REQUEST À FREE SUBSCRIPTION ONLINE HIS METAGE.COM 0-1224430 x42 DESCRIPTION ONLINE HIS METAGE.COM 0-1224430 x42 HIS METAGE.COM 10-1224430 x42 HIS METAGE.COM 10-1224 HIS METAGE.COM 10-1244 HIS METAGE.COM 10-1244 HIS METAGE.COM 10-1244 HIS METAGE.COM 10-1244 HIS METAGE.COM 1

PRACTICAL AND CURRENT INFO

IVIRONMENTAL, HEALTH AND SAFETY

ROFESSIONALS

ARIZON

COMMERCIAL FABRICS CONTAINING NANOSILVER: LIZA R D D D S VASTE U R D D Z VASTE

KIRIL HRISTOVSKI, PH.D. SEE PAGE 4 ALSO INSIDE: ASSOCIATION PAGES, NEWSBRIEFS, COLUMNS & MORE

> Presoned Standard Standard PAID Permit 16 New Richmond Wew Richmond

OCTOBER | NOVEMBER 2012 Vol 10 No. 5



7 Terminals throughout the Western states

Hazardous/Non-Hazardous Transportation Environmental Remediation Services Waste Management Emergency Response Services - 24 Hrs

3045 South 51st Avenue, Phoenix, AZ 85043 602-278-6233 800-833-7602 Fax: 602-278-2884 www.mpenviro.com









Gatekeeper Regulatory Roundup 2013 Ninth Annual

The Environmental Professionals of Arizona (EPAZ), Thunderbird Chapter of the Alliance of Hazardous Material Professionals (AHMP), and the Arizona Emergency Response Commission (AZSERC) are co-hosting the Ninth Annual Gatekeeper Regulatory Roundup Conference. This year's theme is EMERGENCY MANAGEMENT: For Your Site & In Your Town. The conference is a great opportunity to learn the latest regulatory updates, share industry specific information and network among your peers.



Full Conference: \$175 members (\$225 non-members) One Day Only: \$125 members (\$155 non-members) Lunch Only: \$35

TOPICS INCLUDE:

Lean Environmental Practices, Wastewater Treatment Technologies, Vapor Intrusion, Stack Measurement Techniques, Tank Emissions, Groundwater Plume Delineation, Pillars of Sustainability, NSR Rule Revisions, Preparing for EPCRA and CAA 112(r) Inspections, Greehouse Gas BACT, Alternative Fuels, Sustainable Business Practices, Emergency Planning & Response, NEPA/Wildlife Considerations, Preparing for Environmental Litigation, Pharmaceuticals and/or other Emergency Drinking Concerns.

CALL FOR EXHIBITORS:

The Conference is a great way to continue those relationships you've built over the years, and a wonderful way to meet new clients! Only \$650 reserves your spot!

CALL FOR SPONSORS:

Sponsorship opportunities are still available at all levels:

- * Break (\$250)
- * Premiere (\$3,000)
- * Corporate (\$2,000)
- * Lunch (\$1,500)
- * Breakfast (\$350)

Check our website (www.epaz.org) for more details!

QUESTIONS?:

Contact the Exhibitor/Sponsorship Coordinators: Nancy Nesky, ITSI Gilbane, (nnesky@itsi.com; 480-226-4991) or Laura Adams, Republic Services, (ladams2@republicservices.com; (480) 433-6718).

FOR MORE INFORMATION

Please visit: www.epaz.org or www.thunderbirdchmm.org or contact Michael Ford, 2012 Program Chair, Polsinelli Shughart, at mford@polsinelli.com

April 2-3, 2013

Chapparal Suites Resort 5001 N. Scottsdale Road Scottsdale, Arizona



Thunderbird Chapter

AHMP

Regulatory Implications for Commercial Fabrics Containing Nanosilver: HAZARDOUS WASTE OR NOT?

by Kiril D. Hristovskil, Ph. D.

ecent reports published by the Project Emerging on Nanotechnologies at the Woodrow Wilson International Center for Scholars document more than 1,300 commercially available products that contain nanomaterials [1]. Current predictions suggest that this number will increase to more than 3,700 products by 2020. Products containing nanosilver comprise a significant portion of this assortment, representing almost 25% of all reported commercially available (nano)products [1]. Colloidal silver, and now nanosilver, has been historically used as an additive to commercial products to increase their antimicrobial properties. The product lines containing nanosilver are very versatile and range from fabrics to detergents and plastics [1].

Emerging from recent research findings, which have shown that nanosilver is released during washing of these fabrics [2, 3, 4], concerns begin to appear within the research community about the possibility of leaching silver from commercial products containing silver nanoparticles. It is reasonable, however, to expect that these commercial products containing nanomaterials will eventually be discarded as a waste at the end of their life cycle. With silver being one of the determinants for characteristic hazardous waste under RCRA, there is the possibility that much of this waste might have to be designated as RCRA characteristic hazardous waste under 40 CFR 261.24. This hazardous waste designation could trigger serious waste management and financial requirements for the manufacturers and users of nanosilver containing products. This article examines the existing scientific evidence, to address the pertinent question of whether commercial fabrics containing nanosilver should be considered a potential source of RCRA hazardous waste.

EXISTING EVIDENCE AND CONCERNS

Only limited number of studies have been published on the topic of silver nanoparticles release from commercial products. Among them, only two studies [3, 5] incorporated TCLP testing in accordance to US EPA SW-846 Method 1311 [6], while the other studies tested leaching of silver nanoparticles during washing of the fabrics. Nonetheless, all studies provide results that are indicative of one trend. As summarized in Table 1, commercial fabrics tend to leach significantly lower amounts of silver than the RCRA regulatory limit of 5 mg L⁻¹. In general, the concentrations of the leached silver were more than 100 times lower than the RCRA regulatory limit. Exceptions to this trend were the sock fabrics from Sharper Image and Xstatic, which leached about 20 times less silver than the RCRA regulatory limit. However, even these concentrations were an order of



magnitude lower than the regulatory limit. The findings summarized in Table 1 lead to conclusions that waste fabrics containing nanosilver should not be viewed as a potential RCRA characteristic hazardous waste which needs to be designated D011 toxicity characteristic hazardous waste.

