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12/14/2010 With Guest: AMANDA REEVE
AZ STATE REPRESENTATIVE / CHAIR ENVIRONMENT COMMITTEE
Channel Host: MICHAEL C. FORD
YOUR REGULATORY ENVIRONMENT
AZ State Rep. Amanda Reeve speaks with Mike Ford on some of the issues the Environment Committee will be addressing in 2011. 7:10 MIN



EMTV WEEKLY REPORT 04
09/28/2010 SPECIAL: SAEMS 2010 P2 SEMINAR
Clips of the SAEMS 2010 P2 Seminar including a tele-interview with Pamela Beilki and Host Edwin Ramos. 7:08 MIN



10/19/2010 E-WASTE
Channel: Director Ben Grumbles
ARIZONA DEPT OF ENVIRONMENTAL QUALITY
ADEQ Director Ben Grumbles discusses E-Waste issues with EMTV Host Joseph Eddy. 3:56 MIN



EMTV WEEKLY REPORT 03
09/21/2010 SPECIAL GUEST: LISA CULBERT
Lisa Culbert of Layne Christensen discusses water treatment services and other issues with EMTV Host Joseph Eddy. 7:58 MIN



11/23/2010 SMART GROWTH
Channel: Director Benjamin H. Grumbles
ARIZONA DEPT OF ENVIRONMENTAL QUALITY
ADEQ Director Ben Grumbles talks about Smart Growth in Arizona with EMTV Guest Host Tom Curry. 14:51 MIN



11/23/2010 With Guest: STEVE TRUSSELL
ARIZONA ROCK PRODUCTS ASSOCIATION
Channel Host: MICHAEL C. FORD
YOUR REGULATORY ENVIRONMENT
Steve Trussell, AZ Rock Product Association Exec. Director speaks with Mike Ford on rock and aggregate related environmental issues. 4:56 MIN



EMTV WEEKLY REPORT 08
11/16/2010 SPECIAL GUEST: EARL CAMPBELL
Earl Campbell, President of E-Waste Harvesters speaks with EMTV Host Edwin Ramos on E-Waste issues in Arizona. 5:06 MIN



09/21/2010 WATER QUALITY IMPROVEMENT GRANTS
Channel: Michael C. Ford
YOUR REGULATORY ENVIRONMENT
Pejman Eshraghi of Brown & Caldwell speaks with Mike Ford on Arizona Water Quality Improvement Grants. 5:20 MIN



EMTV WEEKLY REPORT 06
10/12/2010 SPECIAL GUEST: LARRY OLSON, PhD
Larry Olson, PhD, ASU, speaks with EMTV Host Joseph Eddy on his professional background & topics for his upcoming Channel videos. 6:12 MIN



EMTV WEEKLY REPORT 09
12/07/2010 SPECIAL GUEST: KALE WALCH
Kale Walch, Deputy Director Pinal County AQ Dept speaks with EMTV Host Edwin Ramos on the upcoming Alliance Air Quality Luncheon. 3:52 MIN



11/02/2010 FAIR FEES
Channel: Director Ben Grumbles
ARIZONA DEPT OF ENVIRONMENTAL QUALITY
ADEQ Director Ben Grumbles speaks with EMTV Host Joseph Eddy on the issue of Fair Fees. 4:48 MIN



EMTV WEEKLY REPORT 02
09/14/2010 SPECIAL GUEST: NICHOLAS R. HILD, PhD
Nicholas R. Hild, PhD, ASU, with EMTV Host Edwin Ramos, on ASU's Env Technology program and his background in environmental management. 6:17 MIN

INSIDE: ALL OUR REGULAR FEATURES INCLUDING

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SUSANNE COTTY AND LEE COMRIE Pg 6



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"Chilean Mine Rescue" presented by
Mark Scharenbroich, Layne Christensen

"Lessons from the Investigations of the Chemical
Safety Board" presented by John Bresland,
US Chemical Safety Board Member

Highlights

ADEQ Director (Invited)

William Wiley, Director, Maricopa County
Air Quality Department

Don Gabrielson, Director, Pinal County Air
Quality Department

Lou Trammell, Director AZSERC, ADEM Chair

Stephen Owens, Assistant Administrator, Office
of Chemical Safety & Pollution Prevention, US EPA

Jane Diamond, Superfund Director, USEPA Region 9

Topics

BP Oil Spill Response

Colorado River Response Plan

Brownfields Redevelopment

Air Quality Compliance & Enforcement

Safety Communication

New Stormwater Permit Requirements

E-Waste Management

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From the Editor



If you are not yet a regular viewer of EMTV (at www.environmentalmanagement.tv), I hope the sample selection of recent videos shown on the cover of this issue will spark your curiosity. If you viewed the first few videos posted in September but have not been back yet, you will find that a lot has been added — please check it out! And if you have suggestions for EMTV, or would like to participate, just let me know!

As we complete our eighth year of publication, here are a few interesting (to me) Journal facts: Over the past eight years, the Journal has published approximately 120 main articles, 240 columns, 48 cover photos, 700+ photos of Arizona environmental professionals & environmental events, 144 Newsbriefs articles, 480 Association Pages articles. Nearly 200 Arizona environmental professionals have authored or co-authored an article, column, or a Newsbriefs announcement. Additionally, the Journal has provided space over the years for hundreds of pages of advertisements offering the types of products and services environmental professionals need. I estimate that if each reader valued his/her subscription at only \$24/per year, based on the average subscriber count over the past eight years, the total value of subscriptions provided, at no cost to readers, has been over \$600,000.00.

You will probably not be reading this until after Christmas, so I hope you had a great holiday and have a Happy New Year in 2011!

Sincerely,

Jim Thrush, M.S. Environmental Management
Editor & Publisher

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ADEQ Director Ben Grumbles:

Blue Ribbons and Green Emissions

Family needs redirected me back to Washington, D.C. in mid-December, which meant leaving a great job in a grand state with hopes of returning some day down the long, but not so dusty, road. During my tenure, we've seen plenty of brown clouds, high pollution advisories, budget cutbacks, and regulatory showdowns. Through it all, though, the Arizona Department of Environmental Quality and the citizens and ecosystems it serves have made important progress and planted good seeds for future greening and growing.

