CO₂ and methane has been emitted into the atmosphere as in the last century. The ten warmest years on record for global average surface temperatures have all occurred since 1998 and the first five months of 2015 are the warmest ever recorded. This is the background for the 21st COP that will be held in Paris in December. The overarching goal of the conference is to achieve a virtually universal binding agreement with an aim of keeping

global warming to no more than 2 °C above pre-industrial levels. If things continue on our current trajectory, it appears we are headed to something closer to 5 °C.

More than 25,000 official delegates are expected in Paris (including government representatives, NGOs, UN and intergovernmental agencies, and other groups). With over 190 countries attending, this is as close to a truly global effort as we've had.

Many nations have already announced their commitments. The European Union as a whole has agreed to cut its greenhouse gas emissions by at least 40% by 2030 and to improve its energy efficiency and use of renewable sources by 27% assuming that other countries agree to comparable commitments. Just recently the U.S. and China unveiled an agreement that called for the U.S. to cut its emissions by 26-28% below 2005 levels by 2025 and for China to cap its emissions by 2030 or earlier if possible. Prior to this, China had only spoken about reducing the rate of growth of greenhouse gas emissions. China also pledged to increase its use of zero emission sources (wind, solar, nuclear) to 20% by 2030. So far, nations whose emissions account for 2/3 of the world total have submitted their goals.

But the difficulties facing delegates is exemplified by India, which is the 3rd largest source of greenhouse gas emissions after China and the U.S. India has 17.5% of the world's population living on only 2.4% of the land surface. 30% of the world's poor live in India. More than 300 million don't have access to electricity and 92 million lack access to safe drinking water. India's per capita energy use of 0.6 tons of oil equivalent is far below the world average of 1.88 toe (<http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf>). Clearly India has not been responsible for the historical buildup of greenhouse gases over the last century. It desperately needs to improve the quality of life of hundreds of millions of people and this has always meant an increased use of energy. So if India follows the path of China, the U.S., and Europe its emissions would dramatically increase over the next few decades as India becomes a global economic power. Like other developing countries, India is demanding that the industrialized world that created the problem shoulder the majority of the load in fixing it and provide financial and technical assistance to help in transitioning to new energy sources.

Will Paris be a turning point? Not only will this generation be judging the outcome, but future generations may be looking back on this time as well.

Larry Olson, PhD., Associate Professor, Arizona State University Environmental Technology Management Program. Dr. Olson holds a Ph.D. in Chemistry from the University of Pennsylvania, and is an environmental chemist with interests in remediation technologies and international environmental management. He can be reached at 480-727-1499, or by email at Larry.Olson@asu.edu.



STAYING SAFE FOR THE HOLIDAYS!

by Chuck Paulausky, CHMM

CHILL OUT! IT'S THE HOLIDAYS!

When Jim Thrush, Journal editor, asked me to write this holiday article for the December issue, I thought it would be a simple task. Unfortunately, I found that over the years, I've collected a TON of information! I decided to pull together suggestions and bits of trivia from a number of sources on a variety of topics covering your holidays.

HOLIDAY STRESS, WORKPLACE VIOLENCE

Frostie the Snowman was arrested recently for attacking Santa Claus. He went to a Santa Claus school and got into an argument with one of the fake Santas. The argument moved to another room, but all the witnesses said they heard Thumpity-Thump-Thump, Thumpity-Thump-Thump...

Almost everyone feels stress during the holidays. If allowed to get out-of-hand it can lead to violence, both at home and at work. Here are a few tips from the Texas Department of Insurance:

- Make a list and plan your time and money, then stick to it.
- Don't overcommit. List favorite holiday activities and pick those you most want to attend.
- Enlist help from family members and friends for entertaining, shopping, etc.
- Use idle time or time alone to spread the true spirit of the season – giving.
- Seek the help of a professional when stress becomes unmanageable.

HOLIDAY FIRE & ELECTRICAL SAFETY

A kitten in Eugene, Oregon, set a Christmas tree on fire while batting at the lights. The heat of the fire cracked a nearby fishbowl. Firefighters arrived within minutes and put out the fire, which had spread to the carpet. A goldfish named Clyde was found in the cracked bowl, and was put into another bowl with water, where it quickly revived, surviving the ordeal. The water in Clyde's bowl had prevented the fire from getting out of control.