A slightly deeper analysis, however, suggests that these findings may not be as conclusive as they initially appear. As summarized in Table 1, more than 5% of the silver content in the fabric could potentially be leached from some products. The blue sock fabric by Sharper Image, for example, leached about 8% of its silver content during the TCLP test. Considering that the silver content of this fabric was ~ 60 µg Ag g-1 fabric and it leached almost 8% of its silver content [2], it is plausible for fabrics with even higher silver content would leach silver in excess of the RCRA regulatory requirement of 5 mg Ag L⁻¹. For example, a fabric containing ~250 mg Ag g⁻¹ of product such as a medical mask or a medical cloth [4] could potentially leach silver in excess of 5 mg L⁻¹ even if only 1% of the silver leaches. Considering that fabrics like these may have significant use in the medical field, medical institutions utilizing these fabrics might have to deal with RCRA hazardous wastes even after treatment of biohazardous characteristic of the generated wastes. This, of course, could either potentially lead to increased costs of medical services if such fabrics are used, or reduce the demand for such fabrics. Similar concerns could be inferred for other industries or services that may generate waste fabrics with high contents of nanosilver. In contrast, however, household hazardous waste is exempt under RCRA so the regulatory implications of discarded nanosilver containing waste would be non-existent even if it is characterized by high silver content.

An interesting legal implication that warrants consideration is the loss of silver during washing of nanosilver containing fabrics [2]. In this scenario, most of the silver may be leached during the washing process, which could consequently lead to lower silver concentrations in the leachate from waste products than the regulatory limit, even if the initial silver content of the fabric is high. A possible direction for addressing this implication, while minimizing the cost of hazardous waste testing, is to set a requirement that only pristine materials are tested for exhibiting the RCRA characteristics of toxic hazardous waste for silver.

CONCLUSIONS

Although silver leaching tests might suggest that nanosilver containing fabrics should not be considered RCRA hazardous waste, it is imperative to evaluate the silver leaching potential of specialty fabrics that contain high content of nanosilver. Utilizing the worst case scenario consideration, where pristine fabric have the highest silver leaching potential, it might be a prudent practice for companies to demonstrate that their fabrics containing nanosilver would not become hazardous waste and their disposal would not adversely impact the environment.

LITERATURE CITED:

1. Woodrow Wilson International Center for Scholars (WWICS). (2011). Nanotechnology consumer product inventory. From http:// www.nanotechproject.org/inventories (September, 15, 2011)

2. Benn, T., & Westerhoff, P. (2008). Nanoparticle Silver Released into Water from Commercially Available Sock Fabrics. Environmental Science and Technology, 42, 4133-4139.

3. El-Badawy, A., Luxton, T., Scheckle, K., Tolaymat, T., Suidan, M. (2009). Silver speciation and leachability from silver nanomaterial containing consumer fabric.

4. Benn, T., Cavanagh, B., Hristovski, K., Posner, J.D., Westerhoff, P. (2010). The Release of Nanosilver from Consumer Products Used in the Home. Journal of Environmental Quality, 39, 1 8.

5. US EPA (1992). SW-846 Test Methods for Evaluating Solid Waste. Method 1311 Toxicity Characteristic Leaching Procedure, pp 1-35. US EPA, Washington, DC, USA.

6. Casiraro, N., Bridgers, K., Hristovski, K., Benn, T., Westerhoff, P. (2010). Commercial fabrics containing silver nanoparticles: hazardous waste or not? 6th Gatekeeper Regulatory Roundup and Conference, Phoenix, Arizona.

Kiril D. Hristovski1, Ph. D., is Assistant Professor, Environmental Technology and Emergency Management, Department of Applied Sciences and Mathematics, College of Technology and Innovation, Arizona State University – Polytechnic Campus. Address: 6073 S. Backus Mall, Mesa, AZ 85212, USA. Kiril can be reached by email at: kiril.hristovski@asu.edu or by phone at 1-480-727-1291.

TABLE 1

No.	Fabrics	Vendor	Concentration of Leached Silver via TCLP (µg L ⁻¹)	Released Silver via TCLP per g fabric (μg Ag g ⁻¹ fabric)	Silver Content (µg Ag g ⁻¹ fabric)	Fraction of the released silver content
1	Green Sock	Sharper Image	$32\pm0.4^{\dagger}$	0.64 [†]	25.8*	~2.48%
2	Yellow Nano Wipe	Good4U	$8\pm0.1^{\dagger}$	0.16	270**	~0.06%
3	Teddy Bear	Pure Plushy	$5\pm0.1^{\dagger}$	0.10 [†]	70**	~0.14%
4	Blue Sock	Sharper Image	$236\pm10.2^{\dagger}$	4.72 [†]	57.8*	~8.16%
5	Silver Sock	Red Head	Below MDL [†]	NA	NA	NA
6	Silver Sock	Natural Reflections	Below MDL [†]	NA	NA	NA
7	Silver Sock	Xstatic, Fox River, Thorlos Inc.	$\sim 190 \pm 10^{11}$	NA	1,358.3*	NA

Nanosilver containing fabrics and their leached silver concentrations and silver contents. The ± values represent standard deviations based on triplicate samples.

† From [6] †† From [3] * From [2] ** From [4]

Journal of Environmental Management Arizona 5



Sustainability AND Sustainable Development

Nicholas R. Hild, PhD.

THE CONUNDRUM

One of the least meaningful and most overused words in the English language is "sustainability." For most Americans, it means something like "pretty much the way I live right now, though maybe with a different car." David Owen, <u>The Conundrum</u>, pp. 246(2011)

f you haven't read David Owen's <u>The Conundrum</u> (2011), you're missing out. While you may not agree with everything Owen says (and I don't), the overall thesis is right smack on: (the real Conundrum is)...in America, which party controls the houses of congress and which party controls the White House clearly impacts our ability to implement green initiatives.