Since coming to ADEQ in 2009, I've been preaching, practicing and prioritizing 3 R's: Reducing waste and inefficiency, Reusing and recharging water supplies, and Restoring air sheds and waterways. Along the way, I've been reminded collaboration, innovation, and technology run through successful efforts on each of the 3 R's and the more we do to integrate clean energy and climate change into our core environmental programs, the better we'll be.

Two of my favorite examples of cross-cutting collaboration: ADEQ's statewide campaign to collect and recycle electronic waste and our brand new partnership with the Arizona Hotel and Lodging Association and Arizona's Office of Tourism to launch one of the nation's best and most detailed green hotel certification programs, tracking waste management and recycling, energy and water conservation and efficiency, and other environmental practices to reduce facility footprints.

Two important efforts worth knowing about: the final report of the Governor's Blue Ribbon Panel on Water Sustainability and the Governor's Executive Order on Climate Change Policy, including the tailpipe emissions work group.

On the waterfront, I'm cautiously optimistic about the Nov. 30, 2010 recommendations of the 40-member panel, co-chaired by ADWR's Herb Guenther, ACC's Kris Mayes, and yours truly. The final report analyzes 26 priority issues and makes 63 recommendations on how to improve and promote water recycling and conservation. It's available at www.azwater.gov/AzDWR/waterManagement/BlueRibbonPanel.htm.

Everyone should read this report. There is much detail and focus by a widely diverse range of experts and stakeholders sifting through legal, policy, and technical issues. A student of process alone could marvel at, or at least learn from, the collaborative effort, an infusion of democracy, hydrology, and ecology.

A few of my favorite and most critical recommendations: ADEQ needs to update its wastewater and graywater recycling regulations and also embrace "net ecological benefit" concepts in its permitting programs.

The panel also recommends significant education and outreach efforts to garner public understanding of water reuse and recycling, including concerns about groundwater recharge, the parameters and complexities of indirect potable reuse, the need for more science and context on pharmaceuticals and personal care products, the nexus between energy and water, and the need for sustainable financing strategies.

On the clean air and climate front, we've got a solid foundation for statewide policies through Gov. Jan Brewer's Executive Order 2010-6 (February 2010). It emphasizes renewable energy and efficiency, nuclear power, smart growth and transportation for a cleaner and greener economy as the state strives to reduce greenhouse gas emissions. Arizona will need to follow through on many related actions, particularly particulate matter and ozone under Clean Air Act mandates.

In her Executive Order, the Governor directed me to convene a stakeholder process to determine whether to repeal the California tailpipe emissions rules Arizona adopted in 2008. The diverse stakeholder group,






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including car makers and dealers and environmental and public health advocates, heard from experts and debated whether to keep the California rules relating to Zero Emission Vehicles and Low Emission Vehicles in place or to follow EPA's existing rules and customize our approach to Arizona conditions.

No one should question the need for further progress in Arizona on curbing vehicle emissions, boosting public health, saving money, and increasing public and private transportation options. It is reasonable, however, to question whether the state should continue to follow California's approach or follow EPA's national rules and use all the right tools for Arizona. Stakeholders identified a lot of solutions, including incentives for public transit, repairing or replacing old vehicles, and increased information for consumers on "eco-driving" to save gas and money.

It's also appropriate to ask whether to increase various fees such as the state air quality fee (\$1.50) for car registrations. The amount goes into a fund facing increasing budgetary pressures and legal demands. Plus, the agency implementing it (ADEQ) no longer receives any general fund dollars from the state legislature.

To answer the question, "what's my car-borne footprint?" think not only about air emissions but also the water and waste impacts from the car itself and the supporting roads and facilities. For example, street runoff includes a range of metals and hydrocarbons from cars and tires. It's reasonable to keep moving towards user pay systems and that includes considering modest increases to fees for beneficial services and cleaner, greener emissions.

All in all, Arizona's future is bright, blue, and green, and not just because of solar, water reuse, and algae biofuels, even though some dark and brown clouds hover and threaten from time to time.

Thanks to JEMA and everyone in the Arizona community of environmental professionals. You are the key to making the bright and green, sustainable and inviting, future a reality. Press forward with the facts, embrace pragmatic progress, and keep policy makers, whether they pass laws, sweep funds, or issue regulations and permits, focused and accountable.



Benjamin Grumbles
Director, AZ Department
of Environmental Quality

Tracking Greater Tucson's Carbon Footprint



Tucson city skyline photo courtesy of: Wikimedia.org. Photographer: Sahmeditor

by Susanne Cotty and Lee Comrie

Pima Association of Governments (PAG) is the metropolitan planning organization for the Tucson region, which includes the City of Tucson, Pima County, tribal lands and nearby cities and towns. In 2007, the Regional Council, PAG's governing body, recognized the importance of climate change to the region and approved a resolution directing PAG staff to conduct a regional greenhouse gas (GHG) emissions inventory. The goal of the inventory was to provide baseline and current GHG emissions data to monitor the overall progress in achieving regional GHG reductions. The inventory is the

result of a cooperative effort among state, Pima County and Tucson staff, and representatives from the electric and natural gas utilities and local industries. The initial inventory was developed in 2008 and was updated in 2010 (PAG, 2010); this summary represents the latest available data.

Separate inventories were developed for eastern Pima County (including Tucson) and Tucson (1990 to 2008), and the County and Tucson government operations (2000 to 2008). The community inventories included emissions from energy use¹, transportation and waste disposal generated by the County and Tucson and estimated carbon dioxide, methane and nitrous oxide emissions, expressed as carbon dioxide equivalents (CO₂e).² Only the County community inventory results are detailed here since the Tucson community emission sources are a subset of the County results.

