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# JOURNAL <sup>OF</sup> Environmental Management

PRACTICAL AND CURRENT INFORMATION FOR ENVIRONMENTAL, HEALTH AND SAFETY PROFESSIONALS

**ARIZONA**

## REGULATORY DELUGE: 2013

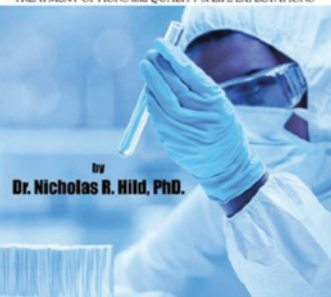
STATE AND FEDERAL DEVELOPMENTS **BERT ACKEN PG 4**

## ADEQ CELEBRATES 25 YEARS

SEE PG 6

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TREATMENT OPTIONS and QUALITY of LIFE EXPECTATIONS



by  
**Dr. Nicholas R. Hild, PhD.**

with Foreword Contributions By  
Dr. Gordon Grady, M.D., Psychotherapist, Southeast Oncology Centers

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**by Dr. Nicholas R. Hild Pg 12**

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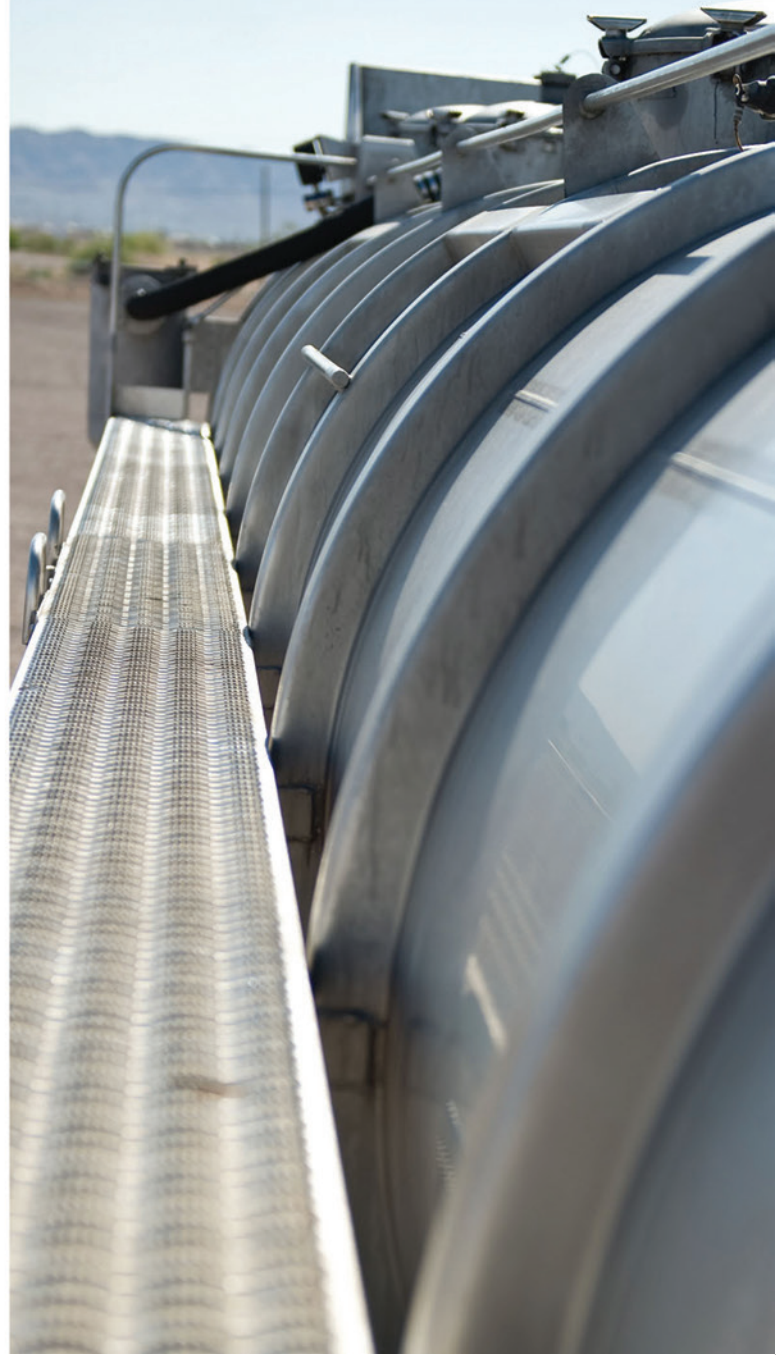




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# REGULATORY DELUGE: 2013

Bert Acken  
Shareholder  
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The coming year promises to be a busy one for those of us tasked with tracking, understanding (or at least attempting to understand), and implementing new environmental regulatory requirements. That EPA will be busy comes as a surprise to no one, but despite the ongoing state-level regulatory moratorium, there will be significant new state and local requirements as well. This article highlights some of the state and federal developments that are likely to affect regulated businesses in the very near future.

## MAJOR AND MINOR NEW SOURCE REVIEW

For several years, ADEQ has been pursuing rule revisions for both its major and minor new source review (NSR) air quality permitting programs. The driving force behind the state's major NSR revisions is to adopt a permitting program similar to the federal revisions promulgated in December 2002 (known as NSR Reform).

EPA adopted its NSR Reform to provide "facilities greater flexibility to improve and modernize their operations in ways that will reduce energy use and air pollution, provide incentives to install state-of-the-art pollution controls and more accurately calculate actual emissions of air pollution. These improvements also will remove perverse and unintended regulatory barriers to investments in energy efficiency and pollution control projects, while preserving the environmental benefits of the NSR program." EPA Press Release 11/22/02. As a result, ADEQ's major source NSR revisions are one example of a regulatory revision that should make the regulatory process clearer, fairer, and more certain (and perhaps the only such example discussed in this article). ADEQ's major source NSR revisions became effective in August 2012.

ADEQ is also revising and strengthening its minor source permitting requirements to meet EPA's current requirements for minor source permitting programs and to eliminate inconsistencies between ADEQ's current rules, as set forth in the Arizona Administrative Code, and older rule versions previously approved and enforceable by EPA (known as the SIP Gap).

Some of the minor new source review revisions will impose a more complex and time-consuming process for minor modifications or minor new sources. For example, there is a new registration program for sources with emissions below current permitting thresholds (however, on the positive side, some sources that currently require a permit will be eligible for the registration program). In addition, a new source or an existing source undergoing a modification must assess the applicability of the minor new source review requirements and may need to conduct modeling or implement controls that were not required previously.

Overall, the revisions to the minor source program are extensive and there are many potential traps for the unprepared and unaware. If you have not already reviewed the rule, take time as soon as possible to become familiar with it, available at: [http://www.azsos.gov/public\\_services/Register/2012/27/final.pdf](http://www.azsos.gov/public_services/Register/2012/27/final.pdf). ADEQ's revisions will become effective upon EPA's approval, which may come at any time. Even if you are regulated by one of the three counties with air quality programs, Maricopa, Pinal, and Pima, the requirements of the state's program will soon make their way to the county programs as well.