When Bill Clinton was in the White House, Vice President Al Gore was fond of pointing out that economic growth and environmental stewardship were both possible, and in fact, necessary, if only we prioritized job growth in green manufacturing practices, we could have both. Then, when Bush (the Second) became President, any so-called "green initiatives" had to be tested against reality—political, economic, scientific, etc.—so that "progress" in our efforts to address our global carbon footprint stalled for eight long years. Then, when Obama sold his vision of "change" and became President, instead of finding compromise between climatologists and "deniers," *fierce conflicts arose between environmentalists and environmentalists*"—which has only served to muddy the waters and halt whatever progress toward climate change initiatives were possible.

And, here in the fall of 2012 as this is written, the environment has not found a voice by either candidate running for the White House. It is clear that any references to how programs would be paid for that target climate change or fossil fuels like coal and petroleum just wouldn't be popular in these last days of campaigning. Once again, Owen detailed the "conundrum" pretty clearly, pointedly saying that the vast majority of Americans are so wrapped up in the "politics" of our faltering economic system that any efforts to support environmental programs that require funding, seem to be lost in the rhetoric about jobs creation and taxes to pay for them. Look no further than the Tea Party-influenced Republican victories in mid-2010 that pretty much derailed the Obama initiatives on energy and climate change.

As Owen points out, "...debating the potential benefits and hazards of a global program to rapidly build vast numbers of thorium-fueled nuclear reactors (for example) is harder and more frustrating than voicing outrage over the latest pronouncement of Sarah Palin or John Boehner, who in 2010, suggested that he thinks the scientific brief against carbon dioxide is that it causes cancer(!)."

So, meaningful debate and negotiation that utilizes good science and the latest studies to support green initiatives have, once again, been denied. A fundamental problem that underlies the discussion (particularly between politicians in Congress and politician-wantabees) is that there are two or more interpretations to almost every study that is used to support (or discourage) a given initiative. Owen notes that, "... it is seldom that one group has all the facts and everyone else is deluded..." as frequently happens with complex issues, the biggest impediments to effective action have been truths, not falsehoods, and the fiercest arguments have often been between ostensible allies."

Here are a few of Owen's examples of where environmentalists vs. environmentalists give substance to our political demagoguery: hydroelectric power is substantially emission free, but dams destroy ecosystems and human communities. U-235 has a small carbon footprint but what about accidents, earthquakes, terrorists, and waste? American gasoline is one of the cheapest

Continued on next page

Nicholas R. Hild, PhD., Professor and Associate Chair, Department of Applied Sciences and Mathematics, Environmental Technology Management program, Arizona State University College of Technology and Innovation, has extensive experience in Environmental Management in the southwestern U.S. Dr. Hild can be reached at 480-727-1309 and by email at DrNick@asu.edu.

manufactured liquids in the world, even today, but taxing it more heavily (to discourage its use and encourage alt fuels) would increase unemployment and deepen the recession. Compact fluorescent lamps (CFLs) use less electricity than incandescents, but CFLs contain mercury...the USEPA recommends disposal of clothing that happens to get mercury in it, rather than washing it(!)...adding fuel to our paranoia about "risk" while discouraging the use of CFLs for fear that one may be exposed when it gets broken. Photovoltaic panels and solar-thermal concentrators have potential as electricity sources, but building utility-scale installations ravages the deserts that are the ideal places to put them (and rooftop PV systems will never effect more than a small percentage of our overall global energy use going forward). Wind turbine systems require vast carbon-emitting infrastructure and sustained winds 24/7 to be efficient, but noise impact to communities and bird-kills are problematic for environmentalists and activists.

So, where does all this lead? As The Conundrum concludes, our climate and energy dilemma is really a world-sized version of the tragedy of the commons (a most insightful document that needs to be on everyone's reading list). It is highly unlikely we will ever manage the earth's resources for maximum longevity-for sustainability (that word again)-as a concerted and coordinated effort between countries, or even between states in the U.S. because we are all, truly 'consuming' individuals who continue to grab as much as we can for ourselves in the short term...(remember the last JEMA issue where we learned there are a lot of environmentally-knowledgeable folks who aren't walking the talk?)

And, that means while we enjoy all the benefits of our own consumption, we share the consequences with everyone else-primarily with people not yet born. And, yes, that would be our children's children's, children.

HELP WANTED

LOOKING FOR EH&S HELP? **ADVERTISE IN THE JOURNAL!**

SPECIAL LOW RATES FOR **EMPLOYMENT ADVERTISEMENTS!** 480-422-4430 x42

JOURNAL OF Environmental Management

CONTENTS

October / November 2012

Volume 10 Number 5 ARTICLES, DEPARTMENTS, & COLUMNS

ARIZONA

- 4 **COMMERCIAL FABRICS CONTAINING NANOSILVER:** HAZARDOUS WASTE OR NOT? KIRIL D. HRISTOVSKIL, PH.D.
- 6 SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT THE CONUNDRUM NICHOLAS R. HILD, PHD.
- 7 **FROM THE EDITOR**
- 8 **ASSOCIATION PAGES** LOCAL ORGANIZATIONS NEWS & EVENTS
- 10 **News Briefs**
- 12 IT'S ALL ABOUT CHEMISTRY FRACKING SCOREBOARD / LARRY OLSON, PHD.
- 14 SAEMS P2 SEMINAR / PHOTOS

FROM THE EDITOR



The somewhat unusual, as well as colorful, cover photo this issue illustrates the somewhat unusual source of a potentially hazardous waste materialcommercially produced fabrics. Read "Regulatory Implications for Commercial Fabrics Containing Nanosilver: Hazardous Waste or Not?" by Kiril Hristovskil, Ph.D.,

ASU Assistant Professor (begins on page 4) to learn if nanosilver additives might be a concern to your business.

Thank you to everyone who commented that you liked the Crossword Challenge feature in our last issuewe will plan another puzzle in an upcoming issue! If you have any "environmental mangement" words and definitions we could include in the next puzzle, please send them to me!