The government inventories included CO₂e emissions from energy use (government facilities, water-handling activities and streetlights), transportation (vehicle fleets and employee commuting) and waste generation. Both County and Tucson government emissions are presented due to their divergent municipal duties and differences in their emission trends. Pima County is responsible for most of the regional wastewater treatment and reclamation while the Tucson government is charged with pumping and conveyance of potable and reclaimed water for the majority of the region.

Eastern Pima County Community Inventory

From 1990 to 2008, eastern Pima County GHG emissions rose by 54 percent but stabilized from 2007 to 2008 due to the economic downturn (Figure 1). During this same 18-year period, eastern Pima County's population increased by 51 percent triggering a major climb in energy use and vehicle travel evident in the inventory results. Despite these increases, County per capita GHG emissions remained low compared to the national averages.³

In 2008, the County generated 15.6 million metric tons of greenhouse gases, with energy consumption and vehicle use being the major emission sources. Combined energy use by the residential, commercial and industrial sectors produced almost two-thirds of the region's annual emissions (Figure 2). Electricity is the region's major energy source and was responsible for over half of the area's emissions (Figure 3). These emissions reflect the predominance of coal-fired electricity generation in the region.

Transportation generated over one-third of regional emissions, 99 percent of which is from personal and commercial vehicle use.

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Figure 1.
Eastern Pima County Greenhouse Gas Emissions 1990 to 2008

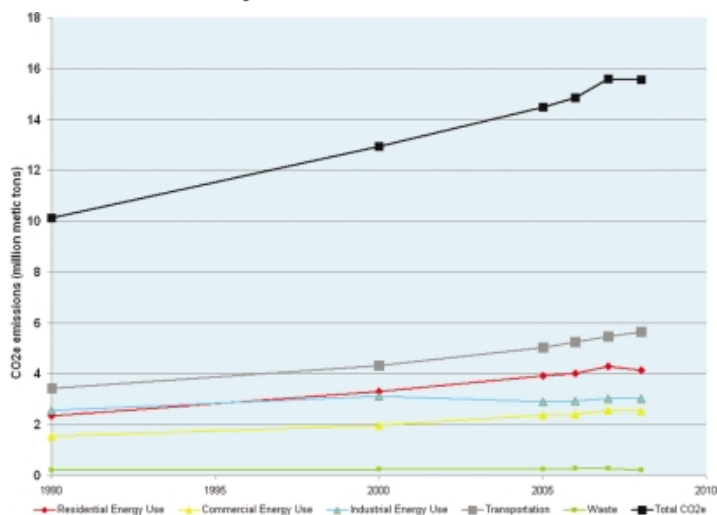


Figure 2.
Eastern Pima County 2008 Greenhouse Gas Emissions by Sector

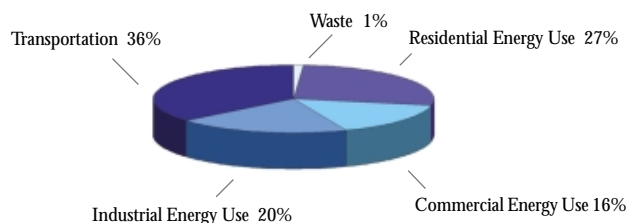
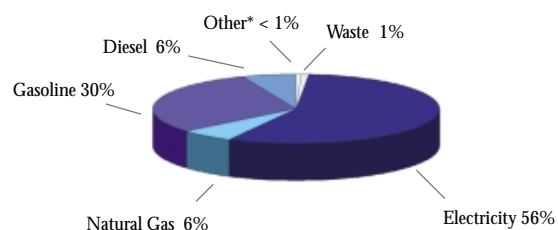


Figure 3.
Eastern Pima County 2008 Greenhouse Gas Emissions by Source



*Other: Biodiesel, CNG less than 1%

Pima County and Tucson Government Operations Inventories

Emissions from government operations represent a small portion of the County and Tucson community totals, 1 percent and 3 percent respectively. Facility and water-related energy use are the major emission sources for both entities, with electricity consumption averaging 70 percent of their total emissions.

From 2000 to 2008, County government emissions rose by 44 percent, with the greatest increases occurring in wastewater reclamation and facility energy use. These increases reflect the rise in demand for services from an expanding regional population. In 2008, facility and regional wastewater reclamation energy use were the major contributors to the County government total (Figure 4).

Continued on next page

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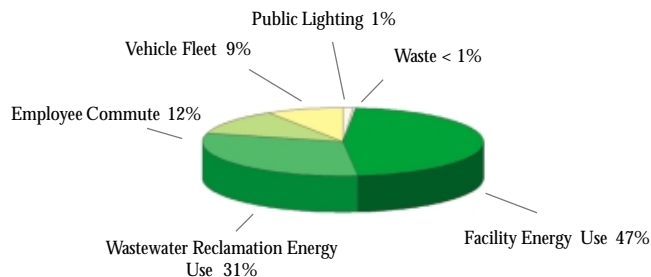
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CARBON FOOTPRINT

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Figure 4.

Pima County Government 2008 Greenhouse Gas Emissions by Sector

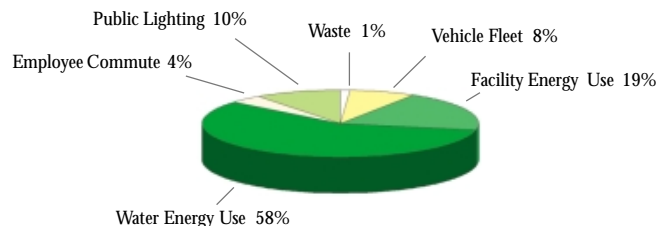


Over this same eight-year period, Tucson's government emissions dropped by 6 percent, reflecting substantial reductions in facility energy use, employee commuting and vehicle fleet emissions. In 2008, water-related and facility energy were the major contributors to the Tucson government emissions (Figure 5).

From 2007 to 2008, both County and Tucson governments exhibited a reduction in their emissions. The County government emissions declined by 4 percent and the Tucson government emissions dropped by 2 percent reflecting a one-year decline in their facility and water-related energy uses.