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## DRAFT 2013 STORMWATER CONSTRUCTION GENERAL PERMIT (CGP)

On the water quality front, ADEQ is proposing revisions to its Construction General Permit in large part to reflect a stormwater control rule EPA promulgated for the construction and development industry (the "C&D rule"). The C&D Rule adopted technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development industry.

This federal regulation requires all construction and development sites to implement erosion and sediment controls, soil stabilization methods, and pollution prevention measures (EPA subsequently stayed a requirement imposing a numerical turbidity limit that it originally adopted). The 2013 CGP will incorporate the new non-numerical requirements of the C&D Rule. More information on the Draft 2013 CGP is available at <http://www.azdeq.gov/environ/water/permits/cgp.html>.

## COAL ASH REGULATION

Historically, coal ash (officially called coal combustion residuals, "CCRs") has been exempt from regulation under the Resource Conservation and Recovery Act ("RCRA"). In 2010, for the first time, EPA proposed options to regulate coal ash from electrical power generation. Under one of the alternatives, EPA proposed to list coal ash as special waste. Under the second, EPA proposed to regulate these materials as non-hazardous solid waste.

Coal ash is commonly recycled in building products, in which it can replace some quantities of materials such as cement, sand, and aggregates. At best, EPA's proposed regulation threatens to make the continued beneficial uses of coal ash more difficult through additional monitoring, recordkeeping and reporting requirements and increased uncertainty in the event the material must be discarded even when originally intended for reuse. At worst, regulation as a special waste threatens to further reduce or eliminate beneficial uses by stigmatizing the material – after all, who wants a hazardous material in their roads or other building materials? The rulemaking has been on the slow track for some time due to its controversy and the high public interest, but a final rule is expected sometime in 2013.

## BOILER MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY ("MACT")

Another interminable EPA rulemaking deals with its requirements to control hazardous air emissions from boilers and process heaters at both industrial operations and large institutional facilities such as universities, hotels, and hospitals. EPA began its quest to regulate new and existing industrial boilers and process heaters nearly a decade ago.

On December 20, 2012, EPA finalized its latest rules for boilers at major and area sources. The requirements for smaller sources include several notification, recordkeeping and reporting obligations as well as work practice standards such as periodic tune-ups.

## REGIONAL HAZE

EPA's recent actions and proposals with respect to Arizona's Regional Haze State Implementation Plan will also affect many Arizona sources directly, and all electric users indirectly. Unlike most of EPA's other rules, the stated purpose of the regional haze program is not intended to produce any health benefits. Instead, the goal of the regional haze program is to eliminate human-caused visibility impairment at national parks and certain wilderness areas.

On December 5, 2012, after partially disapproving Arizona's proposed plan, EPA promulgated a federal implementation plan for three coal-fired power plants. EPA's rule will require costly retrofit controls

at these facilities, which will either drive up the cost of production at these facilities or lead to their shutdown and replacement with other, higher-cost sources of electricity, many of which are located closer to large population centers.

In addition, on December 21, 2012, EPA proposed to partially disapprove other portions of Arizona's Regional Haze SIP. If EPA finalizes this disapproval, costly controls or shutdowns will be required at several major stationary sources. Minor emission sources located near wilderness areas and national parks (for example, all sources in the Tucson metro area) may also find themselves in EPA's crosshairs when EPA proposes its own controls in March.

## CONCLUSION

The regulatory initiatives discussed herein provide just a snapshot of what will be coming over the next year. Maintaining compliance with current requirements is a full time job, but taking the time to become informed about new requirements will be more important than ever in the coming year.

Bert Acken, Attorney, Shareholder, Ryley Carlock & Applewhite. His practice includes assisting industrial, manufacturing, energy, mining, and construction clients with environmental permitting and compliance, facility siting, and NEPA reviews. Prior to pursuing a legal career, Mr. Acken was an environmental and engineering geologist. He can be reached at 602-440-4874 or by email at [aacken@rcalaw.com](mailto:aacken@rcalaw.com).

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# JOURNAL OF Environmental Management

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## FROM THE EDITOR



**C**ongratulations to the Arizona Department of Environmental Quality on 25 years of service! ADEQ recently released the publication, "25 Years Protecting Arizona's Environment, 1987-2012". In this issue (*beginning on opposite page*) we reprint, with permission, several pages from the publication highlighting just a few of the agency's many accomplishments in reducing pollution and protecting the environment.

If you are making New Year's Resolutions for 2013, perhaps one of them should be to contribute an article to the Journal — I know many of you have planned to write, so what better time than now? Please give me a call or an email if you would like to discuss a potential article and topic. Publishing in the Journal is a great way to share your experiences and environmental expertise, as well as gain recognition for your work and knowledge in the environmental management community.

This is our 60th issue — it completes ten years of publication, and we will enter our 11th year with the upcoming February/March 2013 issue. As always — thank you to our advertisers, authors, contributors, and readers for making the Journal possible for all these years!

Sincerely,

Jim Thrush, M.S. Environmental Management  
Editor & Publisher  
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## ADEQ RELEASES PUBLICATION IN HONOR OF AGENCY'S 25TH ANNIVERSARY

**A**DEQ recently announced the publication of "ADEQ — 25 Years Protecting Arizona's Environment, 1987 - 2012" in honor of the agency's 25th anniversary.

During ADEQ's 25 years of existence, the amount of pollution in the skies of metropolitan Phoenix has been greatly reduced.

Carbon monoxide levels have fallen 83 percent, dust has declined 40 percent and ozone 6 percent despite the population of the Valley almost doubling, the number of vehicles increasing 177 percent and the number of vehicle miles driven increasing 89 percent on Valley roads since 1987. Among the reasons are ADEQ's Vehicle Emissions Inspection program, cleaner burning fuels and various dust control measures within the Valley.

Those statistics are among the findings contained in the publication.

"We have helped accomplish many things that protect the public health and environment of our state and touch the lives of Arizonans since our inception a quarter of a century ago," said ADEQ Director Henry Darwin.

ADEQ was established in 1987 as a separate cabinet-level agency to administer all of the state's environmental protection programs.

Director Darwin said he was excited about the prospects of ADEQ offering even better service to Arizona residents during the coming years.

"Our most immediate goals are supporting environmentally responsible economic growth, enhancing Arizona's unique environment and accelerating the pace of environmental cleanups," Darwin said. "It's my hope for ADEQ to be known as an organization committed to technical and operational excellence as we deliver the finest quality service in all of our endeavors."

