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STEP pg 18**

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PHOENIX WDP? pg 16**

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## **WHAT TO EXPECT FROM YOUR ADOSH INSPECTION**

**by Sean Kriloff, ADOSH pg 13**

## **SHOCK AND AWE IN THE DESERT**

**ARIZONA'S OWN VERSION OF SHOCK  
AND AWE, DR. NICK HILD pg 15**

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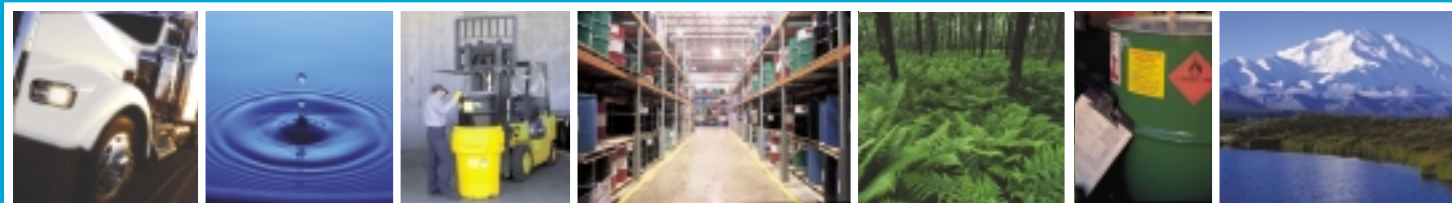
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# JOURNAL OF Environmental Management

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The JOURNAL welcomes readers letters, articles, suggestions for articles and photographs, and releases of news, products, services, literature, business updates, and meeting dates. EH&S associations may participate in the Association Pages. Contact us at the above address and telephone number, or visit the Journal website.

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## JOURNAL of Environmental Management ARIZONA

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## FROM THE EDITOR



I've long noticed that some people will avoid, whenever possible, directly contacting OSHA (or ADOSH in Arizona), even to ask a question. I remember catching myself doing this sometimes, as an EH&S manager for a wet processing equipment manufacturer in Phoenix. When there was an environmental compliance related issue I needed to discuss, I would not hesitate to

call the appropriate person at ADEQ, or Maricopa County, or the fire department, or the city. But a safety related issue — for some reason that was different. It always seemed more prudent to ask a friend to ask a friend to ask someone who knows someone at ADOSH. I'm stretching this a little, but there does seem to be more of a hesitation to call ADOSH then there is to call any of the other regulatory agencies. I don't have an explanation for this, but I don't think there is justification for it. ADOSH has positioned themselves to be more user friendly then they, perhaps, were in the past. For example, Sean Kriloff, ADOSH Industrial Hygienist, has taken the time for several months now to write articles on safety and ADOSH for the Journal. In this issue, in "What to Expect From an ADOSH Inspection," (page 13) Sean describes the procedures ADOSH follows when inspecting a workplace in Arizona. Understanding the inspection process from the ADOSH perspective may help you to better prepare for a possible inspection at your facility. So don't hesitate to call Sean if you have questions!

The annual SAEMS RCRA seminar (see page 3) is coming up soon. Consider attending if you live in or can get to Tucson on May 6th. This is one of the best-attended and worthwhile environmental events in Arizona. In addition to the training and the presentations throughout the day, you will have the opportunity to meet & speak with your environmental colleagues, and representatives from many Arizona environmental businesses & service organizations at various booths (including the Journal!)

Thank you to all the contributors to this issue of the Journal. Thanks to Craig McCurry and The Boeing Company for both an excellent article and some great photographs, including this issue's cover photo of an Apache helicopter over the Superstition Mountains. Craig describes Boeing's achievements in VOC reductions at the Mesa, Arizona facility (see page 18). And I also thank Joan Peters at the City of Phoenix for the article, "Does Your Business Need a City of Phoenix Wastewater Discharge Permit?" (see page 16).

Jim Thrush  
Editor

### LEGAL DISCLAIMER

Information presented in the Journal of Environmental Management Arizona originates from a variety of sources presumed to be accurate and complete. However, due to the rapidly changing nature of regulations and the law and our reliance on information provided by various sources, we make no warranty or guarantee concerning the accuracy or reliability of the content of the Journal. Readers are encouraged to contact authors, agencies, advertisers, and companies directly for verification and/or clarification. Material in the Journal is for informational purposes only, and should not be considered as legal or professional advice. Please consult your own legal counsel or environmental consultants with questions regarding your safety or environmental compliance matters.

### WARNING

Serious legal, environmental, and/or safety consequences can result from non-compliance with environmental and safety regulations and standard safety, environmental, and professional practices.



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EDITOR ARE VERY  
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## MIKE WILL BE BACK

"Legal News You Can Use,  
Regulatory Developments," by  
Michael C. Ford, Attorney  
with Bryan Cave, LLP, will  
return in the June/July issue!





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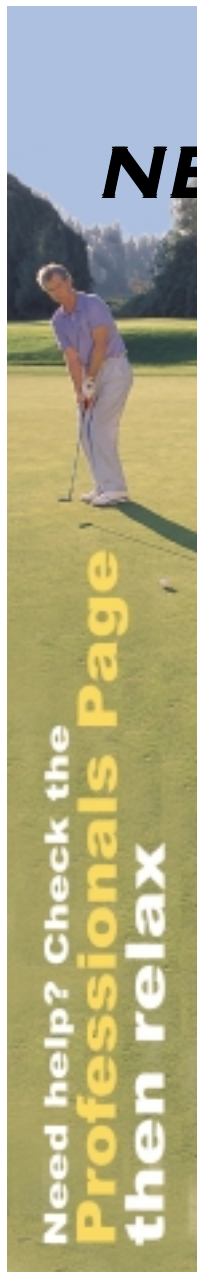
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# NEWS BRIEFS

## A BRITE COMPANY CHEMICAL AND WASTEWATER TREATMENT PRODUCTS

❖ Will Askew, Jr., owner of IDSC, Inc., announced recently that Julie Rogers, an environmental consultant with offices in Tucson and Phoenix, will sell A Brite Co.'s chemicals and wastewater treatment products in Arizona and California. IDSC, Inc. has been selling chemicals to the plating industry in the South for 14 years, and is now coast-to-coast.

IDSC, Inc. (I Do Sell Chemicals, Inc.) can be reached at 1-800-896-4372, or by email at [willaskew@hotmail.com](mailto:willaskew@hotmail.com).

## ERM HIRES NEW ARIZONA OFFICE MANAGER/PROGRAM DIRECTOR

❖ Environmental Resources Management (ERM), a global environmental consulting firm, announced it has hired Robert S. Livermore as Office Manager/Program Director. He is responsible for the overall growth and diversification of the region's environmental consulting services and will oversee ERM Arizona's Environmental Geology Program. Mr. Livermore has a solid geological background and has conducted numerous environmental assessment, contaminant remediation and subsurface soil exploration projects. His

remediation technology knowledge and experience includes excavation, active bioremediation, various pump-and-treat technologies, and vapor extraction/air sparging. ERM is a global environmental, health and safety consulting organization employing 2,400 technical specialists in more than 120 locations throughout the world.