Seasonal decorating with candles, and cold evenings by the fire have always been popular, but also one of the biggest sources of danger during the holidays. Most of these suggestions are common sense, but sometimes the emotions of the holidays make this not so common. NFPA offers these thoughts:

- Be careful with holiday decorations. Choose decorations that are flame resistant or flame retardant.
- Never use lit candles to decorate the tree.

- Keep lit candles away from decorations and other things that can burn.
- Test your smoke alarms and tell guests about your home fire escape plan.
- Keep children and pets away from lit candles.
- Keep matches and lighters up high in a locked cabinet.

Just three years after Thomas Edison invented the light bulb, his partner, Edward Johnson, invented the first string of lights for Christmas trees, for safety reasons. He wanted to help decrease the risk of fires from the candles commonly used at the time.

Fires involving Christmas trees cause an average of 6 deaths, 22 injuries and \$18.3 million in property damage. On average, one of every 40 home Christmas tree fires results in a death compared to one in 142 for total home fires from all causes. Electrical problems were factors in about one-third of all Christmas tree fires. An electric shock or electrical fire could darken festivities and lead to a holiday spent in an emergency room or worse.

Here are some electrical safety tips from NFPA, TDI, and CPSE to help avoid becoming an emergency room casualty this holiday season:

- Use lights that have the label of a recognized testing laboratory. Some lights are only for indoor or outdoor use.
- Use clips, not nails, to hang lights so the cords do not get damaged.
- Keep lights away from curtains or flammable materials.
- Make sure cords and plugs do not come in contact with water around the Christmas tree and outside the home.
- To prevent overheating, pinching and fraying, do not run cords under carpet, rugs, or behind furniture.
- Inspect, test and replace any string of lights with worn or broken cords or loose bulb connections or that become hot. Connect no more than three strands of mini string sets and a maximum of 50 bulbs for screw-in bulbs.
- Always read manufacturer's instructions for the number of LED strands to connect.
- Always unplug an electrical decoration before replacing light bulbs or fuses, and never pull on the wire to unplug them. Grasp the plug itself to remove it.
- Never use electric lights on a metallic tree. The tree can become charged with electricity from faulty lights, and a person touching a branch could be electrocuted.
- Plug outdoor electric lights and decorations into circuits protected by ground fault circuit interrupters (GFCIs). Portable GFCIs can be purchased wherever electrical supplies are sold.
- Always turn off Christmas tree lights before leaving home or going to bed.

HOLIDAY CHEMICAL SAFETY

Poinsettias have long been considered poisonous to humans. But remember, as with any chemical, the dose makes the poison. A 50-lb child would have to swallow 500-600 leaves for it to be fatal. According to www.kidschemicalsafety.org, poinsettias aren't the only holiday plants commonly used for holiday decorating. Mistletoe, holly, Jerusalem Cherry, boxwood and various species of yew are potentially poisonous and should be kept out of the reach of kids. If you suspect that your child has eaten any of these plants, call the Poison Control Center at (800) 222-1222.

The same concerns exist for many holiday decorations which could contain toxic substances, so watch your kids around these, as well. Also, ditto for dogs who eat too much dark and unsweetened chocolate, or other toxic plants and decorations. For these members of the family, contact the ASPCA Animal Poison Control Center at (888) 426-4435.

Allergists are saying that a major cause of a Yuletide increase in allergy symptoms is the Christmas tree. Primary sources for the allergens may be mold spores, pollen, dust mites, and even the fresh pine scent.

MISCELLANEOUS BITS OF HOLIDAY INTEREST

Burning of fires and bonfires was an important part of the Yule festivals of the Druids. When Christmas replaced the Yule festival, the Yule log carried over. It had to be lit 12 days before Christmas by a piece of last year's Yule log and last until Christmas where it was put out and a piece saved for lighting the next year's log.

Bell ringing has always been a part of the holiday season. In Medieval times, people believed that ringing church bells would get rid of lightning during thunderstorms. It was an unfortunate superstition for bell ringers. In 33 years lightning struck 386 church steeples and 103 bell ringers died.