**PARTIAL REPRINT:** With permission (our thanks to ADEQ) the Journal reprints on the following pages a selection of highlights from the 25th Anniversary publication. To download the entire publication from ADEQ, at no charge, visit: [http://www.azdeq.gov/function/about/download/25th\\_anniversary\\_book-web.pdf](http://www.azdeq.gov/function/about/download/25th_anniversary_book-web.pdf).



# Our History



Above: Environmental Quality Act establishing ADEQ was passed by the legislature and signed by Governor Bruce Babbitt on Aug. 13, 1986.

Below: Early ADEQ offices at 3033 N. Central Ave.



When House Majority Leader Rep. Burton Barr addressed the House Committee on Natural Resources and Energy in the spring of 1986, his words were powerful and direct about the matter at hand, the environmental quality act.

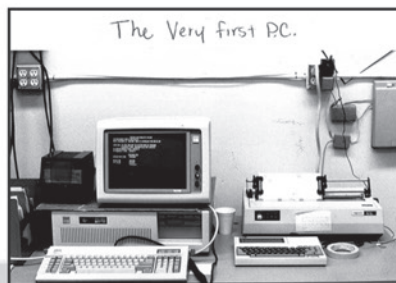
"In the history of state legislation," Barr intoned. "This bill will be regarded as a landmark."

And so it was.

The Arizona Department of Environmental Quality was established as a separate, cabinet-level agency in 1987 to administer all of the state's environmental protection programs. The same legislation also established a comprehensive groundwater protection program and the state's Water Quality Assurance Revolving Fund (WQARF), which cleans up contaminated sites that have the potential to harm human health or groundwater.

Before ADEQ was created, the state's environmental programs were managed by a number of different offices within the Arizona Department of Health Services.

During the last 25 years, ADEQ has grown in size from about 135 employees to an agency of more than 450 people, who support a wide range of environmental programs that protect the quality of our air, water and land in Arizona. The agency has created the rules and regulations necessary to administer state



environmental protection laws and a number of programs delegated by the federal government like the Clean Air Act, Safe Water Drinking Act, National Pollutant Discharge Elimination System program and the Resource Conservation and Recovery Act program.



# Our Green Building

## ADEQ Moved into One of the Nation's Greenest Buildings on Washington Street a Decade Ago

The Arizona Department of Environmental Quality has practiced what it preached in its own work environment. The agency's six-story headquarters, located at 1110 W. Washington in Phoenix, has been a regular winner of state and regional awards for its green features, including greenest building in state government, since its completion in July 2002.

When Opus West finished the building's construction, it was the largest green building in Arizona. In fact, according to Mark Stromgren, senior property manager for what is now Lincoln Properties Company, the building was the largest LEED Silver building in the country at the time it was built.

LEED, or Leadership in Energy and Environmental Design, is a framework and rating system designed by the U.S. Green Building Council to promote green building practices. It consists of four levels of certification: certified, silver, gold and platinum.

ADEQ's building, which wraps around the historic Evans House, has many energy-saving features that reduce energy consumption more than 20 percent below conventional buildings and save the state about \$60,000 a year in energy costs.

These features include a white roof that reflects summer sun rays, motors with variable frequency drives that run at less than full capacity unless there is peak demand, glass that utilizes light but reflects heat away from walls and furniture, and Energy Star transformers. Other energy savings come from fluorescent lights that dim when natural light is available.

Motion sensors in the bathrooms control the amount of water used in the sinks and toilets and motion sensors in the offices and hallways automatically turn off lights when the area is unoccupied.

In the years after ADEQ moved into the building, a governor's office directive to reduce electric bulbs resulted in an additional energy saving of more than two percent without sacrificing workplace light.

Outside the building, trees and shrubbery are watered by a unique irrigation system which uses no potable water, only the bleed water from the air conditioning. Atop ADEQ's parking garage, Arizona Public Service placed 900 solar panels, which generate 200 kilowatts of electricity a year.

While the 300,000-square-foot building incorporated many green concepts, Stromgren said it only cost about one percent more to build than conventional construction because 87 percent of the building debris was recycled, including more than 2,400 tons of wood, gypsum board, steel, cardboard, concrete and masonry.

Bob Rocha, director of Administrative Services Division at ADEQ, and former General Services Manager John Joyce worked with Opus and the Arizona Department of Administration during the construction of the building. "For a state facility this is a premier building," Rocha said. "It was the first environmentally friendly building on the capitol mall."



Above: Governor Jane Hull, J. Elliot Hibbs the Director of ADOA and ADEQ Director Jacqueline Schafer break ground on the new building.

Below: The ADEQ budget team looks over the plans.





# Preventing Pollution



## Pollution Prevention Saves Money

Later this year, ADEQ will become the first state environmental regulatory authority in the country to implement its own in-house environmental management system.

Everything within the agency's buildings will be examined to reduce the agency's environmental footprint. Records will be kept of waste management. Everything from energy usage to paper consumption to emissions reductions will be addressed.

This is just one of the areas in which ADEQ and the State of Arizona have been a pollution prevention leader since the state Legislature adopted a pollution prevention policy in 1991.



ADEQ launched a Performance Track Program in 2005 to encourage and reward businesses that are good environmental stewards and to encourage others to go above and beyond the minimum requirements of the law. Among the success stories are Ping Inc. of Phoenix, which decreased its energy usage by nearly a quarter; Intel Ocotillo of

Chandler, which dramatically reduced its emissions of volatile organic compounds; City of Scottsdale, which conserved more than 4,000 acres of habitat; and Xanterra South Rim, LLC, of the Grand Canyon, which reduced water usage more than 100 million gallons in the past decade.



ADEQ also introduced the Green Business Automotive Program in 2005, designed for auto shops to protect the environment and conserve resources through better front-office waste disposal practices, parts management programs, housekeeping, parts cleaning and degreasing, fluid recycling and reducing energy use.

The program, a partnership with AAA-Arizona, the Automotive Service Association of Arizona and City of Mesa, now has 65 member auto shops in the Valley and Tucson.



For the last two decades, ADEQ's Pollution Prevention (P2) Program has been working with Arizona industry to reduce or eliminate the use of toxic substances, the generation of hazardous waste and pollutant releases.

P2 has partnered with many sectors including aerospace, automotive, boats and marinas, electronics, government, medical services, mining, military, recycling and environmental remediation and utilities and manufacturing companies. It also has collaborated with builders and municipalities in promoting green building practices.