The ERM Scottsdale office number is 480-998-2401.



Robert S. Livermore  
Photo courtesy of ERM

## SHIPPING BROKERAGE SERVICE ANNOUNCED

❖ Dianne M. Sholl, President & CEO of Diversified Transportation, Inc., Laveen, Arizona, announced the formation of Diversified Logistic Solutions, LLC (DLS). DLS will offer brokerage service to shippers of general commodity (non=food), special commodities (needing special equipment), bulk solids and liquids, hazardous & nonhazardous. The DLS brokerage service will "assure shippers of safe, reasonable rates and dependable transportation." DLS has a second office, based in Philadelphia, PA, and services all 48 states. Dianne can be reached at 602-455-0350.

## CON-TEST ANALYTICAL LABS OPENS PHOENIX AREA SERVICE CENTER

❖ Con-Test Analytical Labs has recently opened a service center in the Phoenix area, according to David Veratti. Con-Test Analytical, based in Western Massachusetts, has been in business since 1984, and provides soil, water, and air testing.

David can be reached at 602-377-2696, or by email at [Dveratti@contestlabs.com](mailto:Dveratti@contestlabs.com).

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Larry Olson, PhD.

IT'S ALL ABOUT CHEMISTRY

# TOXICOLOGY OF MERCURY

## PART II

How are we exposed to mercury? Let me count the ways. For more than 2000 years mercury has been used for medical purposes in products such as diuretics, laxatives, antiseptics, skin ointments, dental fillings, and preservatives for vaccines. In industry, mercury is used to make chlorine, insecticides, paints, and polyurethanes and commercial products such as jewelry, batteries, electrical switches, and mirrors. Cinnabar ore (HgS) was used as the red color in tattoo dyes and by Native Americans for warpaint. But the major anthropogenic sources of mercury in the environment are from fossil fuel combustion, mining, and smelting. Human activities account for up to half the total mercury present in the environment. Some of this mercury enters the food chain and is bioaccumulated in fish as methylmercury. The top ten commercial species of fish are estimated to contain a mean mercury level of 0.1  $\mu\text{g/g}$ . The FDA has recommended that pregnant women and women of childbearing age should avoid eating predator fish such as shark, swordfish, or mackerel and limit tuna to 12 oz or less per week.

The body's ability to absorb mercury depends upon its chemical form – elemental, inorganic salts, or organomercury species. Although the boiling point of elemental mercury is 356 °C, the saturation vapor pressure of 18  $\text{mg/m}^3$  is far above the OSHA Permissible Exposure Limit of 0.1  $\text{mg/m}^3$ , the NIOSH Recommended Exposure Limit of 0.05  $\text{mg/m}^3$ , or the ACGIH TLV of 0.025  $\text{mg/m}^3$ . The general public Minimum Risk Level for chronic inhalation has been established by ASTDR at 0.2  $\mu\text{g/m}^3$ . Thus, even a few drops of elemental mercury have the potential to produce a dangerous level of mercury vapor. Once inhaled, up to 80% of mercury vapor passes through the alveoli membranes and is absorbed into the bloodstream. By contrast, less than 0.1% of elemental mercury is absorbed through the GI tract. Inorganic mercury salts have much lower vapor pressures and inhalation is not a primary route of exposure but ingestion results in more than 10% absorption. Similarly, up to 95% of methylmercury is absorbed through the GI tract. There is limited information about dermal absorption, but elemental and inorganic salts appear to be poorly absorbed.

The major target organs for mercury toxicity are the central nervous system and kidneys, although high levels of exposure can affect the respiratory and cardiovascular systems and the GI tract. Elemental mercury and lipid soluble organomercury compounds easily pass through the blood-brain barrier, but mercury salts cannot. Once inside the brain cell, oxidation to  $\text{Hg}^{2+}$  occurs and the mercury is trapped. Similarly, elemental mercury and organomercury can cross the placenta and expose the fetus, so mercury is classified as a teratogen. Infants and children are especially vulnerable to mercury's effects. Like other heavy metals, mercury targets sulfur containing proteins, disrupting their normal function.

Symptoms of mercury toxicity include tremors in motor control muscles, memory loss, irritability, and confusion. These traits were exhibited by the Mad Hatter in Lewis Carroll's *Alice in Wonderland*. Other symptoms include gingivitis, excess salivation, nausea, and diarrhea. High concentrations of mercury vapor can cause acute bronchitis and pneumonitis, resulting in death. Blood mercury concentration are the best indicator of acute exposure, with symptoms usually associated with levels of 5.0  $\mu\text{g/dL}$  or greater. Urine mercury levels are indicative of exposure to elemental or inorganic mercury, but not organomercury compounds.

Evidence of carcinogenicity is limited. The IARC (International Registry for Research on Cancer) has not classified mercury, but EPA has classified methylmercury and mercuric chloride as a potential human carcinogen.

What is the best approach to dealing with mercury toxicity? Without question, the best strategy is to eliminate the source and avoid exposure in the first place. Mercury that has not passed through the blood-brain barrier can be eliminated from the body over time. A variety of treatments, including chelation therapy, have been proposed, but they all have limitations. An ounce of prevention, in this case, is definitely worth a pound of cure.

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

# ASSOCIATIONS PAGES

## Editors note:

Arizona's many environmental associations provide a path for communication and education in the EH&S community. Among other benefits, they provide networking opportunities, educational resources, and keep members informed on professional news and technical advancements. Many of these resources are available to both members and nonmembers, so always look to these associations when you need assistance.

If your organization is not represented here, and you would like it to be, please call us. Being a part of the Associations Pages benefits both the organizations and the readers, most of whom belong at most to a only a few of the organizations, but still would like to keep current on all environmental activities.

*Editor*

## AAI

FOR MORE INFORMATION GO TO AAI'S WEB PAGE AT [HTTP://WWW.AZIND.ORG](http://www.azind.org) AND CLICK ON EVENTS OR CONTACT BRENT FRAZIER (602-252-9415) OR JEFF HOMER (480-441-6672).

AAI'S EHS COMMITTEE BREAKFAST MEETINGS ARE HELD ON THE 2ND WEDNESDAY OF EACH MONTH AT 7:00 AM AT SHERATON PHOENIX AIRPORT HOTEL, 1600 SOUTH 52ND STREET, TEMPE, AZ. 85281.

AAI and the Maricopa County Environmental Services Dept. (MCESD) have teamed together to hold a 2004 Air Compliance Conference. It will be held May 21st at the Doubletree Paradise Valley Resort in Scottsdale. It will be a one day conf. on Air Quality Comp. issues in Maricopa County. Speakers will be from the MCESD staff, EPA Region IX, the Attorney General's Office and local industry. Please contact Brent Frazier at 602-252-9415 for registration information.

*Jeff Homer,  
EHS Committee  
Chairman*



Please mark your calendars for AAI's Annual Environmental Summit scheduled for Aug. 18-20 at the Prescott Resort in Prescott. This is AAI's annual environmental conference that features cutting edge environmental trends and issues for industry in Arizona. The conference will include a reception the evening of August 18th, a full day and a half of presentations and a golf tournament the afternoon of Friday Aug. 20th.