Figure 5.

Tucson Government 2008 Greenhouse Gas Emissions by Sector



Next Steps

Using the report as a guide, Pima County and Tucson have initiated GHG reduction strategies targeting the major emission sources. County government reduction measures include programs to reduce government energy, waste and potable water use, increasing renewable energy use and expediting the purchase of alternative fuel vehicles. From the program's onset in FY2008, County government reduced its energy expenses by \$1.2 million, lowered waste generation by 29 percent, reduced water consumption in County parks by 20 percent and generated 5 percent of the County's total energy load using renewable energy.⁴ The County government is continuing to develop new programs to meet the GHG reduction goals outlined in its five-year Sustainable Action Plan and Year Two Implementation Report Card.

Similarly, Tucson invested over \$1.8 million in solar energy projects, increased landfill gas-to-energy use, expanded alternative fuel use in fleet vehicles and in City buses, and passed ordinances for greater energy and water efficiency for new homes.⁵ Under the direction of the Mayor's Climate Change Advisory Committee, City staff is currently reviewing new policies to reduce GHG emissions throughout the community.

Conclusion

The community inventories show a steady rise in regional GHG emissions over the past several years, driven by increased energy use and vehicle travel. The government inventories' results echo the community emissions trends in energy use and demonstrate its clear link to regional water conveyance and treatment. In identifying the major emission sources and trends, these inventories highlight the sectors where reduction strategies might be focused to provide the greatest impact on decreasing the region's carbon footprint.

The initial steps have been taken - recognition of the importance of GHG emissions to the region's social, environmental and economic health, and quantifying the emissions. The next stage in the emission reduction process clearly has begun - County and Tucson representatives



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are developing reduction strategies aimed at the major emission sources. By involving the community in an encompassing, cooperative effort, the region can begin to advance toward achieving significant regional GHG emission reductions.

The complete report is available at: www.pagnet.org/Programs/tabid/948/Default.aspx

References

- EPA. 2010. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008. U.S. EPA # 430-R-10-006. <http://epa.gov/climatechange/emissions/usinventoryreport.html>
- Pima Association of Governments (PAG). 2010. Regional Greenhouse Gas Inventory: 1990-2008. www.pagnet.org/Programs/tabid/948/Default.aspx

Footnotes

- 1 Energy use includes both electricity and natural gas consumption.
- 2 Emissions were estimated using the National Association of Clean Air Agencies (NACAA)/International Council for Local Environmental Initiatives (ICLEI)/Torrie Smith Associates' Clean Air and Climate Protection model (CACCP).
- 3 In 2008, U.S. per capita GHG emissions were 23 metric tons (EPA, 2010) while County emissions were estimated at 16 metric tons per capita.
- 4 Sustainable Action Plan for County Operations - Year Two Implementation Report Card FY09/10. 2010. <ftp://airinfoNOW.com/wwwroot/Administration/Sustainability/Year%202%20Report%20Card.pdf>
- 5 The City of Tucson's Sustainability Report 2008-2009. 2009. http://www.tucsonaz.gov/ocsd/docs/CMS1_035184.pdf

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Associations Pages

For this issue, Associations were invited to share "what makes your organization special?" Responses are shown in green.



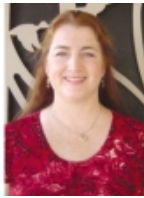
www.azhydrosoc.org

The Arizona Hydrological Society (AHS) has been dedicated to advancing hydrology and water resource research, planning, and development for over 25 years. AHS provides an open forum for professionals to exchange technical information and ideas and is dedicated to helping establish standards for the practice of hydrology as a profession. AHS also strives to enhance public understanding, education, and training in the science and technology of hydrology and water resources. In support of these goals, AHS funds meetings, scholarships, grants, symposia, and other outreach and (or) educational activities.

AHS' chapters are already planning a busy 2011. The Flagstaff Chapter is busiest as plans for the Annual Hydrological Symposium are in full swing. We'll be back at the wonderful High Country Conference Center on the NAU campus, September 11-13, 2011. The Phoenix Chapter is planning a Spring Workshop and the Tucson Chapter is lining up an informative monthly meeting program. See the AHS web site, www.azhydrosoc.org for details as they become available.

AHS would like to wish everyone a happy New Year and don't forget to renew your AHS membership amid the hustle and bustle of the holiday season!

Christie O'Day
Executive Director



www.awma-gcs.com

AWMA Grand Canyon Section (AWMA-GCS) did not hold any meetings during the months of November and December. In January, we will be hosting a tour of Pinal Energy, an ethanol manufacturing plant located in Maricopa, at 1:00 pm on Friday, January 21. Pinal Energy was the first ethanol manufacturing plant to locate in Arizona. It has been operating since 2006 and has the capacity to manufacture 60,000 gallons of ethanol per year from corn.

We are currently seeking candidates for officers in our section (Chair and Vice-Chair, each for one-year terms). The election will be held in January, 2011. Please check our website for additional information on meetings and for membership information. Also, feel free to contact Darcy Anderson at darcy.anderson@redhorsecorp.com or 520-360-2641 with questions or suggestions for meeting topics.

Darcy J. Anderson
Chair



www.AzBAS.net

Arizona Businesses Advancing Sustainability (AzBAS) is a formal association of Arizona businesses committed to sustainable practices that promote strong communities, successful businesses, a healthy environment, and sound public policy. We meet four times a year for the primary purpose of holding in-

depth dialogues among participants to share, learn from, challenge and test the sustainability practices that are in place—or in developmental phases—in our companies. The overarching goal is for Arizona businesses to step forward together and grow sustainability concepts and activities in Arizona's diverse communities.

With the introduction of a new strategic plan in early 2010, this year has brought many positive changes to our association. We have introduced affiliate memberships, opening our network from primarily large to mid sized businesses to include consulting, legal, government and non profits to add diversity to the table. Both our *Affiliate* and *Corporate* memberships have continued to grow despite the recession and we successfully co-sponsored the Green Summit with the Arizona Chamber of Commerce. With this continued momentum we are looking forward to a dynamic 2011.