Here are the results, from 1992 through 2010:

Electrical Energy (Kilowatt Hours Saved)

**572.8 million**

Hazardous Waste (Pounds Prevented)

**48.8 million**

Air Pollutants (Pounds Prevented)

**139.3 million**

Solid Waste Disposal (Pounds Prevented)

**331.9 million**

Toxic Substances (Pounds Prevented)

**41.8 million**

Water Conserved (Gallons)

**2.3 billion**

Waste Water (Gallons Prevented)

**332.1 million**

Natural Gas (Therms Saved)

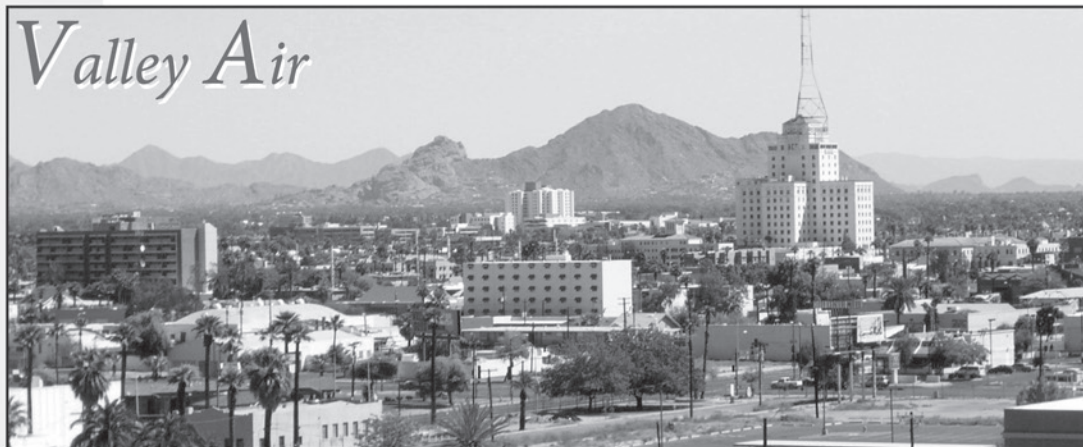
**3.8 million**

Greenhouse Gases (Pounds Prevented)

**18.2 million**



# Cleaning Valley Air



*"The ADEQ staff has done excellent work over the years in improving air quality. While federal require-*

*ments for new vehicle technologies have been critical, the vehicle emissions inspection program also did help get clunkers to clean up their act, letting motorists know that they may not have checked their vehicles' mileage in a while and that their cars may not be up to snuff. We requested a voluntary program by ADEQ to 'save the peaks' and issue advisories, which evolved into the on-going Phoenix Visibility Monitoring Network. Citizens told us that they prized their mountain views and tourism representatives expressed concern that continuing worsening of the areas visibility would have a negative effect on the number of visitors."*

- Ed Phillips  
Former State Senator and a  
long-time Valley television and  
radio meteorologist

## Carbon Monoxide, Dust, Ozone Levels Fallen Far in 25 years

In the 25 years that the Arizona Department of Environmental Quality has been an agency, it has played a critical role in the dramatic improvement of air quality in the Phoenix metropolitan area.

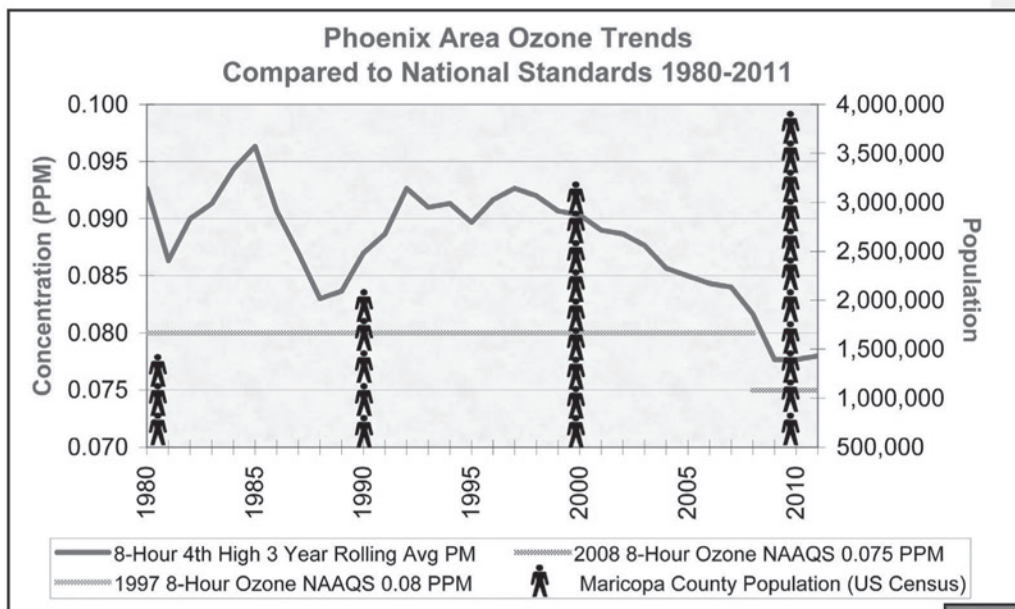
Since 1987, the amount of carbon monoxide, dust and ozone in Valley skies has been reduced by 83 percent, 40 percent and 6 percent, respectively.

Even more remarkable is that this has been accomplished despite the population of the Valley increasing 94 percent from 1.98 million to 3.84 million during that period, the number of vehicles on Valley highways increasing 177 percent from 1.36 million to 3.76 million and the number of vehicle miles travelled within Maricopa County increasing 89 percent from an estimated 17.3 billion to 32.7 billion per year between 1990 and 2010.

ADEQ has assisted in cleaning up the Valley skies in a number of ways:

- Administering what is widely regarded as one of the nation's best vehicle emissions inspection programs.
- Partnering with Maricopa County Air Quality Department and Maricopa Association of Governments to develop and implement pollution reduction strategies.
- Providing technical expertise to task forces in 1996, 1998, 2001, 2007 and 2011 resulting in air quality acts that were instrumental in achieving improvements in air quality, including the elimination of dust problems during stagnant meteorological conditions.
- Issuing daily air quality forecasts and working successfully with local governments and the public, and representatives of dust generating operations to reduce dust levels.
- Operating a camera-based, Web-linked urban visibility monitoring program in Phoenix to observe and rate how air pollution obscures the views of Camelback Mountain, the Superstitions, South Mountain, the Estrellas and White Tanks.
- Using its own scientific expertise and partnerships with Arizona State University, Harvard University, the National Oceanic and Atmospheric Administration, the National Weather Service and Desert Research Institute to further understand the chemistry that produces high ozone levels.