AAI's Environmental, Health and Safety Committee's March 10th breakfast meeting featured Charlie Popeck from the U.S. Green Building Council who spoke on the Leadership in Energy and Environmental Design (LEED) certification process. LEED is a voluntary consensus-based national standard for developing high-performance, sustainable buildings.

## ACHMM THUNDERBIRD



THE ACHMM THUNDERBIRD CHAPTER HAS A NEW WEBSITE!

[WWW.THUNDERBIRDCHEMM.ORG](http://WWW.THUNDERBIRDCHEMM.ORG)

We have updated our website. The new site has been expanded to include useful information for members and non-members, including:

- Links to CHMM-related info. and to other websites of interest to EHS professionals
- News items from a variety of sources, including regulatory updates
- A Job Search page- Let us know if you have an EHS job opening and we can post it on our website.
- Chapter Meeting page- Information about upcoming meetings and links to minutes from past meetings.
- Programs & Special Events page- The Thunderbird Chapter is looking into sponsoring the ACHMM National Conference to be held in Las Vegas in August. The theme this year is "Managing Your Odds for Success." Check it out! It's a great opportunity for educational seminars and networking.

*Chuck Paulausky,  
Chapter Secretary*



We hope that you will check out the new website soon. If you aren't a local member, check out the [Membership page](#) for information on becoming one. Membership in this growing organization for EHS professionals is only \$50.00 annually.

Upcoming ACHMM Thunderbird Chapter meetings and events: May 5, 2004- Lunch meeting and tour of the Ping, Inc. facility at 2201 W. Desert Cove in Phoenix. Further details will be posted on the website. August 2-4, 2004- ACHMM National Conference in Las Vegas, NV [http://www.meetingsmanagementgroup.com/achmm/lasvegas\\_2004/index.htm](http://www.meetingsmanagementgroup.com/achmm/lasvegas_2004/index.htm).

All are invited to attend these events. For program information, go to: <http://www.thunderbirdchmm.org/>.



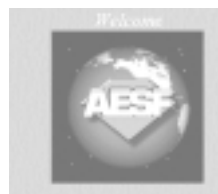
*Barry Westerhausen,  
Sergeant at Arms*

The Arizona AESF would like to welcome all who are interested in metal plating, metal finishing, surface cleaning, metal coating or those interested in environmental issues that

affect industry to meet with us the 2nd Thurs. of each month (dates subject to change, please call to confirm. Meetings begin with a social hour at 5:28 PM and dinner at 6:28 PM, discussion following. Topics planned for 2004 are environmental regulations, haz. waste, new processes, EPA regs., and plating trends. So far for 2004 we had a great meeting with Dave Lickeig from Abrams Airborne on EPA evaporator requirements that was very informative and well attended and an ADOSH meeting with Patrick Ryan on free services available to avoid compliance violations. We are looking forward to the joint meeting with NAMF and encourage reserving space early, we expect a good turn out. The golf tournament in June is a great deal and always well attended, please call for details.

It is very important to be aware of what is happening in the industry and AESF is a great way meet people that have many of the same interests and may have encountered some of the business or environmental problems you may be trying to solve. All are welcome to attend; you do not need to be a member to attend. Meetings are held at the Doubletree Resort in Phoenix, Van Buren and 44th St.

## AESF



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*Paul Plato, R.G.,  
President*

One of the goals of AHS is to advance the understanding of hydrology through educational outreach. Every year, AHS awards three academic scholarships to

promising students in Arizona colleges and universities; this year's awards are \$1,500 each. Please check our website at [www.AzHydroSoc.org](http://www.AzHydroSoc.org) for details. The application deadline is June 30. Additionally, each of our three chapters selects an intern scholar who gets the opportunity to work for a variety of private and government employers. These programs are fully funded by AHS stipends. If you are a student seeking a unique educational opportunity or an employer who would like to participate as a host, look for details on our website. The application deadlines vary from chapter to chapter, so don't delay. See you at a monthly meeting.

## ARIZONA HYDROLOGICAL SOCIETY



*Eddie Martinez,  
President*

March's EPAZ meeting featured two speakers Mr. Hal Gill, H. Gill & Associates and Mr. Ken Ames, IEA, Inc. Mr. Gill, who was appointed by Gov. Hull to serve on the UST Policy Comm., gave a

presentation on pending Az. UST Legislation. This included an overview on the sunset of the State Assurance Fund, which could potentially terminate on June 30, 2011, if the current UST leg. passes. Mr. Ames spoke on the benefits of accessing historical insurance policies to fund env. cleanups. Mr. Ames provided real-world success stories on this process for several sites around the country. The March networking mixer was held at Sugar Daddy's in Scottsdale. Fun was had by all that attended.

The more people I meet and talk to, all say the same thing,

## EPAZ



APRIL LUNCHEON: MOLD ISSUES  
PRESENTED BY BOB HUTZEL,  
HUTZEL & ASSOCIATES

APRIL NETWORKING MIXER WILL  
BE HELD AT COACH AND WILLIE'S  
DOWNTOWN NEAR BOB.

MAY LUNCHEON: ALICE  
WALLWORK OF ADEQ, ON THE  
GOVERNOR'S SPECIAL INTEREST IN  
THE ARIZONA CHILDREN'S  
ENVIRONMENTAL HEALTH  
PROJECT.

MAY NETWORKING MIXER WILL BE  
HELD AT THE MONASTERY TOO  
NEAR ARROWHEAD FOR ALL THE  
FOLKS WORKING OR LIVING IN THE  
WEST VALLEY.

TOPICS FOR FUTURE MEETINGS  
WILL INCLUDE REGIONAL HAZE  
AND FOREST ENERGY.

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## ARIZONA ENVIRONMENTAL STRATEGIC ALLIANCE



"I'm busy". Hopefully this means that the economy is bouncing back. We as environmental professionals are wearing more hats and are multi-tasking more tasks than ever before. What better way to reward yourself by taking in a lunch with other professionals like yourself and networking? If you are unable to attend our luncheon meeting, then join us instead for our monthly mixer after work. EPAZ has been growing steadily over the last few years, but there are many environmental professionals out there that don't know about us and could benefit from our events. I would like to challenge each one of our members to bring a colleague to our next meeting and help EPAZ continue to grow and reach towards our mission "To Promote Effective Management of Pollution Prevention Efforts throughout the Environment".

EPAZ holds monthly luncheon meetings on the 2<sup>nd</sup> Thursday of the month at the Sheraton Airport Hotel (52<sup>nd</sup> St. & Broadway) from 11:30 am to 1:00 pm. Cost is \$20 members/\$30 non-members. EPAZ also gathers on the last Wed. of the month for a casual cocktail mixer. Visit our web site at <http://www.epaz.org> for more details regarding upcoming meetings and our monthly mixer location or contact me at (480) 961-1300 x181.