The Journal always welcomes contributions of feature articles and Newsbriefs items. If you have an announcement, or a news item, or if you would like to contribute a feature article, please let me know (480-422-4430 x42. Thank you!

Sincerely,

JimThrush, M.S. Environmental Management Editor & Publisher

JOURNAL OF ENVIRONMENTAL MANAGEMENT ÁRIZONA EDITORIAL Publidør & Éditor, Janes Thrush, M.S. Env. Mgt., jimshruhdreax, net or 880-422-4430. SUBSCRIBE: elshomepage.com or 480-422-4430. SUBSCRIBE: elshomepage.com or 480-422-4430. SUBSCRIBE: elshomepage.com or 480-422-4430. SUBSCRIBE: elshomepage.com or 480-422-4430. SUBSCRIBE: elshomepage.com of regulations and the law and our reliance on information provided by various sources. Ne accurate and complete. Due to the rapidly changing nature of regulations and the law and our reliance on information provided by various sources. Ne make no warrany or guarantee concerning the accuracy or reliability of the content or [EMA. Readers are encouraged to contact a tuthors, agencies, and advertiser directly for verification/clarification. Content for informational purposes only, and should not be considered legal or professional advice. Consult your legal consul or environmental consultants for advice. WARNING Serious Legal. environmental, and professional practices.

COVER PHOTO (AND PHOTO PG 4): BY "SNAPS880". UNDER CREATIVE COMMONS LICENSE, NOVEMBER 5, 2010, WIKIMEDIA.ORG.

SSOCIATIONS 'AGES 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.



he P2 seminar was held on Wednesday September 26, 2012 at Hotel Tucson. The event was attended by 60 people with a net income of \$4,892 for the scholarship fund. Topics included City of Tucson recycling programs and audits, sustainability at CAP, LED lighting, water efficient plants, urban forestry, air quality, electronics recycling, Pima County's Net-Zero Energy Program and commercial recycling.

SAEMS members and family will participate in Adopt-A-Highway clean-up November 14th.

Monthly luncheons are held on the last Wednesday of each month at Hotel Tucson.Our holiday luncheon will be December 5 with a

presentation from ADEQ Director Henry Darwin. We are in our annual membership drive. If you are interested in joining please visit Shoemaker our website.



Hello Everyone! It has Arizona Chapter over the last couple of months the AZ Chapter has had an increase in attendance and interest in the topics provided. In September we had a visitor American Society of Safety Engineers from Arizona OSHA provide us an update on the current AZ.ASSE.ORG

we had our very own Harold Gribow teach us how do be a better presenter. We now have Dr. Christine Branch coming in for our themed Red, White and Blue month of November.

Don't forget that we have a toy collection for our December meeting and we will discount your luncheon fee. Check out our website for more information. One final note, we will be having a half day work-shop on

9th. November 2012 at the Arizona Safety Education Center. Cost is \$10 and there is more info on az.asse.org.





WWW.AZHYDROSOC.ORG

Thank you for another great AHS Symposium! We hope everyone enjoyed themselves, made and renewed contacts, and learned something along the way.

Now it's back to our regular monthly dinner meetings. The next meeting of the Tucson

Chapter will be held on Tuesday Nov. 13, 6:00 PM, at the offices of Errol Montgomery and Associates, 1550 E. Prince Road. The featured speaker is Fred Tillman of the U.S. Geological Survey, who will be discussing Groundwater Discharge by Plants in Arizona's Basin & Range. The Phoenix chapter will also be meeting Nov. 13th at Monti's Casa Vieja in Tempe for a special viewing of the Robert Redford film

documentary, "Watershed. Social hour starts 5:30 PM. at Please vist www. azhydrosoc.org for additional details.





Industry and the Arizona Manufacturer's Council will hold its 2013 Legislative Forecast Luncheon on Friday, January 4, 2012 in Phoenix. This annual event features legislative leaders who present their plans and agendas for the up-coming legislative session. More information is available as www.azchamber.com.

The Environment Committee next breakfast meeting will be held on November 14, 2012 at the Sheraton Phoenix Airport Hotel. Speakers include Terry Lockwood who will provide a status report on the North Indian Bend Wash Aquifer remediation

1969

THE ROLE OF TRANSPORATION IN DRIVING ARIZONA'S ECONOMY

majority of Arizonans (70 percent) aren't

 ${f A}$ satisfied with the state's transportation

effort and Laura Malone who has recently been appointed as director of ADEQ's Waste Programs Division.

SINCE

system, according to a

WestGroup Research

survey conducted on

Forward. However, the

number of residents who

are highly dissatisfied

declined by 13 percent

behalf

of Arizona



WWW.VALLEYFORWARD.org

JOURNAL OF

Environmental Management

since similar polling in 2008.

Arizona's No. 1 transportation issue is the need for expanded public transit, according to the new poll. Nearly one-third of respondents rated "a lack of public transit" as most important.

Survey results point to a paradigm shift in thinking over the last four years. Residents are clearly interested in more transportation options and less concerned about building additional roadways. Not surprisingly, a majority of respondents admitted to having little knowledge about transportation planning and funding.

Arizona Forward has released a primer on transportation to provide residents with unbiased facts, background and viable alternatives to consider as the state moves forward with transportation planning. It's hoped the document will be a catalyst for discussion to help find workable, affordable

alternatives to meet future transportation needs. To access the primer, visit www.valley_{Diane Brossart} forward.org.





WWW.AZAEP.ORG

he Arizona Association of Environmental Professionals, the state chapter of the National Association of Environmental Professionals (NAEP), invites readers to our monthly dinner meetings. AZAEP meetings are generally held the fourth Tuesday of the month. The meeting fee (member \$15; non-member \$20) covers the cost of dinner.

Dr. Joel Diamond from AZ Game and Fish will speak about "Bats and Bridges" at the November 27 meeting that will be held in Tucson. Also, save December 13 for our second annual Holiday Networking Mixer with Air & Waste Management - Grand Canyon Section. Due to popular demand, the event will be held again at the Terroir Wine Pub in Scottsdale.