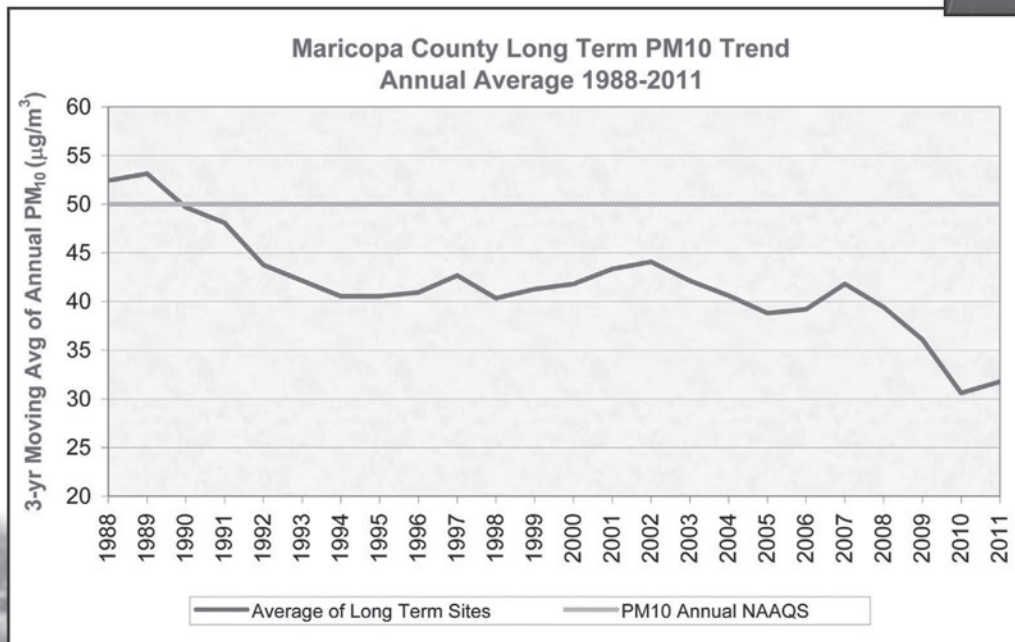
The Phoenix area's topography and climate play a significant role in concentrations of air pollution.

Every evening after sunset, the land cools off more rapidly than the air above it, trapping dust and gases from combustion under the inversion and combining with moisture to form a brown cloud.

Due to elevation differences, cooler air pushes pollution across the Valley from east to west. Each morning, as the sun rises and the land and air heat up, the air flow direction reverses leading to higher afternoon pollutant levels in the East Valley.

The Valley's weather also produces unique challenges. With an average wind speed of only 6 mph, the Valley is prone to having stagnant air which traps pollutants, sometimes for days at a time.

Also, monsoon storms in the summer push enormous dust storms into the area, sometimes from hundreds of miles away. Westerly winds transport ozone and other pollutants from out of state. The abundance of summer heat and sunshine combine in the chemical formation of ground-level ozone.





# ASSOCIATIONS PAGES

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



WWW.SAEMS.ORG

The holiday luncheon was held Wednesday, December 5 at Hotel Tucson. Our speaker was ADEQ Deputy Director Henry Darwin and the event was attended by 65 guests. SAEMS has joined with Tucson Clean and Beautiful and Arizona Native Plant Society in offering a Youth Environmental Education Mini-Grant. Grants are available from \$100 to \$500 per project. Applications are due by January 31, 2013.

Our January luncheon will be January 31 in conjunction with Pima County LEPC Seminar at Desert Diamond Casino. For seminar information please visit: <http://www.pima.gov/lepc/Training.shtml>. If you are interested in joining please visit our website at [www.saems.org/](http://www.saems.org/).

Heather Shoemaker  
President



WWW.AZHYDROSOC.ORG

AHS hopes everyone had a great holiday and is looking forward to a New Year full of potential!

If networking with other water professionals is on your resolution list then come on over to one of our chapter meetings in Phoenix, Tucson, or Flagstaff and join us for a beverage, share business cards, and talk water. The Phoenix and Tucson chapters normally meet on the second Tuesday of the month and Flagstaff often meets on the third Wednesday. Please visit the AHS web site for additional information and meeting details at [www.azhydrosoc.org](http://www.azhydrosoc.org).

Christie O'Day  
Executive Director



**SOUTHERN ARIZONA  
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OF SAFETY ENGINEERS**

A lot has been happening with the Southern Arizona Chapter of ASSE. With the beginning of a new fiscal year, we have new leadership - Shari DiPeso, Safety & Health Administrator - Sierra Southwest Cooperative Services is now President through July 2014. Janet Gallup has been elected to the Region, Area A Director.

We have added our new chapter logo and have created a new visionary scholarship named after renowned occupational safety professional and 60 year society member - David V. MacCollum. The scholarship will be available for students through the ASSE Foundation (<http://www.asse.org/foundation>). Additionally, with the goal to bring in younger blood, the local chapter is in the process of creating a student chapter at the U of A for students

in mining, environmental services and public health. The student chapter is expected to be operational sometime in January 2013.

Upcoming events include a tour of Raytheon Missile Systems Tucson Plant, tour of Caterpillar Proving Grounds, and a presentation on Safety Programs for the volunteers involved in Habitat for Humanity. For further information on these topics and on OSHA training opportunities, please visit <http://SouthAZ.ASSE.org>.

John Roads  
Secretary



WWW.AZAEP.ORG

The Arizona Association of Environmental Professionals, the state chapter of the National Association of Environmental Professionals (NAEP), invites everyone to visit our terrific new website coming in January at [www.AZAEP.org](http://www.AZAEP.org)! The new website has information on speakers for our upcoming meetings and locally-sponsored NAEP webinars. You can go on-line to become a member, sign-up for the distribution list and register for monthly meetings.

The second annual Holiday Networking Mixer on Dec. 11, 2012, sponsored jointly with A&WMA Grand Canyon Section, was a huge success again. More than 30 professionals from both organizations had a chance to network and enjoy terrific holiday fare at the Terroir Wine Pub in Scottsdale.

We look forward to another great year in 2013!

Patricia Mariella, Ph.D.  
Vice President



**ARIZONA  
ENVIRONMENTAL  
STRATEGIC  
ALLIANCE**

WWW.AZALLIANCE.ORG

Alliance members and guests visited ASU Tempe Campus on November 27th for a presentation by ASU Sustainability Director, Dr. Nick Brown, gaining new knowledge of metrics for sustainability indicators and infrastructure design. Following the presentation members toured the ASU Co-Gen



**ARIZONA  
FORWARD**

ARIZONAFORWARD.ORG

Parochialism is no longer in vogue and Arizonans appear ready for change. Business and civic leaders from throughout the state are coming together to advance a holistic sustainability agenda for Arizona that balances economic growth and environmental quality. They are passionate in their cause and growing in number.

The results are so impressive the group that spawned the effort is reinventing itself after 43 years of operation in Maricopa County as Valley Forward and is conducting business as Arizona Forward beginning this year.

Leaders of the association say the transition will result in a more influential, impactful organization working cohesively to make Arizona the best state in which to live. Indeed, Valley Forward has laid a solid foundation for going statewide. This seemingly natural evolution propels its four decades of environmental stewardship into an expanded sphere of influence at a time when Arizona most needs it.

Our collective voice will make a difference to ensure smart growth and development, efficient transportation, improved air quality, responsible water management, energy alternatives and meaningful education throughout Arizona. To learn more, visit [arizonafoward.org](http://arizonafoward.org).

Diane Brossart  
President



Power Plant (see photo). Thank you to our ASU Tour hosts Dr. Nick Brown, Betty Lombardo, and Al Brown!