We anticipate 2011 to bring another year of providing resources and educational forums to both the corporate sustainability professional and their companies. To that end we are currently working with John Neville of *Sustainable Arizona* towards developing a gathering of sustainability associations to discuss our collective strengths towards advancing sustainability across the State. More details on this gathering will be announced later in 2011.

Wishing everyone a restful holiday and a happy new year!

Richard Condit
Chair



www.eia-az.org

Congratulations Journal of Environmental Management for 8 GREAT years of service!

For the end-of-year issue The Environmental Information Association (EIA) selected to share with our readers what we think makes the EIA unique and what our organization offers to our members and to the environmental community.

Many environmental organizations focus on the dissemination of information to their members by providing informative monthly meetings and webinars. But none other (that I'm aware of) offers free seminars to non-members. The outreach programs provided by the EIA invite and encourage the end-users (municipalities, government, industrial, commercial, homeowners, suppliers, manufacturers, contractors) to attend. The EIA offers informational and educational programs for the highly regulated asbestos and dust control (PM10). The seminars are free of charge and include breakfast and lunch. Our seminars are endorsed by our local and regional regulators who are often in attendance or are presenters. The local Arizona Chapter is the most active chapter within the National organization and has assisted regulatory leaders in rulemaking, evaluation of rule effectiveness, and technical and research evaluation. The EIA-AZ Chapter was started 20 years ago as the National Asbestos Council by a hand-full of local professionals in an effort to better understand the regulations that taunted us daily. We wanted a forum to interact with the regulators and a platform to share this knowledge with others.

Please visit our web site at <http://www.eia-az.org> or call 602-437-3737 ext. 123 for information on all upcoming events sponsored by EIA-AZ and for membership and sponsorship opportunities.

Vicky Aviles
Past President



www.valleyforward.org

Now entering its 42nd year, Valley Forward Association has fulfilled a key leadership role as the Valley's marquee non-profit dedicated to bringing business and civic leaders together to advocate for the livability and sustainability of our region. This influential, action-oriented organization helps drive public policy on smart growth issues including land use, transportation, air quality, water management and energy.

Valley Forward's greatest strength is the diversity of its membership, representing large companies and small businesses, municipal government and state agencies, educators, non-profits and concerned citizens. Their common denominator is a vested interest in making Arizona among the best places in America to call home.

An historic voice for balance between economic growth and environmental quality, Valley Forward's tagline is "Our Environmental Legacy - Your Sustainable Future." This effective coalition has made quite a difference over the years. From the government mall to the Rio Salado project and Tempe Town Lake, from ribbons of freeway across the community to a light rail transit system, from the healed scars of the Phoenix Mountains to infill development and adaptive reuse, Valley Forward has left a mark.

In addition to quarterly luncheons and committee activity, Valley Forward presents four signature events each year, including its: **Livability Summit** to promote healthy communities; **Environmental Excellence Awards**, celebrating 30 years of stewardship; **EarthFest Educators Night**, providing environmental education resources to teachers; and **Annual Luncheon**, featuring such nationally recognized speakers as National Geographic Photographer Joel Sartore, Robert Kennedy Jr., Erin Brockovich and Bruce Babbitt.

Diane Brossart
President



www.SAEMS.org

The Southern Arizona Environmental Management Society Inc. (SAEMS) was formed in 1986 and incorporated in 1991 as a non-profit 501 (c) organization to actively promote awareness, education, and understanding of environmental issues and to provide a forum for the exchange of ideas and information between private enterprises, government, industry, and educational institutions.

As we enter our 25th year, SAEMS is still a strong and vital organization with over 250 members. The membership is diverse with people from private industry, regulatory agencies, and environmental service companies, who represent a broad cross section of interests.

What makes SAEMS such a successful organization is the value that it provides to its members and the willingness of its members to volunteer their time and energy to make things happen. In this past year SAEMS has accomplished the following:

- Held two seminars; RCRA and P2,
- Completed four highway cleanups,
- Completed two wildcat dump cleanups,
- Awarded scholarships to two U of A students,

- Sponsored the Tucson Earth Day Festival,
- Held our first annual golf tournament.

Additionally, SAEMS holds luncheon meetings on the last Wednesday of the month at the historic Manning House. Please visit www.saems.org to read about all of these exciting events.

Ken Asch
President



www.EPAZ.org

Just a reminder that annual membership renewal was due November 1. Attendees at EPAZ events will be subject to non-member rates if not renewed by Dec. 31, 2010. Also, applications for EPAZ scholarships are due by Dec. 31, 2010.

At our November luncheon, Lisa Spahr of Engineering & Environmental Consultants, Inc. (EEC) gave an update on the soon to be published Arizona Stormwater Multi-Sector General Permits for industrial and mining facilities. These new general permits are expected to be issued by ADEQ by the end of the year and potentially impact many companies in the state.

The December luncheon featured a presentation by Stephanie Tavares of Goodrich Interiors on recycling and sustainability. As an option to paying the normal fee, attendees were given an opportunity to pay by bringing a new, unwrapped toy which will be donated to the Toys for Tots organization to help out some of the less fortunate children in our community.

In January, we are scheduled to hear from Tom McMahon of the Arizona Game and Fish Department about some of the problems imposed by non-native invader species, including an update on the regulations that are designed to protect our land and water.

Feb. 15-16, 2011 is the annual Gatekeeper Regulatory Roundup at the Scottsdale Chaparral Suites. See the ad in this issue (pg. 3) or our website for details.

EPAZ normally holds monthly luncheon meetings on the 2nd Thurs. of the month from 11:30 am to 1:00 pm. at the SRP PERA Club. For details and reservations, please go to our website at www.epaz.org. EPAZ also gathers on the last Wed. of the month for a casual cocktail mixer at various locations throughout the valley. Visit our website to find the location of our next mixer or contact me at (480) 829-0457 for more information.