As more organizations and industries come to recognize that many management decisions have potential environmental impacts and costs of various kinds, recognitions of the value of EMS will grow. In addition, proactive environmental

decisions within operations can enable the more efficient and cost-effective use of natural resources, including energy and water. It makes good sense to take advantage of AZELM summer college intern program & become an industry leader in our region. Our undergraduate and graduates students are very enthusiastic about innovative research approaches to env. protection. The internship length is 8 weeks during the summer and AZELM provides limited financial support throughout the period of work. There can be many industry requests for this program, and in order to expedite our selection process for the limited number of projects we can support, we ask that you provide the following: 1) A brief but fully comprehensive statement of goals for wishing to have a AZELM summer intern. 2) A list of not more than 3 areas in the general fields of environmental needs, e.g. engineering, technical writing, management reports, purchasing, energy, policies/ regulations, EMS research, Green Building, etc. 3) A letter of commitment from senior mgmt. as it relates to environmental objectives affecting your business.

Richard Polito



The Arizona Environmental Strategic Alliance promotes environmental leadership in the State of Arizona. The Salt River Project has been a long-standing supporter and member of the Alliance. Through its actions, SRP continues to be an environmental leader and the Alliance is proud to count it as a member.

Recently SRP entered into a five-year contract to purchase 50 megawatts windpower and associated renewable-energy credits from the Public Service Company of New Mexico. This will allow SRP to supply Arizona consumers with 61,600 MW-hours of electricity per year, or enough to meet the needs of more than 4,200 Valley homes. Providing the cleaner wind-driven power is the newest component of SRP's EarthWise Energy Program, and will help the company determine the feasibility of building its own wind farm in Arizona.

David G. Young,  
President





## WHAT TO EXPECT FROM AN ADOSH INSPECTION

First of a series on Arizona Division of  
Occupational Safety and Health Inspections

by Sean Kriloff

Based on feedback received during an inspection or from comments received from employers and/or employees following an inspection, this article is the first in a series of short articles that will provide a reminder to the format and procedures that ADOSH follows during a workplace inspection. Contrary to popular belief, ADOSH cannot “show up” at your workplace without just cause and conduct an inspection. An inspection can result from a complaint, referral from another agency (i.e. state agency, municipality), or a media referral. An inspection can also result from a planned inspection, or a workplace fatality. An employer is generally not required to notify ADOSH of a workplace incident unless that incident involves a fatality or the hospitalization of three (3) or more employees.

Each ADOSH compliance officer is provided with credentials that must be displayed during the opening conference. The opening conference is usually conducted with a member of management, however, if no member of management is available, the opening conference will be conducted with an employee. During the opening conference, the compliance officer will request administrative information such as the legal company name, name of the workers’ compensation provider, and the number of employees controlled by the employer (in Arizona and nationwide). Depending on the reason

for the visit, a written summary of the complaint items will be presented to the company. The scope of the inspection will be explained, to include many of the following items: A walkaround representative is designated; *private* employee interviews are conducted during the inspection; a partial inspection can be expanded if necessary; advising that full shift chemical/noise monitoring may be conducted at a later date; photographs will be taken to document the current state of the workplace conditions; and the handling of trade secrets will be kept confidential.

Usually, immediately following the opening conference and with time permitting, the compliance officer will examine the written health and safety programs that exist. Comprehensive safety and health programs will be evaluated to ensure the programs contain the required elements. Additionally, questions may be derived from the written programs to ask employees during the interviews to assist in determining how effectively your safety

*Continued on page 17*

The Arizona Division of Occupational Safety and Health (ADOSH) has jurisdiction over workplace safety and health issues in Arizona enforcing mainly 29 CFR 1910 & 1926, the General Industry and Construction standards, respectively. Arizona Administrative Codes (AAC) and Arizona Revised Statutes (ARS) are also enforced. The standards that are enforced are considered *minimum* safety and health standards. Your company may elect to enforce stricter standards than the OSHA regulations require.

FOR MORE INFORMATION  
ABOUT THE ALLIANCE OR ITS  
MEMBERS, PLEASE CONTACT  
DAVID YOUNG, PRESIDENT, AT  
DAVIDGYOUNG@MSN.COM OR  
480-460-5751.

In order to promote an abundant form of alternative energy in the state, SRP is conducting the Solar Spectacular 2004 at Tempe Town Lake. The event is in its third year and is highlighted by a solar powered boat contest, where teams of high school students received grants to design and build vessels with photovoltaic motors. In the process, the students learn about air quality issues, science instruction and environmental stewardship.

SRP also helped to increase the air quality of the region by supplying three low-sulfur diesel powered school buses with diesel oxidation catalysts to the Gilbert Unified School District. In addition, SRP retrofit 30 existing school buses with the catalysts, which will reduce particulate emissions by 25% and carbon monoxide and hydrocarbons by 50%.

## SAEMS



### LUNCHEON TOPICS:

APRIL: 2004 PIMA COUNTY  
CONSERVATION BOND PROG.

MAY: CAT SCHLADWEILER, MALCOLM  
PIRNIE, OPTIMIZATION OF A LONG-TERM  
MONITORING PROG.

JUNE: NEW PAG EXEC. DIR., GARY  
HAYES, ON THE REG. TRANS. AUTHORITY

### LUNCHEON'S HAVE MOVED TO A NEW LOCATION

THE MANNING HOUSE, CONVENIENTLY  
LOCATED IN DOWNTOWN TUCSON AT  
450 W. PASEO REDONDO, NORTH OF  
CONGRESS ON GRANADA.

SAEMS is sponsoring the first Southern Arizona event in a series of forums to explore the Arizona Children's Env. Health Project. ADEQ is leading this project, working with the Arizona Department of Health Services, other government and private agencies, schools, community groups, and individual citizens. The Southern Arizona Forum, to be held on April 23, will feature presentations by health experts on the development and treatment of asthma in children, as well as a panel discussion on children's environmental health issues along the Arizona/Mexico border.

The SAEMS Annual RCRA Seminar will be held on May 6 at the Tucson Convention Center. This seminar is designed to meet annual training requirements for those who already received basic RCRA training. In addition to RCRA basics, speakers will address waste determinations, sustainability and security issues. Attendees will learn how to improve performance, lower costs, and avoid violations through effective compliance systems. The seminar is a great way to enhance your knowledge, meet training requirements, and have a little fun, too! SAEMS luncheon meetings are routinely held the last Wed. of the month starting at 11:30. For information: [www.saems.org](http://www.saems.org).

Pamela Beilke,  
President



## VALLEY FORWARD



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[WWW.VALLEYFORWARD.ORG](http://WWW.VALLEYFORWARD.ORG).

In celebration of its 35<sup>th</sup> year of environmental leadership, Valley Forward Association presents its inaugural Livability Summit on Earth Day, Thurs., April 22, 2004 at the Phoenix Civic Plaza. The daylong event (8 a.m. - 4 p.m.) will promote healthy communities through education and awareness of innovative technologies, sustainable development, resource conservation and environmental initiatives.

We will provide a local and national perspective on such livability issues as health and fitness, renewable energy, water management, air quality, transportation, green building and land use planning. In addition to nationally recognized speakers and local experts, we will feature an exhibit hall showcasing the many livability initiatives underway throughout the Valley.

Phoenix Mayor Phil Gordon will provide welcoming remarks at the Summit. Keynote speakers include nationally renowned nano technology expert Richard Smalley, Ph.D., who received the 1996 Nobel Prize for chemistry for the discovery of fullerenes or "Buckyballs," and urban planner Peter Calthorpe, recognized as one of the country's top 25 innovators by *Newsweek*. Dr. Richard Carmona, US Surgeon General, is also an invited speaker.