AZAEP also sponsors NAEP webinars in Phoenix and Tucson locations; these webinars feature nationally-recognized experts on key environmental issues and provide career development information. Please go to our website www.AZAEP.org to register for the webinars, RSVP for monthly meetings, become a member, or to be added to our

> SUBSCRIPTIONS are FREE to Qualified EH&S Professionals! Subscribe on-line at www.ehshomepage.com or call 480-422-4430 x42



ARIZONA



distribution list. Check next month to see the launch of our new website that is easier to use and graphically improved!

The Board is recruiting for a Secretary; the

position is selfnominating by sending a brief statement of interest and resume to AZAEP President Ali Fakih at Mariella, Ph.D. Ali@azseg.com. Vice President





ARIZONA ENVIRONMENTAL STRATEGIC ALLIANCE

WWW.AZALLIANCE.ORG

Alliance members will participate in a panel presentation at the November 25th conference, "Arizona Recycles: Making a World of Difference." The panel will share their conservation and recycling experiences. For information on the conference visit the Keep Arizona Beautiful website at www.kazb.org.

The Alliance is planning to host our second "Air Quality Luncheon" in early 2013. A date has not yet been selected. The luncheon format will be similar to our very successful 2011 Air Quality Luncheon, when nearly 100 attendees heard presentations from Air Quality Department Directors from Maricopa County (Bill Wiley) and Pinal County (Don Gabrielson) on current air quality concerns. Ed Fox, Vice President and Chief Sustainability Officer at APS, was the moderator of the 2011 AQ Luncheon. We are considering the possibility of allowing a limited number of vendor booths — if your organization would be interested in a booth, please contact me or Jim Thrush at 480-422-7392.

Earlier this year the Alliance started the practice of hosting bi-monthly environmental/ technical tours, mainly at our member organization's facilities, but not limited to these. The tours have been very popular with our members and guests, with the host organization providing an onsite demonstration of various environmental processes or successful programs it has implemented. The next planned tour will be at the ASU Tempe campus, on November 27th, hosted by Al Brown, with a presentation and tour from Dr. Nick Brown, ASU Sustainability Director. Members and guests will be interested in Dr. Brown's metrics for monitoring and tracking ASU's progress toward its sustainability goals, and a tour of

the Co-Gen Plant. If you are interested in participating as a guest, contact the Alliance office at Matt Conway 480-422-7392. Chain



Communicate with the Arizona environmental management community, promote your organization, and gain well-deserved recognition for your achievements by participating in the Journal Association Pages! Contact the Journal Editor at 480-422-4430 x42 for more information.

Back Issues of the Journal are available online at www.ehshomepage.com



N. Weiss Associates, Inc.

Environmental Compliance Services

Experience Counts

Contact: Norm Weiss @ (602) 870-5504 Web Site: www.nweissassoc.com

Promote Your Organization's Conference or Seminar With an Advertisement That Directly Reaches Your Audience: In the Journal!

480-422-4430 x42

Drafting your marketing plan? Have you considered ...

JOURNAL OF Environmental Management ARIZONA

Advertising in the Journal?

Find new clients by reaching thousands of potential customers with every issue. Reduce the expense of obtaining new customers; reduce or eliminate direct mail expenses.

Keep your message in front of potential customers; when they are ready to purchase, or need your service, they will remember you.

Increase your market share by advertising directly to your potential market. Remind your current customers why they chose to do business with you. Clients like

to know that they are dealing with the best! Support the enironmental, health and safety community in Arizona. It pays!

Call 480-422-4430 x42

NEWS BRIEFS

ADEQ FILES NOTICE OF INTENT TO SUE EPA FOR FAILING TO ACT TIMELY ON STATE'S 2011 REGIONAL HAZE IMPLEMENTATION PLAN

Arizona Department of Environmental Quality officials announced recently that they intend to file suit against the U.S. Environmental Protection Agency for failure to take timely action on the State's implementation plan for regional haze and for splitting the decision on Arizona's state-wide plan into two parts.

Arizona submitted a proposed air quality plan on Feb. 28, 2011, to improve visibility in protected national parks and wilderness areas throughout the State. EPA was required by the Clean Air Act to approve or disapprove the entire plan by Tuesday, Aug. 28 and has proposed action on only part of the plan related to three power plants.

"The regional haze program is about improving visibility by 2064, not about protecting public health," said ADEQ Director Henry Darwin. "We would have much preferred to work with EPA as a partner to make sure the visibility benefits are justified by the costs, but because we have been cut out of the process we feel as though we have no other choice but to file suit to protect Arizona's rights. EPA's decision to split the decision on a state-wide plan into multiple parts simply makes no sense and is contrary to the Clean Air Act."

Arizona originally submitted a regional haze plan to EPA in December 2003 and updated that plan a year later. EPA then determined more than five years later, in January 2009, that specific parts of the plan purportedly were incomplete.

Between January 2009 and May 2010, ADEQ worked with its partners among tribes, industry and other states and also with EPA to fix the plan. When it became clear that it was no longer possible to satisfy the federal agency's concerns, ADEQ developed its own regional haze plan and submitted it to EPA in February 2011.

A number of environmental groups sued EPA in August 2011 for failing to approve regional haze plans for 40 states, including Arizona. ADEQ successfully intervened in the lawsuit in January 2012, but was ignored by the plaintiffs and EPA. The court for the District of Columbia ruled swiftly on motions filed by the plaintiffs and EPA before Arizona was given the opportunity to oppose. The court upheld the settlement proposed by the plaintiffs and EPA on July 2. ADEQ has filed a notice of intent to appeal.

The July 2 ruling allows EPA to delay and offer a partial decision regarding Arizona's 2011 regional haze plan. EPA is required to decide whether the State's proposed emissions controls for the Apache Generating Station near Benson, the Cholla Power Plant near Joseph City, and the Coronado Generation station near St. Johns are adequate for reducing Regional Haze by Nov. 15, 2012. Under the settlement opposed by Arizona, EPA's decision regarding the rest of the plan is due July 15, 2013. If EPA disagrees with the State's plans at the same time it notifies the State of its final decision.