Mannie
Carpenter
President



Arizona
Environmental
Strategic
Alliance

www.azalliance.org

Each of the many environmental organizations in Arizona has its own special focus and the focus of our organization is to "recognize and demonstrate environmental leadership throughout Arizona". The Alliance is a unique public-private partnership. Our members are organizations regulated under local, county, state or federal environmental laws. Members are required to maintain a high level of environmental integrity and performance. Applicants must demonstrate substantial compliance with laws and regulations for one year, and work to go beyond compliance to improve

the environment. Alliance membership does not require perfection—but as environmental leaders, members are expected to take appropriate corrective action if an incident or violation occurs. Membership in the Alliance involves an application process; however, if your company strives for environmental leadership and supports the Alliance environmental principles, you may already meet many of the application requirements. Benefits include the recognition of achieving Alliance environmental standards, but also include being able to network with other like-minded environmental professionals, and communicate with county, state, tribal and federal regulators in an informal, non-confrontational setting.

The Alliance is hosting an Air Quality Luncheon on January 25th with speakers Bill Wiley, Director of the Air Quality Department of Maricopa County, and Don Gabrielson, Director of the Air Quality Department of Pinal County, moderated by Ed Fox, VP and Chief Sustainability Officer of APS, on the topic of PM 10 and PM2.5 and the recent non-attainment issues. See the Alliance website for details if you are interested in attending or call us at 480-422-7392.

Matt Conway
Chair



www.azchamber.com



The Arizona Chamber and Manufacturer's Council Environment Committee continues to hold monthly breakfast meeting focusing on timely topics associated with industrial environmental compliance. Meetings are held on the second Wednesday of each month beginning at 7:00 AM at the Phoenix Sheraton Hotel located at 1600 S. 52nd Street Tempe, AZ 85281. Meeting notices are generally sent out two weeks in advance and include the agenda, topics and speakers that will be participating. Breakfast meeting information can also be found on the Arizona Chamber's web page at www.azchamber.com. Contact Katie Whitchurch at kwhitchurch@azchamber.com, (602) 248-9172 x.126 to have your name added to the invitation list.

The Arizona Chamber and Manufacturer's Council Environment Committee maintains three technical subcommittees covering the areas of water, waste and air compliance. Anyone wishing to participate on any or all of these committees should also contact Katie Whitchurch.

Jeff Homer
Chairman
Environment
Committee



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American Society of Safety Engineers

ASSE is a unique platform for safety professionals to utilize for education and networking. It is the oldest professional safety organization, celebrating its 100th anniversary this year. ASSE has locally held chapters. This allows for convenient attendance of meetings as well as being active with you local safety community. ASSE keeps up to date information on changing regulations, which is extremely important for safety professionals to stay current so that their companies are abiding with any new laws.

We have monthly meetings on various topics in order to reach as many individuals as possible. At each meeting we give the opportunity to our members to have the floor with any specific concerns that they have as well as speaking on their current safety needs.

ASSE also holds a large reference database of safety jobs and educational opportunities in order to assist in furthering a safety professional's career. We also have student outreach programs in order to educate younger children in the importance of safety. We provide adult students guidance into their safety careers as well as mentor them through their own ASSE Student chapters. We also provide opportunity for these students to have financial support through scholarships.

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Larry Olson, PhD.

It's All About Chemistry

The Vasa's Greatest Battle

One of the most interesting places I've visited is the *Vasa* Museum in Stockholm, Sweden. In the 17th century Sweden was at war with Poland, Russia, and Denmark over who would control the Baltic Sea and King Gustavus Adolphus wanted to build the mightiest warships in Europe. He commissioned the *Vasa* with two gun decks and 64 guns, more than any other ship of its day. Unfortunately, there were no computer models or good methods to determine a ship's stability and on Sunday August 10, 1628, with the shores lined with cheering spectators for its maiden voyage, the top heavy *Vasa* began to heel over in the wind after only a few minutes under sail and sank in the Stockholm harbor.

After more than 300 years buried in the mud, the *Vasa* was located in 1956 and an ingenious plan to raise the ship was devised. On April 24, 1961 the *Vasa* was brought to the surface, amazingly remaining in one piece. Obviously, it is a priceless historical treasure, but it also presents a unique scientific challenge to protect it from degradation now that we've dug it up.

The *Vasa* survived its burial for several reasons. Water in the Baltic is much less salty (brackish) than normal because the only outlet to open oceans is the very shallow Kattegatt between Denmark and Sweden which limits inflow from the North Sea. As a result, the shipworm, *Teredo navalis* doesn't thrive in these conditions. The water in Stockholm



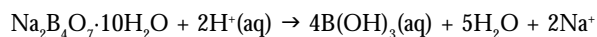
The VASA: Courtesy of Wikimedia.org. Photographer: Georg Dembowski

harbor was polluted with sewage and other organic material. This created anoxic conditions at the bottom and sulfate became the primary electron acceptor for oxidizing carbon. When sulfate is reduced, H₂S is produced which is toxic to wood degrading microorganisms.

But this is also the source of the *Vasa's* current problems. H₂S penetrates the wood and if iron is present it can form pyrite, FeS₂, or other reduced sulfur compounds. Core samples taken from different parts of the ship show the total sulfur content still in the wood to be about 1.0% by weight, which equates to 2.5 tons of sulfur. As long as the ship was buried in the mud and protected from oxygen, these sulfur compounds were stable. But exposure to air oxidizes sulfur back to sulfate and H⁺.

Indeed, in the summer of 2000 a number of white and yellowish precipitates were observed in various parts of the ship. These were identified as various sulfates such as jarosite [NaFe₃(SO₄)₂(OH)₆] and melanterite [FeSO₄·7H₂O]. The pH in these areas had dropped to 3 or lower.