Diane Brossart,  
President



**ASSOCIATIONS PAGES** *continued on page 17*



SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT:  
**SHOCK AND AWE**  
**IN THE DESERT:**  
*'De ja' Vu All Over Again!*

Nicholas R. Hild, PhD.

PART ONE OF  
TWO...

In Arizona, we recently had our own version of *shock and awe* when a broken pipeline that transfers most of our gasoline from California to Phoenix metro caused great wailing and gnashing of teeth over not having enough fuel to propel our gas-guzzling SUV's. Prices for petro shot up to \$2.50 a gallon in the Phoenix metro area and people were lined up around the block just to top off their tanks.

The fallout reminded me of the "energy crunch" in the late '70's but back then, when the prices got to a level just below the "obscene" mark on the gullibility gauge, the "shortage" mysteriously ended and we resumed our wasteful pursuit of the internal combustion dream. Funny thing is, we never saw gasoline prices return to pre-crunch levels after that "crisis" was over, and we were happy to be paying fifty cents more a gallon, just to have an endless supply.

What got me thinking about automotive fuel costs (besides the rapidly rising prices for petro we are experiencing as this goes to press) is the recent report that the largest U.S. trade deficit ever has just been posted at \$489.4 Billion, more than 17% larger than the previous record set in 2002. And, imports of automobiles and auto parts accounted for a whopping 42% (\$210 Billion) of that total!

It should be a wake-up call for the Big 3 who remember all too vividly, the '60's foreign car invasion which they tried to ignore until they'd lost a whole H2 Hummer full of market share. \$210 Billion is quite a dent, but the report didn't highlight how many auto industry jobs were lost because of that deficit. Now, they are scrambling to blunt the *hybrid* car invasion that, according to the 2004 Ward's Automotive Reports, has seen a five-fold increase in total sales and market share since 2000, from \$9 Million in 2000 to \$47 Million in 2003. That's only a tiny percent of that \$210 billion but it's a trend that can not be ignored.

Priorities are driven by politicians and politicians are motivated by dollars (and companies) which support politicians. Our state's top politician, Governor Napolitano announced that she had asked the Bush administration to look into why our petro prices have sky-rocketed into the \$2-\$3 range almost overnight. After all, the pipeline was fixed weeks ago so why haven't prices gone *down*, instead?

She knows its really about dollars and not about the most critical question she *should* be asking: why don't we have alternative fuels and vehicles to use it? We first danced to this energy crisis tune 25 years ago and politicians swore then that they would change our energy policy so we would have alternatives to Big Oil by the new millennium. Welcome to 2004 and, as Yogi Berra would say, it's... "*de ja' vu all over again.*"

But, the Governor knows better than to go down that road because the (driving) public really only cares about how much fuel *costs* them. If they cared about making politicians live up to their promises to *really* find alternatives for oil and petroleum-based fuels and transportation, the politicians would be the ones doing the hand wringing accompanied by great gnashing of teeth.

It's not ever going to happen, though. Only you and I know we are preaching to the choir and we are such a small minority, we can never rally the forces in a big way. No, politicians get votes by talking about saving *money* today. Not oil, not non-renewable resources. Money...*taxpayer-voter's* money. Politicians know they are in it for the short run, not for the future of our children's, children's, children.

Nicholas R. Hild, PhD., Professor, Environmental Technology Management, Arizona State University College of Technology and Applied Sciences, 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.

# ***DOES YOUR BUSINESS NEED A CITY OF PHOENIX WASTEWATER DISCHARGE PERMIT?***

**Businesses discharging wastewater into city sewer systems are responsible for complying with local municipal permit requirements. Here is a look at the City of Phoenix permit requirements.**

by Joan Peters

**T**he City of Phoenix, Water Services Department, permitting process helps prevent sanitary sewer discharges that:

- Have the potential to interfere or pass through the Publicly Owned Treatment Works (POTW)
- Prevent the reuse of POTW biosolids
- Could have a negative environmental and/or health impact.

The permitting process allows the City of Phoenix POTWs to comply with their Arizona Pollution Discharge Elimination System (AZPDES) permits. Although all industrial dischargers must comply with Phoenix City Code, Chapter 28, Section 28-8, General User Requirements as well as other requirements listed in Chapter 28, some dischargers also require a discharge permit. A copy of Phoenix City Code, Chapter 28, may be found at [www.phoenix.gov/PCD](http://www.phoenix.gov/PCD).

## **WHO NEEDS A PERMIT?**

- 1) Any Significant Industrial User
- 2) Special Dischargers

## **WHO IS A SIGNIFICANT INDUSTRIAL USER?**

- 1) Any industrial user that is subject to categorical pretreatment standards under

40 Code of Federal Regulations (CFR) 403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-471). Applicable Effluent Guidelines and Standards can be found at [www.epa.gov/docs/epacfr40/chapt-I.info/subch-N.htm](http://www.epa.gov/docs/epacfr40/chapt-I.info/subch-N.htm).

- 2) Any industrial user that discharges an average of twenty-five thousand (25,000) gallons per day (gpd) or more of process wastewater to the POTW
- 3) Any industrial user that contributes a process wastestream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or
- 4) Any industrial user that the Water Services Director or his representative determines has a reasonable potential to adversely affect the POTW's operation or to violate any pretreatment standard or requirement.

In order to legally discharge to the sanitary sewer, Significant Industrial Users (SIU) require a Class "A" Industrial Wastewater Permit issued to them by the City of Phoenix, Water Services Department, Pollution Control Division, Industrial Pretreatment Program (IPP) Section. SIU requirements are listed in Phoenix City Code, Chapter 28, Section 28-45. Other requirements are determined by 40 CFR 403.6, and the SIU's governing effluent guidelines and standards as listed in 40 CFR Chapter 1, Subpart N.

## **WHO IS A SPECIAL DISCHARGER?**

- 1) An industrial user who is subject to a categorical pretreatment standard as listed in 40 CFR Chapter 1, Subpart N but has zero discharge to sewer from the regulated processes

The City issues Class "B" Zero Discharge Permits to facilities with categorical processes but no discharge to sewer from these processes.

- 2) An industrial user that discharges the equivalent strength of 25,000 gpd of domestic waste as measured by biochemical oxygen demand (BOD) and suspended solids (SS)

Class "B" High Strength Discharge Permits are issued to facilities that discharge the equivalent strength of 25,000 gpd of domestic waste to the sanitary sewer.

- 3) Entities that discharge polluted groundwater or other polluted wastewater to the sanitary sewer

The type of permit that is required is determined on a case-by-case basis. Some of the data taken into consideration include: length of time for the discharge, analytical sampling results, if treatment is used prior to discharge, etc.

If the discharge is polluted groundwater and is to take place over an extended period of time, a Class "B" Groundwater

Permit is issued.

Manhole Entry Permits are issued for one time discharges to a manhole.

The City may simply issue a letter giving permission to discharge to sewer if the discharge does not meet the definition for a Groundwater or Manhole discharge permit.