The Alliance held its Annual Meeting December 19th, and elected our 2013 officers, including: Matt Conway, PING, CHAIR; Neal Brown, APS, VICE CHAIR; Mark Salem, Salem Boys Auto, TREASURER; and Jim Thrush, PRESIDENT.

The Alliance Advisory Council also elected its officers at the Annual Meeting: Beverly Westgaard, CO-CHAIR, and Scott Davis, CO-CHAIR.

An Alliance member panel presented "Practical Steps for Making Your Business Environmental Sound" at the November 15th conference, "Arizona Recycles: Making a World of Difference" sponsored by Keep Arizona Beautiful and the Arizona Recycling Coalition.

For more information on the Alliance or Alliance activities contact our office at 480-422-7392.



Alliance Environmental  
Technical Tour:  
A Presentation by  
Sustainability Director  
Dr. Nick Brown and Tour  
of ASU Co-Gen Plant.

November 27, 2012

Matt Conway  
Chair





# NEWS BRIEFS

## WINTER IN THE DESERT: CHILDREN'S COLORING BOOK RELEASED

❖ Arizona Department of Environmental Quality officials announced recently the release of a new coloring book entitled "Winter in the Desert" as a tool for students to learn about air pollution and to take preventative actions and become good environmental stewards.

The book, written by Joseph Benesh & Illustrated by Sandra Zally, is a collaborative effort among ADEQ's Office of Children's Environmental Health, Maricopa County Air Quality Department and Phoenix Center for the Arts and copies can be downloaded at [http://www.azdeq.gov/ceh/download/winter\\_air\\_colorbook-web.pdf](http://www.azdeq.gov/ceh/download/winter_air_colorbook-web.pdf).

The book is being released at this time because the Phoenix metropolitan area typically has its highest levels annually of smoke from woodburning fireplaces, stoves and chimineas during the holiday season. As a result of the high smoke levels, repeated high pollution advisories and health watches are issued this time of the year by ADEQ and "No-Burn Days" by Maricopa County Air Quality Department.

"This coloring book is something fun for children to do while at the same time providing a good story that's instructive about protecting human health and the environment," said ADEQ Director Henry Darwin. "This is of foremost importance this time of the year because of the historical problems with Particulate Matter-2.5 during the holiday season."

For more information, daily ADEQ air quality forecasts for the Phoenix

metropolitan area are available at <http://www.azdeq.gov/enviro/air/ozone/ensemble.pdf> and to find out if a no-burn day has been issued, go to <http://www.maricopa.gov/aq/>.

## CATHY PALASZ JOINS CT ENVIRONMENTAL SERVICES

❖ CT Environmental Services (Chemical Transportation) announced recently that Cathy Palasz has joined its Phoenix office to manage sales and marketing for the company. In addition to representing CT's transportation and bin services, she will also be capitalizing on their broad range of industrial services, remediation, and waste management capabilities.

Cathy holds a "Green Belt" in Lean Enterprise Solutions and is assisting with streamlining operational activities as well. She obtained a Bachelor of Science degree in Industrial Engineering from Bradley University and comes to CT with a diverse multi-industry technical sales background.

Cathy is the past Treasurer for the Air Waste & Management Association (AWMA) and is currently a member of the Environmental Professionals of Arizona (EPAZ) and Southern Arizona Environmental Management Society (SAEMS) organizations.

CT's Phoenix office is located at 1945 E. Jackson Street, Phoenix, AZ 85034. Cathy can be reached by phone at (480) 544-2299 or email at [cathy.palasz@cti-az.com](mailto:cathy.palasz@cti-az.com).



**Cathy Palasz**  
CT Environmental  
Services

## MARICOPA COUNTY AIR QUALITY DEPARTMENT'S RAPID RESPONSE NETWORK EXPANDS

❖ The Maricopa County Air Quality Department recently announced its Rapid Response Notification System has expanded its network to include the agency's Mesa monitoring station, bringing the total number of sites in the program to sixteen.

The Rapid Response Notification System was developed in 2011 to provide an immediate alert (via email or text message) when a Maricopa County air monitor detects elevated levels of particulate matter (PM-10) pollution. By sending these alerts, the department seeks the help of other regulatory agencies, businesses, residents and local cities and towns to help identify potential causes of the elevated PM-10 levels, and take actions to reduce them.

The goal of the program is to prevent exceedances of the federal health standard for PM-10 and maintain clean air for the residents and visitors of Maricopa County. The region of Maricopa County is currently classified as "serious non-attainment" for PM-10. This means our air quality is not meeting federal health standards. While we live in a desert, human caused pollution activity such as off-highway vehicles, leaf blowers, sand and gravel mining, and construction contribute to the dust pollution in our air.

Those interested in receiving future alerts for one or more of the participating monitoring stations may sign up to receive Rapid Response email or text message alerts at [www.maricopa.gov/aq](http://www.maricopa.gov/aq). Sixteen of the department's monitors measuring coarse particulate matter (PM-10) are currently available for this service. Funding for the initial air monitoring notification network upgrade was provided by the Maricopa Association of Governments.

## CATALYST PAPER TO BEAR COST TO REMEDIATE ANY ENVIRONMENTAL CONTAMINATION FOUND AT MILL SITE

❖ Sale of the Catalyst Paper Mill in Snowflake, Arizona, approved today by a federal bankruptcy judge in Delaware, ensures that any environmental damages discovered at the site will be cleaned up as required

*Continued on page 14*

## ASSOCIATION PAGES

CONTINUED FROM PAGE 12

### Arizona Chapter



American Society of  
Safety Engineers  
AZ.ASSE.ORG

Happy New Year! I trust that everyone has had their fair share of food, presents and partying. Now it's time to get back to protecting people and saving lives. The AZ chapter of ASSE will be hosting the Regional Operating Committee (ROC) meeting in April. As the Chapter hosts all the leaders in this region we will also be having our annual Professional Development conference and our first ever Awards

Banquet. The dates of these events are April 25-27, 2013. Anyone can attend the meetings. For more information please visit our website at [az.asse.org](http://az.asse.org).

One final note, the AZ Chapter and the So. AZ Chapter will be co-sponsoring a letter to the Arizona State Legislature to assist in the beginning stages of a new Texting and Driving law. The law will be aimed at all drivers with an emphasis on teenage drivers. Be on the look-out for this new co-sponsored letter.

Have a great 2013 and I look forward to seeing you soon!



Tim  
Bortoff, CSP  
President



# NEWS BRIEFS

CONTINUED FROM PAGE 13

under State and federal law and the permits issued by the Arizona Department of Environmental Quality, the state's environmental quality director, Henry Darwin, said recently.

"Today's court order ensures that Catalyst Paper will bear the cost to remediate any environmental contamination found at the mill site," Darwin said.