MICHAEL C. FORD RANKED AMONG THE BEST LAWYERS IN AMERICA® 2013

Polsinelli Shughart LLP was recently honored when 134 of its attorneys from Los Angeles to Washington, D.C. were included in *The Best Lawyers in America*[®] 2013. Among those recognized for this prestigious ranking is Michael C. Ford, an

Arizona environmental law attorney, and frequent legal columnist in the Journal of Environmental Management Arizona.

Best Lawyers® compiles lists of outstanding attorneys by conducting exhaustive peer review surveys in which thousands of leading lawyers confidentially evaluate their professional peers. Since its inception in 1983, Best Lawyers® has become universally regarded as the definitive guide



Michael C. Ford

to legal excellence. Because Best Lawyers[®] is based on an exhaustive peer-review survey in which more than 39,000 leading attorneys cast over three million votes on the legal abilities of other lawyers in their specialties, and because lawyers are not required or allowed to pay a fee to be listed, inclusion in Best Lawyers[®] is considered a singular honor. Corporate Counsel magazine has called Best Lawyers[®] "the most respected referral list of attorneys in practice." The lawyers listed in Best Lawyers[®] have no say in deciding which specialties they are included in. They are voted into specialties entirely as a result of the votes they receive from their peers.

Polsinelli Shughart Public Relations Manager, Heather McMichael, said, "Our attorneys strive to work on behalf of their clients' businesses as passionately as if they were their own. We are proud to be recognized by our peers for this prestigious ranking which is one of the oldest and most respected peer review publications in the legal profession."

With more than 600 attorneys, Polsinelli Shughart (www.polsinelli.com) is a national law firm and recognized leader in the areas of health care, financial services, real estate, life sciences, energy and business litigation. Serving corporate, institutional and individual clients, the firm builds enduring relationships by creating value through our legal services - with passion, ingenuity and a sense of urgency. The firm has offices in Chicago; Dallas; Denver; Kansas City; Los Angeles; New York; Phoenix; St. Louis; Washington, D.C.; and Wilmington, DE. In California, Polsinelli Shughart LLP.

You can reach Michael C. Ford through email at MFord@Polsinelli.com.

ADEQ RELEASES SCHOOLS

CHEMICAL MANAGEMENT TOOLKIT

Arizona Department of Environmental Quality officials announced recently the release of a 60-page schools chemical management toolkit publication to assist school districts throughout the state in managing chemicals used at schools. An online version of the toolkit is available in English at http:// www.azdeq.gov/ceh/download/sc_toolkit.pdf and in Spanish at http://www.azdeq.gov/ceh/download/sc_toolkit.SP.pdf.

The toolkit was developed to provide Arizona schools with basic information and resources needed to remove unnecessary, outdated or unknown chemicals from school labs and storage places. It provides guidance to prevent chemical mismanagement of incidents in schools and also serves as an educational tool to heighten awareness of the importance of proper chemical management.

"This is an important compilation of guidelines, resources and procedures to help schools around the state effectively oversee the use of chemicals and make sure that students and school personnel are protected," said ADEQ Director Henry Darwin. "When chemicals are mismanaged they create risk from spills, fires and other accidental exposures in and around schools." The toolkit provides a roadmap for a school district or individual school to establish a school chemical management program and avoid hazardous chemical incidents. The program identifies, manages and prevents hazards through all stages of chemical purchasing, storage, use and disposal.

The release of the toolkit follows on the heels of a successful ADEQ-sponsored cleanup last month at three schools in the Nogales Unified School District funded by a \$54,716 grant from the U.S. Environmental Protection Agency. More than 200 pounds of chemicals were collected

and disposed of in an environmentally safe manner. MARICOPA COUNTY AIR QUALITY DEPARTMENT RECIPIENT OF U.S. EPA AIR AWARD

The U.S. Environmental Protection Agency's 12th Annual Clean Air Excellence Award was given recently to Maricopa County's Air Quality Department for the development of its Rapid Response Notification System, which provides realtime air quality updates to residents on elevated levels of air pollution.

The department retrofitted 13 air monitoring systems with Rapid Response Notification System technology that alerts residents via email, text message, and Twitter and Facebook posts when elevated air pollution levels are detected.

"The 42-year history of the Clean Air Act is all about meeting challenges through commitment and innovation," said Gina McCarthy, EPA Assistant Administrator for the Office of Air and Radiation. "The contributions of this year's award winners are continuing the Clean Air Act's progress in benefiting public health, our communities and the economy."

Maricopa County's award was one of 11 given to projects and companies nationwide for work on clean air initiatives. The Clean Air Excellence Award recognizes innovative programs that protect Americans' health and the environment, educate the public, serve their communities and stimulate the economy.

U.S. EPA AWARDS ARIZONA MORE THAN \$27 MILLION TO IMPROVE WATER QUALITY, PROTECT PUBLIC HEALTH

The U.S. Environmental Protection Agency recently awarded the Water Infrastructure Finance Authority of Arizona (WIFA) a \$9,542,000 million grant for its Clean Water State Revolving Fund and an \$18,327,000 million grant for its Drinking Water State Revolving Fund for water pollution control and drinking water infrastructure projects.

WIFA will use the funds to provide low-cost loans for drinking water and wastewater infrastructure upgrades. WIFA's Clean Water State Revolving Fund provides financing for municipal wastewater treatment projects, while its Drinking Water State Revolving Fund provides financial assistance for basic drinking water infrastructure for both public and private drinking water systems.

"EPA is continuing its investment in Arizona's water infrastructure," said Jared Blumenfeld, EPA's Regional Administrator for the Pacific Southwest. "Our goal is to ensure that Arizona has safe, reliable drinking water and proper wastewater treatment."