In order to legally discharge to the sanitary sewer, industrial users will need to contact the City of Phoenix, Water Services, Pollution Control Division, Pollution Prevention (P2)/Commercial Section to determine what type of permit/approval is required.

#### FOR MORE INFORMATION:

City of Phoenix, Class B Permits: Contact P2/Commercial Program Supervisor Ken Karnes at 602-262-6997. Class A Permits: Contact IPP Program Supervisor Mike Rose at 602-495-5926.

Joan Peters is a Senior Water Quality Inspector in the P2/Commercial Section. Joan can be reached at 602-534-2916, or by email at [joan.peters@phoenix.gov](mailto:joan.peters@phoenix.gov).

## ADOSH INSPECTIONS

*Continued from page 13*

and health programs are implemented. Documented safety and health training records should be recorded and maintained as part of the overall health and safety programs.

Many health and safety regulations require formal, written programs detailing the company's position on a particular standard. Hazard communication (1910.1200), confined space (1910.146), and Lockout/Tagout (1910.147) are a few select standards that require a written plan to address the hazards that exist at your company. Your company can "pre-plan" for an ADOSH inspection by starting now to examine your written safety and health programs. Ask yourself: Do your employees understand the information in



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your programs? Do your health and safety programs adequately address the hazards experienced by your employees? Do your written health and safety programs provide appropriate direction and training to the employees, thus helping to minimize their exposure? Are your programs *effectively implemented*?

*Continued on page 21*

## ASSOCIATIONS PAGES

*Continued from page 14*



Charlie Popeck,  
Vice President

The U. S. Green Building Council-Arizona Chapter is excited to be participating with the Journal of Environmental Management for the first time! We are a

non-profit Chapter of the USGBC national organization based in Washington, D.C. After several months of hard work in 2002 we were only the fifth group to be given "Chapter" status in November, so we are a young organization well positioned for progress in a growing industry. At this point in time, there are approximately 21 chapters of the USGBC across the country, and the numbers are growing exponentially.

The Arizona Chapter's mission is to positively transform the building processes, building industry and built environment of our region. Through the consensus process, and by drawing upon the experience of stakeholders in the building industry, we will: **Promote** the cost-effective design, construction and operation of buildings that are healthy places to live and work, environmentally responsible, and economically viable on a lifecycle basis. **Serve** our members and communities by developing industry standards, promoting best practices in design and technology usage, advocating Green Building policies, and encouraging and facilitating information exchange and education. **Encourage** the widespread acceptance and use of the LEED™ Green Building Rating System as both the regional standard and as an integral component of all building progress.

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View from above the main assembly building at The Boeing Company facility in Mesa.  
*Photo courtesy of Boeing.*

## VOC REDUCTION AT THE BOEING COMPANY

Taking the next step in  
reducing VOC and organic HAP  
emissions

by Craig McCurry, P.E.

In response to the Clean Air Act Amendments of 1990, most large facilities spent a good portion of the 1990s just trying to get a handle on what the new air quality requirements meant to their facility and determining the compliance status of the facility. The Boeing Company in Mesa, Arizona (Boeing) was no different, and in fact, created the Safety, Health & Environmental Affairs Technology Natural Work Group (SHEA NWG) in 1990 to prepare for the influx of environmental regulations and find solutions to meet the new regulation requirements. The SHEA NWG not only focused its efforts on meeting regulatory directives, but this cross-functional team was also tasked to find Pollution Prevention (P2) opportunities. Prior to 1998

it was difficult for the SHEA NWG to concentrate its efforts on anything but meeting the compliance requirements of the air toxics rules, otherwise known as NESHAPs (National Emission Standards for Hazardous Air Pollutants) and local air quality rules. Since then, however, the SHEA NWG has produced and implemented several successful Volatile Organic Compound (VOC) and Hazardous Air Pollutant (HAP) emission reduction initiatives. These initiatives led Boeing to change its designation from a 'major source' of VOCs and HAPs to a 'synthetic minor source' in 2002 and avoid Title V and most likely applicability to future NESHAPs. Reducing emissions is not only about being a 'Good Neighbor,' but can also have significant impacts on regulatory applicability (as in Boeing's case) and may result in monetary savings as well. This article will present some of the ideas that Boeing implemented which may help other facilities reduce their VOC and organic HAP emissions.

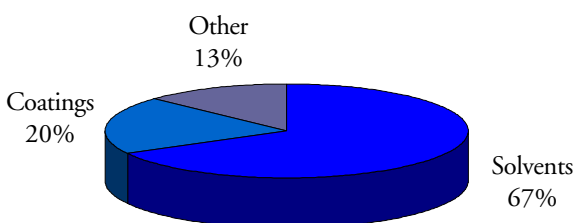
The Boeing facility in Mesa assembles helicopters and aerospace subassemblies for the U.S. military and international customers. The main product line since the facility began operations in 1983 has been the Apache attack helicopter. Currently Boeing is building the next generation AH-64D Apache Longbow for the U.S. Army and international customers. With a workforce of approximately 4,400, the Boeing facility in Mesa can build completely new helicopters, modify existing helicopters, and complete all necessary flight testing. In the manufacturing process, Boeing uses a variety of solvents, coatings, and other materials that result in VOC and organic HAP air emissions.

The first step in finding potential VOC emission reductions is to identify the sources of the VOC emissions at the facility. As illustrated in Figure 1, cleaning solvents have historically made up two-thirds of the VOC emissions at the Boeing facility. These solvents are used in operations which include handwipe

cleaning, paint gun cleaning and parts washer cleaning. Coating operations, which are the next largest contributor of VOC emissions at about 20% of the total, are difficult for Boeing to reduce for several reasons:

- Most coating vendors have already formulated their coatings to meet VOC limits (typically right up to the limit) and are reluctant to re-formulate their coatings if there is no driver to do so; and,
- Most coatings used by Boeing are driven by military specifications, therefore only a few vendors supply the coatings, and it takes years of testing to approve any possible substitutes.

**FIGURE 1. BREAKDOWN OF VOC EMISSION SOURCES AT BOEING**



However, in the long-term, Boeing is always looking for ways to promote the use of waterborne and zero VOC coatings where possible, since they are becoming more prevalent. The last source of VOC emissions at Boeing which make up about 13% of the total are classified as 'Other.' These emissions include products of combustion, and a variety of VOC containing non-production support materials. Emissions from the 'Other' category are not good candidates for reduction initiatives because there will always be some level of facility support needed and at only 13% of the total, it is doubtful that any effort to reduce

these emissions would significantly impact the overall facility emissions. Therefore, the SHEA NWG has focused the bulk of its reduction efforts on the cleaning solvents used at the facility. The following are some of the changes that have been made to solvent cleaning processes at Boeing that have helped reduce VOC and Organic HAP emissions:

#### 1) CONVERTING VAPOR DEGREASERS TO AQUEOUS CLEANERS

In the mid-1990s Boeing was using a substantial amount of 1,1,1-Trichloroethane (TCA) in vapor degreasers to clean parts. TCA is not a regulated VOC, but is a HAP and a Toxic Release Inventory (TRI) chemical. In addition, continued use of TCA in vapor degreasers would have subjected Boeing to the Halogenated Solvent NESHAP. The Boeing Company's Material & Processes Engineers worked closely with the SHEA NWG to formulate a solution of using aqueous cleaners. Once it was demonstrated that the cleaning performance of the aqueous cleaners using zero VOC detergents was comparable to the vapor degreasers using TCA, the aqueous cleaners were implemented and TCA usage was dramatically reduced.