Catalyst Paper, a Canadian-based corporation, announced in July its decision to close the mill amid the company's bankruptcy proceedings, which left in doubt whether it would honor its clean-up commitments under both State and federal law and as specified in the mill's operating permits. In early October 2012, ADEQ conducted an extensive multi-media inspection of the Catalyst facility to evaluate compliance with air, water, and solid and hazardous waste regulations. As a result of the inspection, ADEQ required no further action of Catalyst; however ADEQ felt it was important to work with the Arizona Attorney General's Office, Navajo County, the Arizona State Land Department, and the United States Department of Justice to get the environmental protection provisions in the sale agreement and court documents.

## ADEQ EMPLOYEES HONORED FOR STELLAR WORK DURING ANNUAL AWARDS CEREMONY

❖ Arizona Department of Environmental Quality Executive Administrator Kurt Maurer received the Director's Excellence Award and 21 other agency employees were also honored for their outstanding job performances during 2012 at ADEQ's annual awards event at its Phoenix headquarters. Maurer was cited for being the "thoughtful, calming voice" of ADEQ during a time of great transformation at the agency and making the agency a leader in state government in areas like continuity of operations, emergency response and employee recognition.

"ADEQ places a high value on the importance of recognizing our employees for their commitment to protecting public health and the environment of Arizona and for the exceptional service they provide to all Arizonans," ADEQ Director Henry Darwin said.

Other award categories and winners were: Customer Service: Esmeralda Martinez of Administrative Services Division for her warm demeanor and knowledge of the agency in providing assistance to the public and co-workers.

**Efficiency:** Latha Toopal of Air Quality Division for improving all aspects of the process by which air quality permits are issued by her drive and technical expertise.

**Environmental Commitment:** Mark Shaffer of the Director's Office for his

leadership and volunteering time to the agency for ADEQ's 72 electronic waste recycling events in the state since 2009.

**Innovation and Creativity:** Ryan Richards of Water Quality Division for analyzing use of ADEQ's database and finding and promoting efficient means for improving internal processes and producing reports.

**Mentorship:** Ray Morgan of ADEQ's Southern Regional Office in Tucson for mentoring all levels of employees, which has improved the technical expertise of the agency and made ADEQ employees better people.

**Perseverance:** Dennis Turner of Water Quality Division for his work in leading the renewal of the Arizona Pollutant Discharge Elimination System (AZPDES) Construction Stormwater General Permit through a lengthy stakeholder review process.

**Positive Attitude:** Meghan Smart of Water Quality Division for her contagious, optimistic attitude, creativity and leadership.

**Productivity:** Tom Adams of the Director's Office for his many technical talents in supporting the top priority projects of the agency.

**Professional, Technical or Scientific Expertise:** Brad Busby of Air Quality Division and Chuck Graf of Water Quality Division. Busby won for his groundbreaking work in developing a model to determine why dust storms truly are "exceptional events" and should not be counted against Arizona while being reviewed by the U.S. Environmental Protection Agency. Graf won for continued use on numerous fronts of his nationally and internationally recognized talents as an expert in hydrology, engineering and water management.

**Team:** Members of the State Lead Unit of Waste Programs Division: Andrea Baca, Samar Bhuyan, Rick Brunton, Debi Goodwin, Jason Kocer, Mike Latin, Brent Mitchell, Laura Morales, David Pettigrew, Mark Rhoades and John Robertson. The team won for the tremendous strides it made in improving efficiency and productivity throughout the year, including reducing the time in half needed to hire consultants for corrective action work.

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Larry Olson, PhD.

**IT'S ALL ABOUT CHEMISTRY**

## **ENVIRONMENT AND HEALTH**

**B**y the time you read this column, I'll be packing for my first trip to Africa. My wife (also an ASU professor) and I will spend almost 3 weeks at Africa University in Mutare, Zimbabwe. In any comparison of countries based on GDP per capita, Zimbabwe is almost at the bottom with an estimated \$500 per person per year. Thus, even in Africa, Zimbabwe is the poorest of the poor.

We'll be participating in a conference on neglected tropical diseases and working with faculty at the university. I'm not a medical doctor, but I am very interested in the role the environment plays in disease and the appropriate use of technology in support of human health.

Many people in developed countries view technology as having a negative impact on their lives. From use of pesticides on foods, to traces of flame retardants and other synthetic chemicals now found in virtually all humans, to climate change from increased production of greenhouse gases, to choking smog from traffic and industry there is a sense by some that our modern society is poisoning us.

But there is another side to the picture. Without electricity, some 3 billion people in Africa and other developing countries depend upon burning biomass (wood, animal dung, crop waste, or coal) for heating and cooking. I remember visiting an apartment complex in Beijing in 1986. In the large courtyard was a mountain

of coal and residents brought a pail each day to collect enough for the stove in each apartment. Of course there was no air pollution control besides an imperfect ventilation system. The World Health Organization estimates nearly 2 million people per year die prematurely, mainly from pneumonia and COPD, due to the effects of indoor air pollution from burning biomass. This is to say nothing about the desertification and deforestation resulting from people living on marginal lands scavenging for firewood.

Another example of disease that affects the poor disproportionately is malaria. The WHO estimates there are over 200 million new cases of malaria a year and 655,000 deaths. But a recent article in *Lancet* puts the deaths at twice that number or 1.2 million. Malaria is the second leading cause of death in Africa after HIV/AIDS. It is spread by mosquitoes infected with the *Plasmodium* parasite. The primary means of preventing malaria are vector control and insecticide treated mosquito netting. A major international campaign has cut malaria deaths by 1/3 in the last decade, but global funding has leveled off since 2010, threatening to reverse this progress. For example, distribution of mosquito netting dropped from 145 million in 2010 to 66 million in 2012. Universal coverage requires 150 million to be distributed each year.

Zimbabwe had a 60.9 per 100,000 population rate of death by malaria in 2010. But the highest rates (over 150 deaths per 100,000 population) are for Burkina Faso, Central African Republic, Liberia, Mali, and Mozambique. A recent review article in the *American Journal of Tropical Medicine and Hygiene* showed indoor insecticide spraying had reduced malaria infections in endemic areas by 62% even in the face of increased resistance. Interestingly, they found DDT was more effective than pyrethroids or other insecticides. I suspect that were I to be a parent in one of these African countries, I would look at the relative risks of insecticides differently.

Of course, the most basic issues of environmental health revolve around the accessibility of clean drinking water and adequate food – things we just take for granted in the United States. About 60% of the people in Africa still do not have access to improved sanitation and 35% have no improved drinking water in 2010. I'll give an update from my trip in the next column.

---

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](mailto:Larry.Olson@asu.edu)





## SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT

Nicholas R. Hild, PhD.