U.S. EPA has awarded more than \$240 million in federal funding for Arizona's Clean Water State Revolving Fund from inception of the program. WIFA increases the investment in Arizona by leveraging the federal dollars on the bond market. WIFA's Clean Water Revolving Fund reached \$1.4 billion in assistance provided cumulatively, with a total of 171 wastewater treatment projects funded through 2012. The funds are used for a wide variety of water quality projects, including nonpoint



Larry Olson, PhD.

IT'S ALL ABOUT CHEMISTRY

Fracking Scorecard

In an earlier column we looked at the process of hydraulic fracking and the promise, as well as the problems, created by this new technology. But in this fast moving field, a year is a lifetime ago. So what does the scorecard look like today?

First the good news. Proven U.S. oil reserves dropped steadily from about 32 billion barrels in 1980 to about 20 billion barrels in 2008. But hydraulic fracturing has reversed this decades long trend by making "tight" oil recoverable and proven reserves have risen back to 25 billion barrels in 2010, even though Alaskan reserves have dropped by about half and there was a temporary drilling moratorium in the Gulf of Mexico after the Deepwater Horizon explosion (http://www.eia.gov/naturalgas/ crudeoilreserves/). To put this in perspective, the U.S. uses about 6.9 billion barrels per year. On a BTU basis, the U.S. imported 58% of the oil it used in 2011, down from a peak of 67% in 2006, but still a long ways from oil self-sufficiency.

Fracking has had an even bigger impact on natural gas production. U.S. "wet" natural gas reserves have increased from about 175 trillion cu ft in the mid 1990s to over 300 trillion cu ft in 2010, the largest ever. This is at a time when conventional natural gas reserves such as coal bed methane and conventional deposits are decreasing, so that shale gas has grown from less than 10% in 2007 to over 30% of U.S. reserves in 2010. Total U.S. consumption of natural gas in 2011 was 24.3 trillion cu ft (http://www.eia.gov/dnav/ng/hist/n9140us2a.htm).

Other positives from fracking include a potential revolution in chemicals production based on feedstocks from natural gas rather than petroleum. Instead of a recent history of shutting down petrochemical plants in the U.S. with as much as 140,000 lost jobs in the chemical industry, new plants based on ethylene cracking are being constructed. This makes the U.S. one of the lowest cost chemical producers in the world. Switching from coal to natural gas plants to produce electricity has also helped to reduce energy related carbon dioxide emissions to levels last seen in the mid 1990s. For the first time ever, as much electricity is now produced by natural gas as from coal.

But there is a down side to this scorecard. Hydraulic fracking injects a mixture of water, fracturing chemicals, and sand or other proppant material through perforations in a horizontal pipe thousands of feet below the surface at pressures sufficient to fracture the formations containing oil or natural gas. It takes a lot of water - as much as 3-5 million gallons per well. A substantial portion of this water returns to the surface and is now unusable without further treatment. In some instances, the untreated water is simply injected into deep wells. Treatment for reuse in future wells is an option, but scaling and bacterial growth inside the next well must be controlled. Depending upon the composition and treatment method, some water may be able to be discharged to a wastewater treatment plant or used in agriculture (Chemical and Engineering News (2012), Vol 90 (41), p. 13).

Fracking also creates air pollution. Natural gas is touted as a "clean" fuel, and it is true that it produces less conventional air pollutants when burned than coal and less carbon dioxide per MW of energy produced. But extracting it from tightly bound shale can result in uncontrolled releases of methane, sulfur dioxide, and other toxic VOCs such as benzene. Methane leakage from wells is estimated at 2-4% of production. This is important because methane is a much more potent greenhouse gas than carbon dioxide. EPA issued the first air pollution standards for the hydraulic fracking industry in April 2012. These regulations require the capture of VOCs and methane rather than their uncontrolled release (although flaring rather than capture will be allowed until January 2015). EPA claims that the technology will pay for itself by capturing gases that have resale value, rather than venting to the air.

With as many as 100,000 new wells planned in the next few years, solutions to air and water pollution issues are critical to balancing the scorecard for this new technology.

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

NEWS BRIEFS

CONTINUED FROM PAGE 11

source pollution control, watershed protection or restoration, water and energy efficiency projects, wastewater reclamation, and traditional municipal wastewater treatment projects.

WIFA's Drinking Water Revolving Fund has received \$297.1 million in federal funding to date. WIFA has issued 185 drinking water loans totaling \$713 million through 2012. Funds to the program also support projects like drinking water plant operator training, and technical assistance.

"One of the best things about WIFA is our ability to help communities throughout Arizona with their water infrastructure needs," said WIFA Executive Director, Sandy Sutton. "Not only are we able to award very low-interest rate loans, we also offer incentives for green projects and even further financial incentives for disadvantaged communities. For some communities, this is their only option when it comes to improving or upgrading their water infrastructure."

Forty years ago, when the federal Clean Water Act was made law, Congress charged a fledgling EPA with the goal of making the nation's waters "fishable and swimmable." Achieving this goal requires communities to make large investments in drinking water and wastewater infrastructure. The state revolving funds are EPA's primary tools for helping communities meet their continuing and significant water infrastructure needs. Each state maintains revolving loan fund programs, capitalized by the EPA, to provide low-cost financing for water quality infrastructure projects.

ATC ASSOCIATES TRANSITIONS TO CARDNO

ATC Associates announced that on October 1st, "our



'doing business as' name transitions to Cardno ATC to reflect the comprehensive global network of which we are now a part. It is business as usual other than the rebranding of our name."

This past March, ATC joined

Joe C. Holmes forces with global environmental and professional services leader, Cardno. Cardno delivers physical, social, and

economic infrastructure services worldwide. With ATC, Cardno employs approximately 7,500 staff in over 270 offices worldwide. 4,500 of those staff are within the U.S. To

Your Local Source for Portable DI Exchange Equipment



Largest DI Regeneration facility in Arizona Serving High Purity and Ultra Pure water industries and markets

The Layne Difference:

- Most competitive pricing.
- No tank rentals
- Professional service
- 24/7
- Longest-lasting

For more information, contact: 602-345-8600 • www.layne.com <u>(layne)</u>

contact Cardno, visit www.cardnoatc.com.