#### 2) SOLVENT SUBSTITUTION

One of the easiest ways to reduce solvent emissions is to evaluate whether there are available substitutes that will meet the

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*Photo courtesy of Contec®*

cleaning requirements of the process. Water is always a great alternative as well as non-regulated organic solvents such as acetone. However, chances are there will still be cleaning processes which require a VOC-based solvent. As a second option, there are many cleaning solvents that are classified as 'low VOC', typically below 50gram/liter VOC. While many of these solvents would not be characterized as aggressive cleaners, they do work well in certain applications. Another solvent property to consider is the VOC composite vapor pressure. A lower vapor pressure solvent will have a lower evaporation rate, and depending on the application and how waste is collected, can reduce solvent usage and hence emissions. Even though Boeing must meet rigorous military cleaning specifications, cleaning solvents have been substituted over the years

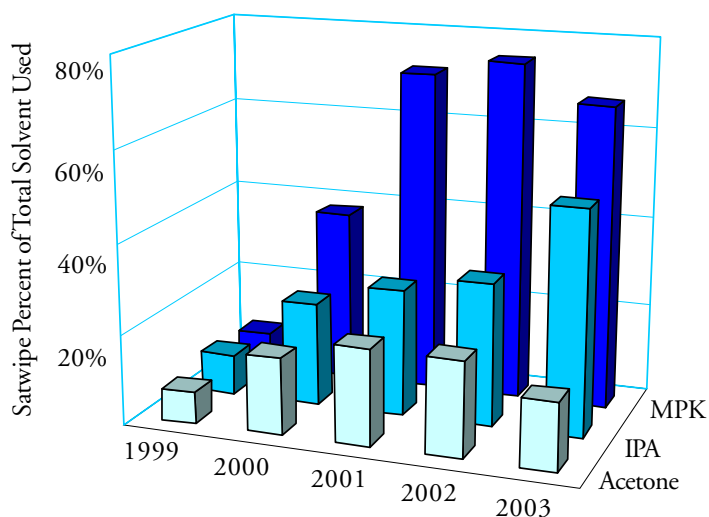
to solvents with less hazardous chemicals (such as the replaced M-114, methyl ethyl ketone, Desoclean 45, and TCA are all HAP containing solvents), lower VOC contents (water and acetone), and lower VOC vapor pressures (methyl propyl ketone and isopropyl alcohol are below the Aerospace NESHAP requirement of 45 mmHg @20C).

### 3) IMPLEMENTATION OF PRESATURATED SOLVENT WIPES

Until 1999, the solvents used in the production processes at the facility were purchased as bulk solvent in 55-gallon drums. The solvent was typically used in combination with a cloth rag in a cleaning process. The SHEA NWG introduced presaturated solvent wipes (commonly referred to as "Satwipes") in 1999 to reduce solvent usage, reduce hazardous waste, improve quality, and help ensure compliance with air quality regulations. When solvent is applied with cloth rags, the amount of solvent poured onto the rag varies by each individual technician. In most cases too much solvent is used with the cloth rags and results in solvent over-usage, more solvent spills, and additional solvent evaporation. In studies by Boeing and Satwipe suppliers (e.g., Contec Inc), the use of satwipes instead of bulk solvent results in about 50% less solvent being used. These same studies also demonstrate that about 50% less hazardous waste results from these cleaning processes. From a quality standpoint, since each wipe comes with more or less the same amount of solvent, the quality and consistency of the cleaning is improved. In addition, an inherent advantage to using the satwipes instead of bulk solvent is how it helps maintain compliance with general housekeeping standards in air quality regulations. Using the satwipe containers help minimize solvent spills, eliminate solvent transfers, and reduce opportunities for open VOC solvent containers.

The SHEA NWG has significantly increased the implementation of Satwipes since the initial roll-out in 1999 as shown in Figure 3. It has been estimated that the conversion from bulk solvent to satwipes has cut VOC emissions from the facility by 25,000 Lb over the last 3 years.

FIGURE 2: IMPLEMENTATION OF SATWIPES AT BOEING



### 4) RIGHTSIZING VOC-CONTAINING MATERIAL

A measure that was implemented in 2003 and designed to support the Just-In-Time (JIT)/Point-Of-Use (POU) lean manufacturing initiatives, is re-packaging of certain VOC-containing materials to the "Rightsize" needed at the POU. For instance, instead of delivering 1 or 5-gallon containers of bulk solvent, bulk solvent in pre-packaged 8-oz (or similar size) bottles, is delivered right to the POU location. This cuts down on material usage and inventory levels. Many vendors have jumped on-board the rightsizing bandwagon and have worked with Boeing to package materials in more appropriate size containers. The initial challenge for Boeing was getting past the higher upfront cost and realizing the resulting savings in reduced inventory, waste and usage.

### 5) SOLVENT RECYCLING

In some applications spent solvent can be filtered and used again in the process. Boeing recycles the solvent used to clean High Volume Low Pressure (HVLP) paint spray guns. This

practice saved over 6,000 Lb of solvent in 2002 and 2003. In addition, the solvent being used for this process has been switched from a high VOC and HAP lacquer thinner to a 50/50 blend of MPK and acetone. Boeing has also started to recycle the solvent used in some of its parts washers and will see additional savings this year. In addition, recycling solvent usually comes out a winner in a cost-benefit analysis.

#### 6) CONTROL OF DISPENSING AND DELIVERING SOLVENT

In 2001 Boeing took ownership of dispensing bulk solvent from 55-gallon drums to the shop floor away from shop floor personnel and gave it to Environmental technicians. Typically the solvent is delivered in 1 or 5-gallon containers directly to a process area. This measure has decreased “overuse” of solvent by restricting access to the 55-gallon bulk solvent drum. In addition, this measure has given Boeing enhanced information of exactly which process areas are using the bulk solvent, and research how they are using the solvents and whether satwipes could be introduced to that process area. However, there will always be some applications at the site which need to use bulk solvent and satwipes are not appropriate (e.g., flush cleaning of parts).

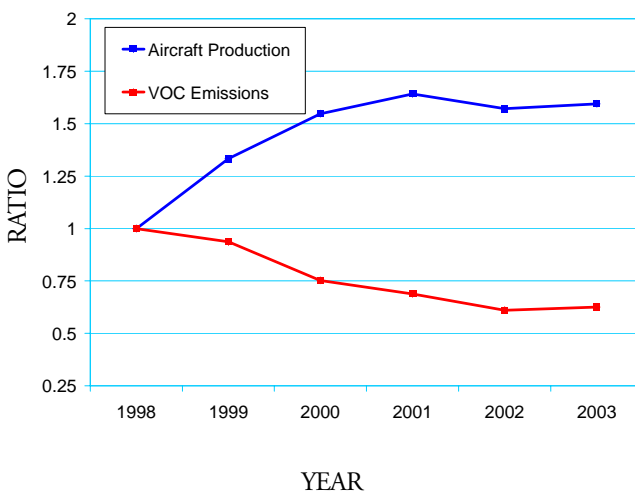
#### 7) CONTROL OF PURCHASING SOLVENTS

Boeing has the ability to flag certain materials as “No Purchase Allowed” in the internal Purchasing System. This measure has greatly assisted the ability of the SHEA NWG to change solvents and ensure that unapproved solvents (such as TCA, MEK and Desoclean 45) are not purchased in the first place and somehow find their way onto the site. In addition, regular inventories are conducted of hazardous materials on-site and numerous internal compliance inspections that verify which materials are actually in inventory. This measure was instrumental in reducing Boeing’s TRI reporting for TCA and MEK.