### “...METHANOL IS THE BEST ALTERNATIVE FUEL...”

DR. ROBERT FALCO  
EMERITUS ENGINEERING PROFESSOR  
MICHIGAN STATE UNIVERSITY

In the last couple of years, the availability of new vertical and horizontal drilling technologies for recovering oil and natural gas from shale deposits has put us in the awkward position of continuing to be dependent on these (non-renewable) petroleum-based fuels well into the late part of this century. Policy makers seem oblivious to the fact that they are committing our transportation system to continue to burn diesel and gasoline (instead of pursuing alternative fuels), all because energy independence from OPEC oil is driving the energy policy agenda.

There is little interest, it appears, in finding the best way to wean ourselves from OPEC oil *while simultaneously finding a domestic supply of an alternative fuel which will result in less greenhouse gas being emitted when it is burned.*

To do that, we need to understand how those policy makers think and then be able to provide a way for them to prioritize environmental impact simultaneously with the priorities on jobs and energy independence. Here, then, are the policy decision-maker's (i.e. this would be Congress) reasons for implementing new petroleum-based energy policy:

**First**, any energy 'policy' that gets endorsed by Congress today must absolutely guarantee that the fuel produced maximizes the number of jobs its production can make—the first order of business for a politician, especially if s/he can bring jobs to their home state!

**Second**: successful energy policy must be focused on weaning ourselves from foreign oil and allow us to deal with volatile foreign (OPEC) governments without having to worry about our own ability to meet our fuel supply needs.

**Third**: to pass the political endorsement process, today's energy policy must focus on how much less a gallon of fuel will cost at the pump (because we will control our own prices) if it's all produced from domestic sources like recently discovered shale deposits in several states in the Midwest.

**Last**: how much can we reduce our carbon footprint by producing our own oil rather than buying foreign oil? Well, OK this last one is probably not a priority of our politicians. But, it needs to be a critical part of the dialog while we are engaged in the pursuit of domestic oil production from shale. And, here's why:

Production efforts from shale deposits (as well as the Mississippi Lime geology deposits of southern Kansas), offers the opportunity to switch a

major portion of our fuel burning vehicles—big diesel-burning trucks first—to methanol burning rigs! Because, natural gas is easily converted into methanol, (and, many of those shale and Mississippi Lime deposits produce natural gas at the rate of over a million cubic feet a day per well, according to research conducted by the University of Kansas), we can reduce our dependence on foreign oil AND our greenhouse gas emissions (carbon footprint) at the same time. We just need to prioritize our efforts to make methanol the “alternative fuel” of choice for the future of our transportation system and put the methanol infrastructure in place across the country to be able to fuel the cars and trucks that will be using it instead of gasoline and diesel.

Doing that will be a lot less costly than installing natural gas pumps and retrofitting all the tanks and associated fuel systems in vehicles that natural gas requires, plus methanol will be a liquid that has a slightly lower energy density than gasoline so it will only require a slightly larger vehicle tank to get the same mileage distance—and it will sell for a third of what gasoline costs per gallon!

In fact, today's fleet of flex-fuel cars and trucks can already burn methanol and a fifteen year study in California (*Fifteen Years of Fuel Methanol Distribution* by Ward, et al, California Energy Commission) showed that replacing diesel burning trucks and busses with methanol reduces CO<sub>2</sub> emissions to almost nothing—even studies at MIT have demonstrated the cost effectiveness of converting diesel engines to methanol with the added benefit of cheaper fuel at the pump and higher mileage gained on the road. This is truly a win-win for politicians and the driving public, alike, and a really big win for the environment. But we need to get this information to our policy makers before we establish an oil-based energy policy that guarantees a future of transportation-fueled greenhouse gas emissions.

Thus, the shale oil/natural gas rush is a golden opportunity to incentivize the conversion of diesel polluting engines to methanol that will burn cleaner and generate less than a third of those greenhouse gases we need to get rid of. With the addition of shale and tar sands natural gas from Texas, Kansas, and the Dakotas, we could easily prioritize the conversion of diesel burning truck fleets to coincide with the addition of methanol pumps at filling stations across the U.S.

And, by the way, Dr. Falco points out that methanol plants could easily be placed in the nation's more than 2000 landfills to capture methane that is not being harnessed now, convert it to methanol and provide additional fuel for big waste hauling diesel trucks as well as general transportation vehicles—another way to reduce the carbon footprint of landfill gas production and provide jobs, too! The environment benefits and local economies across the nation get a boost in jobs—truly a win-win-win for everyone.

Shale oil production has already shown how many jobs it's production creates—the Center for Applied Economics at the University of Kansas reported recently that in the first quarter of 2013, their state should see \$116 Million in extra income from new jobs and royalties in the shale oil produced in that state alone. In North Dakota, shale oil and gas production has pumped over a billion dollars into the economy in the last few years with no end to the number of new wells planned for 2013 and beyond, where the shale oil wells number in the hundreds already. Wellworkers are making six-figure incomes and services like restaurants and motels are being built at a staggering rate—even high school students are being recruited for the 4 pm to midnight shift, making \$25 per hour—they cannot find enough workers in the 24/7 world of the shale well fields!

Shale oil exploration across the Midwestern U.S. is expanding rapidly with no end to the range of possibilities for opportunities to cash in on the boom. Jobs and the opportunity to become energy self-sufficient are the primary drivers but there is also an opportunity to use newly discovered natural gas in those shale deposits to convert our entire transportation system to methanol. Check out Dr. Falco's presentation at <http://www.youtube.com/watch?v=b-G8Kj594w&list=PLYJmCLFnEPIHEuUEE9brFtaRF5PrT6Y4&index=2> and then consider this: If we don't seriously consider this golden opportunity to allocate the shale sands natural gas to be made into methanol for transportation vehicles of all kinds, you know who will be asking why we didn't: our children's, children's, children.

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



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Journal readers order direct: Mail a check for \$10.95 payable to Nicholas R. Hild, PhD. to: N.R. Hild, P.O. Box 19955, Fountain Hills, AZ 85269. To order online: follow the directions at [www.worldleadingexpert.com](http://www.worldleadingexpert.com). Order direct from Infinity Publishing online at [buybooksontheweb.com](http://buybooksontheweb.com) (\$13.95 + shipping) or order online from Amazon.com or BarnesandNobel.com



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# 2013 Arizona Health and Safety Summit

Arizona Chapter



American Society of  
Safety Engineers



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Arizona Golf Resort, Mesa, Arizona

**REGISTRATION:** To register or for more information visit [az.asse.org](http://az.asse.org)

SPEAKERS  
KEYNOTE



**OPENING SESSION:**

**Darin Perkins**

"22 Years In Safety -- Lessons Learned  
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**LUNCH SESSION:**

**Tim Page-Bortorff**

National Speaker and President of the  
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#### CORRECTION NOTICE

THE SPELLING OF KIRIL D. HRISTOVSKI, PH.D.  
 WAS INCORRECT IN THE OCT/NOV ISSUE.  
 OUR APOLOGIES FOR THE ERROR. THANK YOU!

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KIRIL D. HRISTOVSKI, PH. D.

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