In an acid environment, the glycoside linkages in cellulose can be hydrolyzed, weakening the structural integrity of the wood. So this is a major issue if the *Vasa* is going to remain viable. From 1965-1979, a solution of polyethylene glycol (PEG) was sprayed on the wood in an attempt to replace the water in the wood and prevent shrinkage as the wood dried. It was the first major object on which this technique had been tried and some 240 tons of PEG was consumed. But the pH of the recirculated solution was found to steadily decrease. A solution of borax was added to the PEG to keep the pH about 7. The 5 tons of borax added over the years was sufficient to have neutralized about 1.3 tons of sulfuric acid.



In the years since the PEG treatment stopped in 1979, as much as 2 more tons of sulfuric acid could have been formed. If all the remaining sulfur is oxidized another 5-6 tons of sulfuric acid is possible. Sweden has allocated over \$1 million to try to find a long term solution to the problem, but considering that tourists visiting the *Vasa* generate \$275 million annually, it would appear to be a good investment. The *Vasa* never fired a shot in anger, but it is in a battle now and we have a lot to learn from her.

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 env. mgmt. He can be reached at 480-727-1499, or by email at Larry.Olson@asu.edu



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Michael C. Ford, Attorney

Regulatory Developments

The 2011 Gatekeeper Regulatory Roundup Conference

The 2011 Gatekeeper Regulatory Roundup Conference is right around the corner, and all environmental professionals in Arizona should consider attending this year. This is the 7th Annual Conference and this year's features an interesting 2-day agenda to get you up to speed on the latest regulatory and professional developments, learn about topics you might not be familiar with, network with colleagues, and reconnect with old friends from the environmental scene. The agenda and registration information is available at the Environmental Professionals of Arizona (EPAZ) website: www.epaz.org.

The GRR Conference has grown to be the premier environmental conference in the state, and is unique in

that it is not put on by a professional seminar company or a private entity or a government agency. The entire conference is organized by a planning committee consisting of environmental professionals in the private and public sector from Arizona who commit a substantial amount of time each year to working together to make this conference happen. The planning committee takes care of all those details necessary to make a conference like this come together – the facilities, meals, exhibitor space, speakers, sponsorships, seminar materials, etc., etc., etc.

While I am honored to be the Chairman of this year's GRR conference, I am but a puppet - the real work is done by local environmental professionals and committee members like (in no particular order!) Chuck Paulausky (CP Safety & Environmental), Lisa Culbert (Layne Christensen), Nancy Nesky (ITSI Environmental), Mark Howard (Arizona Department of Emergency Management), Mike Ardito (EPA), Laura Malone (Goodrich Aircraft Interior Products), Brad Cross (LFR), Manny Carpenter (JBR Environmental), Julie Hoskins (ADEQ) and Maribeth Klein (Polsinelli Shughart). The planning committee has been meeting regularly since July to bring the conference together.

Many key regulators will be at the conference from the county, state and federal level, including the County Air Quality Directors from Maricopa, Pima and Pinal counties; the Director (or Acting Director) and Division Directors of ADEQ; and EPA program administrators from Region IX and headquarters. We also have sessions lined up on the hottest topics in the environmental field, including enforcement defense, electronics recycling, chemical reporting, emergency planning, alternative energy, greenhouse gas regulation, dispersion modeling, and stormwater permitting. Yours truly will be doing something a little different this year, "teaching" a simulated law school class covering a few important environmental cases, for those of you who've always wondered what it would be like to go to law school. We also have a special session by the FBI on WMD chemicals. Our lunch speakers will be discussing the Chilean Mine rescue and the latest accident investigations by the Chemical Safety Board. And, of course, our house band, The Shammy's, featuring local environmental professional and guitar hero Matt Conway (PING, Inc.) will provide the entertainment at our infamous happy hour. We have great sponsorship and exhibitor opportunities and the price for attendance is one of the best bargains around. You will not want to miss this year's Gatekeeper Regulatory Roundup!

We look forward to seeing you February 15th and 16th.


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Michael C. Ford is an Environmental and Natural Resources Law Attorney with the Phoenix office of Polsinelli Shughart. His practice is focused primarily on regulatory compliance advice and enforcement defense. He can be reached at 602-650-2321, or by email at mford@polsinelli.com. Check out Mike's EMTV Channel videos on www.environmentalmanagement.tv!



Sustainability and Sustainable Development

Nicholas R. Hild, PhD.

"Uncertainty Paralysis"

As A New Business Strategy

It is pretty clear that the route to greenhouse gas (GHG) reduction leads directly through the power industry—at least they represent the “low hanging fruit” that politicians can ‘regulate’ when they want the environmental votes. With a significant percent of those gases generated by coal and oil-fired power plants, the easy answer is to ‘regulate’ and tax those emissions until the utilities cry “uncle.”

Unfortunately, those same utilities are in the precarious position of not only having to guess what future regulatory requirements *might* be but also, to anticipate whether or not to invest in multi-million dollar coal-to-gas conversions and/or gas-emissions-capture technologies, without knowing for sure if cap-and-trade (or some other politically-motivated and ill-conceived regulation), will put a real dollar value on carbon or just be another waste of rate-payer’s money.

Until the utilities know just what new standards they can realistically expect, they are justifiably in a holding pattern—what Fortune magazine political observer, Geoff Colvin calls being in a state of “**uncertainty paralysis**”—the freezing of investment funds that result when big businesses—not *just* the power industry, but *ALL* businesses—are unsure of what future regulations will mean to their operations. With lame duck politicians and tea party newbies sending mixed messages, who can blame them for not wanting to spend investment dollars on compliance technologies that no one knows for sure will even be required?

Environmental regulations have been the basic underpinnings of industrial environmental practice for all kinds of industry that generates wastes, not just the power industry—but beginning with the Water Quality Act Amendments of 1972, until just this year, those industries could pretty well anticipate what their emissions/effluent management requirements were going to be, at least for 5 year

planning requirements, regardless of which party controlled congress at any given time.