REDUCING HOLIDAY WASTE

EPA offers these ideas to reduce waste while celebrating the holiday season:

- Send recycled-content greeting cards to reduce the amount of virgin paper used during the holidays. Remember to recycle any paper cards you receive. You also can try sending electronic greeting cards to reduce paper waste.
- About 40 percent of all battery sales occur during the holiday season. Buy rechargeable batteries to accompany your electronic gifts, and consider giving a battery charger as well. Rechargeable batteries reduce the amount of potentially harmful materials thrown away, and can save money in the long run.
- Consider the durability of a product before you buy it as a gift. Cheaper, less durable items often wear out quickly, creating waste and costing you money.
- When buying gifts, check product labels to determine an item's recyclability and whether it is made from recycled materials. Buying recycled encourages manufacturers to make more recycled-content products available.
- Approximately 33 million live Christmas trees are sold in North America every year. After the holidays, look for ways to recycle your tree instead of sending it to a landfill. Check with your community solid waste department and find out if they collect and mulch trees. Your town might be able to use chippings from mulched trees for hiking trails and landscaping.

AND FINALLY... NEW YEAR'S RESOLUTIONS

Not everyone believes in making resolutions, but here are some worth considering as you go forward in 2016:

Resolve to think about your workplace Safety programs:

- Take a fresh look at the work areas, operations and hazards to make sure you are doing everything necessary to keep these from becoming injuries.
- Perform an annual review of your Safety programs and make sure they are current and in compliance.

- Make sure your employees are wearing the required Personal Protective Equipment.

- Evaluate training programs for content and effectiveness.

Resolve to get employees to participate:

- Develop a Safety suggestion process. I have a client who awards employees for pointing out legitimate Safety issues using incentives.

- Get input from the employees when dealing with Safety issues, new processes, and during incident investigations.
- Freshen up your Safety team by replacing members to inject some new ideas and viewpoints.

Resolve to show more gratitude to your employees.

- Publicly recognizing those who contribute to a safe workplace will let all the employees know that Safety is a top priority!

Wishing you a Happy and Safe Holiday Season!

Stay Safe, Chuck Paulausky

Chuck Paulausky, CHMM, is President of CPSE LLC, a consulting firm specializing in OSHA and EPA compliance and loss control for manufacturing and many other businesses. Chuck is active with several professional and business organizations and is an AHMP Champion of Excellence Award winner. For over 25 years, Chuck has

been providing safety, environmental, and worker's compensation support to companies in Arizona, Texas, California, Minnesota, Washington, Utah, Europe, and Asia. Chuck can be reached at: 480-694-1975, cpaulausky@cpsafety.net, www.cpsafety.net



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NEWS BRIEFS

PINAL COUNTY AQ DEPARTMENT HOSTS DUST CONTROL COMPLIANCE ASSISTANCE CONFERENCE CALL

❖ Pinal County AQ Department will two conference calls to discuss new dust rules effective January 1, 2016, in the West Pinal PM10 Nonattainment Area. Areas affected whole or in-part are San Tan Valley, Florence, Coolidge, Eloy, Casa Grande, Arizona City, Stanfield, Hidden Valley, and Maricopa.

December 9, 2015: 9 AM to 10 AM, Topics of Discussion - Construction Dust Rule, New control and stabilization Requirements for Construction Sites.

December 9, 2015: 1 PM to 2 PM, Topics of Discussion - Fugitive Dust Rule, New requirements for stabilizing open areas, vacant lots, unpaved lots and unpaved roads.

For Conference Line Instructions and Call-In number, contact Kale Walch at kale.walch@pinalcountyaz.gov.

U.S. EPA REQUIRES ASARCO TO CUT TOXIC EMISSIONS TO 103-YEAR-OLD ARIZONA COPPER SMELTER

❖ The U.S. Department of Justice and the U.S. Environmental Protection Agency announced recently a settlement with ASARCO requiring the company to spend \$150 million to install new equipment and pollution control technology to reduce emissions of toxic heavy metals at a large smelter located in Hayden, Ariz. The company will also fund local environmental projects valued at \$8 million, replace a diesel locomotive with a cleaner model for \$1 million, and pay a \$4.5 million civil penalty.

The federal enforcement action targeted hazardous air pollutants,

including lead and arsenic, and particulate matter (PM). With the controls in place, the hazardous air pollutants should be reduced by at least 8.5 tons per year, and PM emissions are expected to be reduced by 3,500 tons per year. The new equipment and controls will also slash the facility's sulfur dioxide (SO₂) emissions by 19,000 tons per year, a reduction of more than 90 percent, according to EPA estimates. Currently, the ASARCO smelter is the largest source of SO₂ emissions in Arizona.

"The communities living near this century-old smelter will breathe cleaner air as a result of this landmark enforcement action," said Jared Blumenfeld, Regional Administrator for EPA's Pacific Southwest Region. "As one of only three major copper smelters in the nation, it is critically important that the facility operate in a way that complies with federal law, minimizes harmful pollutants and safeguards public health and the environment."