For more information about Cardno contact Joe C. Holmes, West Region Manager / Business Development, at 480-355-4668.

PDEQ HOLDS PUBLIC MEETINGS IN NOVEMBER FOR ASARCO MISSION COMPLEX MINE PROPOSED AIR QUALITY PERMIT RENEWAL

Pima County Department of Environmental Quality (PDEQ) recently held two Open Houses and, and will hold a Public Hearing on November 27th, on the request for an air quality permit renewal for ASARCO Mission Complex copper mine (ASARCO) operating at 4201 W. Pima Mine Road in Sahuarita, Arizona. *Continued on page 14*



ENVIRONMENTAL SOLUTIONS

866.694.7327 www.liquidenviro.com info@liquidenviro.com "Protecting your business is our business" Liquid Environmental Solutions is a comprehensive provider of non-hazardous liquid waste collection, transportation, treatment, and recycling services with an industry leading record of compliance, safety, and customer service.

- The Nation's Largest Network: By operating the largest network of treatment facilities we offer unmatched expertise in safely and cost effectively treating your waste streams
- Industry Leading Insurance Coverage: With three times the industry average for insurance coverage you can rest assured that you are protected
- Exclusively Non-Hazardous Waste: We reduce your company's exposure to a possible fine, non compliance, or superfund involvement in the future by being an exclusively non hazardous facility.





SUSTAINABILITY FROM THE GROUND UP **SAEMS 2012** P2 SEMINAR

The SAEMS P2 2012 seminar, "Sustainability: From the Ground UP", was held on Wednesday September 26, 2012 at the Hotel Tucson. The annual event was as always a great





success, attended by 60 people, and raising \$4,892 for the SAEMS scholarship fund.

Presentation topics included City of Tucson recycling programs and audits, sustainability at CAP, LED lighting, water efficient plants, urban forestry, air quality, electronics recycling, Pima County's Net-Zero Energy Program and commercial recycling. Due to technical problems, a video intended to be included with the City of Tucson's recycling program presentation could not be shown, but interested readers can view the video at: http://www.kvoa.com/player/?video_id=11860.

The P2 Seminar is made possible through the volunteer efforts of the SAEMS seminar committee! For more information, contact SAEMS at www.saems.org.

Environmental, Health & Safety Séminars **OSHA, DOT & EPA Courses**

poly.asu.edu/seminars







- Clean Air Act Regulatory Compliance

- HazWOpER (40 hour & 8 hour refresher) - Hazardous Materials Transportation
- (49 CFR & IATA, initial & refresher) - RCRA Regulation & Compliance (initial & refresher)

Registration, schedule, descriptions & fees: poly.asu.edu/seminars Denise Kolisar 480.727.1825

contact:

- Water Quality Laws & Requirements

- EPA Method 9 (Smoke School)

- Emergency Response Technician Level

Site specific courses: Chad Geelhood 480.727.1869

Arizona State

UNIVERSITY

POLYTECHNIC CAMPUS





PSC provides nationwide industrial services, environmental services, transportation and container services, delivered by thousands of skilled and committed professionals throughout North America.

www.PSCNow.com



PSC is the single source for industrial cleaning services:

- · Hazardous Waste Disposal Labpack
- Household Hazardous Waste Services
- Soil Excavation/Remediation/ Decontamination
- · Vacuum Tankers
- Roll-off and Vacuum Bins
- · Super Suckers and Jet Rodders

What does PSC stand for?

People, Service and Commitment. As the industry leader, we don't just promise these qualities. We live them every day.

PEOPLE. PERFORMANCE. PRIDE. PROMISE. THIS IS PSC NOW

.....

PSC 5150 N. Tom Murry Avenue Glendale, AZ 85301 602 252 1186

NEWS BRIEFS

CONTINUED FROM PAGE 11

A formal Public Hearing will be Tuesday, November 27, 2012, at the Rancho Resort Clubhouse at 15900 South Rancho Resort Boulevard in Sahuarita, Arizona, from 5:00 p.m. to 6:00 p.m. There will be an opportunity at this hearing for the public to speak about the proposed renewal of the ASARCO air quality permit or to drop off written comments about the permit.

ASARCO is currently operating under an air quality permit issued in 2003 and revised in 2011. This existing five-year permit remains in effect until the Control Officer (Director) of PDEQ makes a decision regarding the air quality permit renewal.

The proposed air quality permit requires ASARCO to continue to control particulate emissions from the tailings by incorporating a tailings management plan. In addition, the permit requires ASARCO to continue to control particulate emissions from



REMEDIATION | TRANSPORTATION & BIN SERVICE



INDUSTRIAL SERVICES | WASTE MANAGEMENT

crushers, conveyor belts and processing equipment through the use of various pollution control equipment. Additionally, all equipment at ASARCO is subject to local and/or federal standards that limit or control overall emissions from the facility. There are no significant changes in ASARCO's operations proposed in this permit.

The official public comment period for the proposed permit began on October 1, 2012, and will end on November 30, 2012. Copies of the permit application and relevant background material may be reviewed at www.deq.pima.gov or during normal business hours at the PDEQ offices, 33 N. Stone Ave., Suite 700, in Tucson. For additional information, please call (520) 243-7400





1982 - 2012 30 YEARS OF EXCELLENCE

 Emergency Response
Hazardous Materials Management
Lab Packing
Clandestine Drug Lab Remediation
Confined Space Rescue Certified
Temporary Technical Personnel
Training, Including: HAZWOPER; RCRA; and Confined Space
Asbestos, Lead, and Mold Abatment
UST Removal
Soil Remediation
Tank Cleaning
Tanker Service

FINE PERFO ONCENCE SECU



Phone: (480) 945-0009 24 Hour Emergency Spill Response Fax: (480) 945-8599

WWW.KARYENVIRONMENTAL.COM ROC151767 L-05 ROC218820 C-05 ROC263766 K-57 641 S. Drew, Mesa, AZ 85210