But, with the new emphasis on global climate change, and politically partisan mid-term haggling, every measure of gauging what impact to expect from next year’s greenhouse gas regulations, has been cast into question.

This is not only the case with environmental legislation, but ‘*uncertainty paralysis*’ has become a part of all businesses who are dealing in these times of major economic impact with confusing and sweeping legislation that gets debated on the hill daily, and interpreted by the media nightly, on both right and left-leaning cable networks.

How, then, should environmental programs be managed, in the face of uncertain compliance requirements yet to be legislated at the federal level? And, how can industry continue to implement sustainability measures if they can not predict what the goal is?

The best answer to that question is: environmental programs should not manage to just be in compliance; programs should be ‘*beyond compliance*’ and therefore, be designed to anticipate ‘worst case’ scenarios even if they don’t know what ‘compliance’ means yet.

In Arizona, the utilities’ EMS programs have taken that idea seriously for the past two decades, but what they are hearing now has them rethinking their five year plans—their critics are saying that what they’ve done in the past does not address greenhouse gases emitted by those fossil-fueled power plants, so the power industry had better be prepared to make a renewed effort to reduce those emissions, or...or...or else!

That’s easy for the environmental critics to say, but in the real world of power producers, every internal program must be managed with an eye toward the bottom line (and rate-payer impact), and being ‘beyond compliance’ already takes a large bite out of the apple. And, with the politically-partisan and confusing messages coming from the congressional debate (i.e. cap and trade, emission taxes; etc.), all the power industry knows for sure is that the Fed will want greenhouse gases regulated. But just “*how*” is still in question.

It seems clear that managing environmental programs, and especially the budgets for them, in these times of uncertainty may, in fact, be a lot easier to predict than the other newly minted federal programs where uncertainty is about taxes and tax rates, and insurance and health reform costs. Or at least, it should be a lot more obvious what the ‘do nothing’ (paralysis) tactic would be if the power producers don’t implement more effective emissions controls for GHG in the next five years. Utilities are aware, after all, that there are GHG emissions reduction programs that *MUST* be implemented to reduce their carbon footprint, going forward, despite all the mixed messages coming from Congress.

They know that because they know that if we don’t do that now, the full impact of ‘*uncertainty paralysis*’ will clearly be on the shoulders of our children’s, children’s children.

Nicholas R. Hild, PhD., Professor, Environmental Technology Management, 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.

News Briefs

23 Companies Settle Hazardous Waste Dumping Claims: Some date back up to 65 years

❖ ADEQ and the Attorney General's Office announced recently that they have reached settlements with 23 companies to pay a total of \$542,000 to resolve hazardous waste dumping claims in the area of Tucson's Broadway Pantano Landfill from 1945 through the early 1970's.

The money will be used to fund further cleanup work at the state Superfund site, known as the Broadway Pantano Water Quality Assurance Revolving Fund (WQARF) site. ADEQ is currently continuing its investigation to determine the best way to clean up the site and identify additional responsible parties.

Tucson resident Ernest Joseph "Joe" Blankenship, 80, a retired salvager, testified to state and federal investigators in 2009 that he disposed of spent solvents from dozens of companies for decades in landfills along Pantano Wash, located six miles east of downtown Tucson, from shortly after the end of World War II until the early 1970's. The contaminants of concern are trichloroethylene (TCE), tetrachloroethylene (PCE), and methylene chloride. All are solvents also used as ingredients in various industrial processes. Those who drink water with elevated levels of TCE and PCE over many years may have an increased risk of cancer and experience liver problems. Continued exposure to methylene chloride may cause eye and respiratory tract irritation and skin exposure may cause irritation or chemical burns.

"This is good news for Tucson area ground water. We hope this fair share settlement becomes a model for others to step up and pay for cleaning up our precious water supplies instead of paying for litigation," said ADEQ Director Benjamin H. Grumbles.

Attorney General Terry Goddard also welcomed the initial round of settlements. "Any companies handling industrial solvents need to rigorously comply with state standards to protect the health of our citizens and our environment," Goddard said. "It's also good to see a positive resolution for many of these hazardous waste cases that date back 65 years." The complaints were filed under Comprehensive Environmental Response, Compensation

and Liability Act (CERCLA) and Water Quality Assurance Revolving Fund (WQARF) law in federal district court in Tucson, Arizona.


governor Brewer's Blue Ribbon Panel on Water Sustainability Issues Final Report


❖ Gov. Jan Brewer's Blue Ribbon Panel on Water Sustainability recently released its final report outlining recommendations to improve statewide water sustainability through increased recycling and water conservation. The 139-page final report analyzes 26 priority issues and makes 63 recommendations on how to improve and promote water recycling and conservation by ADWR, ACC, and ADEQ. Among the recommendations:

- Coordinate and streamline permitting and data submission requirements to foster the increased use of reclaimed and recycled water;
- Promote research on human health effects of low levels of contaminants, such as pharmaceuticals, typically found in reclaimed water to ensure that the use of reclaimed water remains safe;
- Gain a better understanding of the energy needs to produce water and the water needs of energy production;
- Examine ways to safely expand the use of reclaimed water for environmental purposes in recognition of the derived net ecological benefits;
- Develop a comprehensive approach to matching the quality of water supplies to appropriate uses to save both water and energy;
- Establish financial and rate-making guidelines for regulated water utilities that mirror programs currently in effect for energy producing utilities.

The panel's charge was to identify and overcome obstacles to increased water sustainability, a matter vital to the future of the state.

ADWR Director Herb Guenther, ACC Chairman Kris Mayes, and ADEQ Director Ben Grumbles co-chaired the panel. "We look forward to continued collaboration with our key stakeholders to secure a sustainable water future for Arizona. The recommendations of the Blue Ribbon Panel are a definite step in that direction," Guenther said. Grumbles emphasized the importance of clean and safe water. "This is a timely blueprint to help connect the dots, drops, and watts to sustain our most precious liquid asset. Arizonans can lead the nation in water conservation and recycling if we work together to increase awareness and embrace innovation," Grumbles said.





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