"This settlement will bring tremendous benefits to public health and the environment in Arizona for generations to come through dramatic cuts to harmful air emissions," said Assistant Attorney General John C. Cruden for the Justice Department's Environment and Natural Resources Division. "The requirements of this consent decree will not only bring ASARCO into compliance with the nation's clean air law, but will also result in testing for lead contamination in area homes and improvements to nearby roads to further improve air quality."

EPA's investigation found the company violated federal Clean Air Act standards by failing to adequately control emissions of hazardous air pollutants, such as arsenic and lead, from the Hayden smelter. Under the settlement announced today, ASARCO will install new and upgraded ventilation hoods to capture hot flue gases from its furnaces to better capture the PM, which includes the hazardous air pollutants, and SO₂. The company will also replace an aging electrostatic precipitator with a new, cleaner baghouse and inject high performance lime to reduce SO₂ emissions.

To reduce wind-blown dust from the facility, which contains varying levels of heavy metals, the company will implement an improved dust control plan, including the use of wind fences, upgraded water sprayers and the installation of concrete pads. In addition, ASARCO will operate five ambient air monitors in and around the Hayden and Winkelman communities to track levels of pollutants, including arsenic, lead and PM, and will make additional improvements to dust controls if levels are high.

The settlement requires ASARCO to spend \$8 million to fund two environmental mitigation projects. Of this, \$6 million will be used on a road paving project in Pinal County that will reduce dust pollution on local dirt roads close to the towns and benefit residents exposed to PM emissions. In addition, \$2 million will be provided to the Gila County Environmental Health Services to conduct lead-based paint testing and abatement in homes, schools and other public buildings in the towns of Hayden and Winkelman.

ASARCO will spend approximately \$1 million to replace an existing diesel switch locomotive operated at the facility with a cleaner

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■ 2015 December 8

Joint Holiday Mixer: EPAZ will be hosting a Joint Holiday Mixer with AZAEP & AWMA-CG.
Location: Terroir Wine Pub, Scottsdale

■ 2015 December 10

Luncheon Featuring: Phil McNeely, Director, Maricopa County Air Quality Department.
Topic: Director's Air Quality Update
Sponsor: TestAmerica
Location: SRP Pera Club, 1 E. Continental Drive, Tempe, AZ

■ 2016 January 14

Luncheon Featuring: (Speaker TBD) **Topic:** Tier II Updates
Sponsor: ERI
Location: SRP Pera Club, 1 E. Continental Drive, Tempe, AZ

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diesel-electric switch locomotive. The project will reduce emissions of nitrogen oxides, which are precursors to the formation of PM_{2.5}, and greenhouse gases.

Long-term inhalation exposure to inorganic arsenic is associated with irritation of the skin and can affect the brain and nervous system. Exposure to lead can cause effects on the blood, as well as the nervous, immune, renal, and cardiovascular systems. Particulate matter, especially inhalable coarse particles (PM₁₀) and fine particles (PM_{2.5}), can cause coughing or difficulty breathing, decreased lung function, aggravated asthma, and even premature death in people with heart or lung disease. SO₂ has also been linked to a number of adverse effects on the respiratory system, and SO₂ is also a precursor to the formation of PM_{2.5}. Fine particles are also the main cause of reduced visibility (haze) in parts of the United States, including national parks and wilderness areas. The PM_{2.5} and SO₂ emission reductions achieved through compliance with this settlement will also serve to reduce visibility impairment owing to emissions from the facility.

Built in 1912 and expanded over the years, the ASARCO Hayden site is a copper ore processing, concentrating and smelter facility located adjacent to Hayden and Winkelman. The ASARCO plant includes a crusher, concentrator, smelter and tailings impoundment areas and produces 300 to 400 million pounds of copper and over half a million tons of sulfuric acid annually. ASARCO is owned by Grupo México, a Mexican consortium that owns Ferromex, the largest railroad in Mexico, and operates mines and smelters, including the one in Hayden, that make it the fourth largest copper producer in the world. The Hayden facility is one of three copper smelters in the United States, and the only one owned by ASARCO.

The settlement was lodged with the U.S. District Court of Arizona and is subject to a 30-day public comment period and final court approval. The proposed consent decree can be viewed at: www.justice.gov/enrd/consent-decrees.


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