These measures have helped Boeing lower its VOC emissions, while at the same time increase aircraft production. Using 1998 as a base year, Figure 3 illustrates just how divergent aircraft production and VOC emissions have been.

Craig McCurry, P.E., is Environmental Compliance Lead, Safety, Health & Environmental Affairs, for The Boeing Company in Mesa, Arizona. Craig can be reached at 480-891-8309, or by email at [craig.f.mccurry@boeing.com](mailto:craig.f.mccurry@boeing.com).

FIGURE 3: BOEING VOC EMISSIONS AND PRODUCTION RATIOS SINCE 1998



## ADOSH INSPECTIONS

*Continued from page 17*

Many times, the information provided by the company is gathered from various sources and not in any organized fashion and lacks the required elements. At times, the information provided is “on-the-spot” and given to appease the compliance officer. Take an inventory of your written health and safety programs. Do they address all required elements?

Plan **now** to enhance your health and safety programs, thus providing a safer and healthier workplace for your employees.

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Sean Kriloff is an Industrial Hygienist for ADOSH. Sean can be reached at 602-542-1664, or by email at [kriloff.sean@dol.gov](mailto:kriloff.sean@dol.gov).



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# CALENDAR

**AZ ENVIRONMENTAL DATES, APRIL 15, 2004, THROUGH JULY 15, 2004**

## APRIL

- 22 Livability Summit Phoenix. Valley Forward Association presents an Earth Day summit. 602-240-2408 or [www.valleyforward.org](http://www.valleyforward.org).  
 28 EPAZ Cocktail Mixer Phoenix. Location to be announced. See website [www.epaz.org](http://www.epaz.org).  
 28 SAEMS luncheon Tucson. [www.saems.org](http://www.saems.org).

## MAY

- 5 ACHMM Tour/Lunch Phoenix. ACHMM Thunderbird Chapter lunch meeting at Ping, Inc. Details on web at [www.thunderbirdchmm.org](http://www.thunderbirdchmm.org).  
 6 The RCRA Puzzle Tucson. SAEMS RCRA seminar. See ad page 3. Contact Catherine Schladweiler at 520-629-9982.  
 13 EPAZ luncheon Phoenix. 11:30 am to 1:00 pm. Topic: Childrens' Env. Health Issues, Alice Wallwork, ADEQ. See [www.epaz.org](http://www.epaz.org).  
 13 AESF Din. Meeting Phoenix. Social hour 5:28 PM, dinner at 6:28 PM. Speaker TBD. Contact Barry Westerhausen 480-206-4107 or Mark Thede at 480-695-4344.  
 13-14 Phx Brownfields Conf. Phoenix. Brownfields redevelopment in Phx & Valley. Rosanne Sanchez at [rosanne.sanchez@phoenix.gov](mailto:rosanne.sanchez@phoenix.gov).  
 21 Air Compliance 2004 Air Compliance Conference sponsored by MCESD and AAI. See ad page 7. Brent Frazier 602-252-9415  
 26 SAEMS luncheon Tucson. [www.saems.org](http://www.saems.org).

## JUNE

- 5 AESF Golf Tourney Phoenix. (Tentative Date). Contact Barry Westerhausen 480-206-4107 or Mark Thede at 480-695-4344.  
 10 EPAZ luncheon Phoenix. Speaker topic, Regional Haze. See [www.epaz.org](http://www.epaz.org).  
 30 SAEMS luncheon Tucson. [www.saems.org](http://www.saems.org).

## JULY

- 8 EPAZ luncheon Phoenix. Speaker topic, Forest Energy. See [www.epaz.org](http://www.epaz.org).

*Items for the Calendar must be submitted with the appropriate information to the editor 5 weeks before publishing. Acceptance for publication is at the discretion of the editor. Please contact the Editor at 480-422-4430 x42, or send items to [Calendar@ehshomepage.com](mailto:Calendar@ehshomepage.com).*

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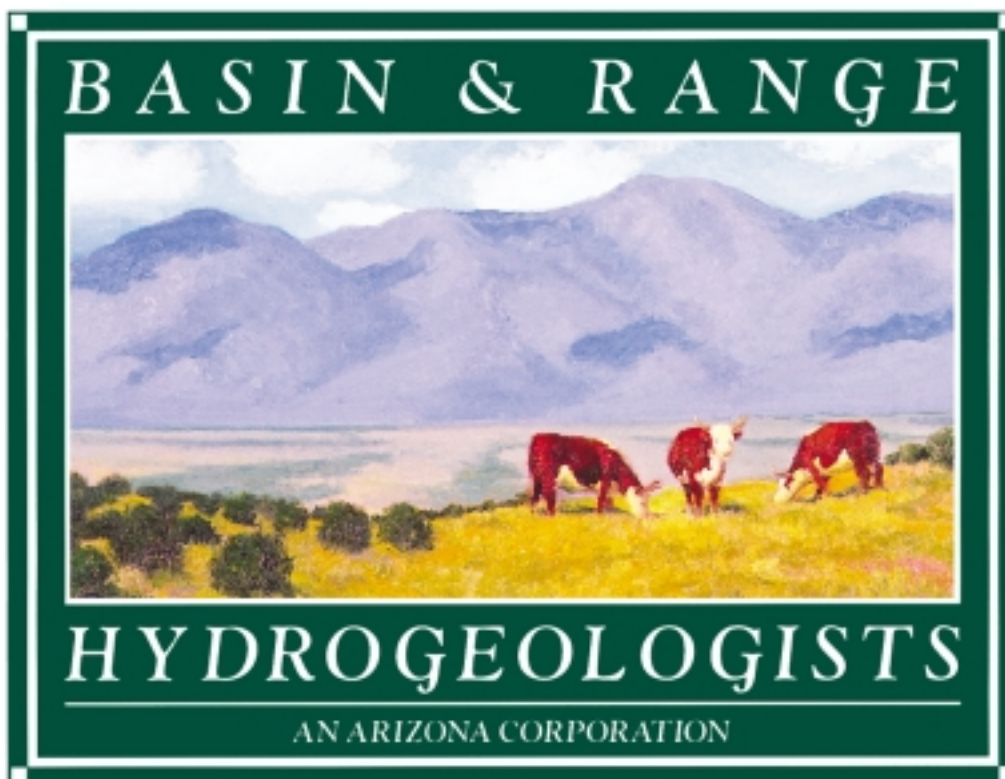
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