

JOURNAL ^{OF} Environmental Management ARIZONA

NEW ADVERTISER:
THE JOURNAL WELCOMES
CLEAN HARBORS!

Practical and Current information for Environmental, Health and Safety Professionals

**PLEASE RENEW YOUR
SUBSCRIPTION
ANNUALLY - YOU CAN DO
IT ON-LINE TODAY!
WWW.EHSHOME.COM**

POWERED INDUSTRIAL TRUCKS

**CRITICAL SAFETY TRAINING REQUIREMENTS
CHUCK PAULAUSKY, pg 14**

GATEKEEPER/REG ROUNDUP pg 6

PHARMACEUTICALS IN YOUR DRINKING WATER?

DR. LARRY OLSON, pg 17

April / May 2008 Vol 6 No. 2

Environmental, Health & Safety Seminars

Fall 2007 / Spring 2008
Course Schedule,
Class Descriptions,
& Registration Fees,
are available online @
www.poly.asu.edu/seminars/



OSHA, DOT, and EPA COURSES

Courses provided include:

- HazWOPER (40-Hr. & 8-Hr. Refresher)
- Hazardous Materials Transportation (49 CFR & IATA, Initial & Refresher)
- RCRA Regulation & Compliance (Initial and Refresher)
- Clean Air Act Regulatory Compliance
- Water Quality Laws & Requirements
- Emergency Response Technician Level

Register online @ www.poly.asu.edu/seminars/

Please contact Hal Berkowitz (480) 727-1323 for
information on site specific courses. For registration
information please contact Denise Kolisar @ (480) 727-1825

Our 18th year of providing regulatory compliance training courses.

ASU ARIZONA STATE
UNIVERSITY
POLYTECHNIC CAMPUS

BELFOR ENVIRONMENTAL

**Providing the
Finest in
Environmental
Service**

- 24 hour emergency spill response
- Soil remediation
- Storage tank cleaning and removal
- Vapor extraction system installation
- Asbestos abatement
- Waste management
- Bulk chemical transfer
- Industrial decontamination
- Lab packing



Offices in Phoenix, Denver, Atlanta, Portland,
Colorado Springs 480-632-2119 800-930-0011

BELFOR

GRIZZLY Trackout Control Device



The shaking of the vehicle as it drives across the Grizzly Trackout Control Device knocks dust, mud, and other debris off the vehicle tires and chassis which falls into the free space below the grate making the trackout device virtually maintenance free.

Minimize Trackout from Your Construction Site!

- Patented method to minimize the trackout of dirt, mud, dust & debris*
- Recognized innovation that is an improved method to control trackout
- Reusable, transportable, and can be expanded to any length required
- Reduces the cost of clean-up on the road
- Promotes a safe construction site by slowing exiting traffic
- Helps control Particulate Matter (PM10) to help improve air quality
- Sizes available: 10 ft. & 20 ft. widths & any length in 8 ft. sections

*Patent numbers 6,981,818; 6,881,006; 7,059,799 & more patents pending

Grizzly Trackout Control • P.O. Box 10970, Tempe, AZ 85284
1-800-761-0056 • www.trackoutcontrol.com

The Environmental Information Association Arizona Chapter

Southwest Regional Conference
Join us in February '08!

- Learn from Industry Leaders
 - Meet the Regulators
- Support the Arizona EIA!
 - Collect CEU Points!!!
- Meet Industry Vendors

Membership Benefits

- Asbestos Regulatory Seminars
- Lead Seminars
- Mold Seminars
- Networking Opportunities
- Community Involvement
- Corporate Sponsorship Opportunities



Join today!
Memberships start at just \$20
Corporate Sponsorships
start at \$250

Call or visit our website
(602) 864-6564
www.eia-az.org

The 2008 Annual RCRA Seminar

RCRA: The Keys to Compliance



One-Day Seminar

May 22, 2008

at the

Marriott Tucson
University Park
880 E. 2nd Street
Tucson, Arizona

7:30am - 4:30pm

*Free parking for seminar attendees
at U of A Main Gate Parking Lot
(reference SAEMS to attendant)*

Two-Track Conference Agenda

Morning Session

Track I:

- RCRA Basics
- Waste Sampling & Analysis
- Waste Determination
- Workplace Safety

Track II:

- Advanced RCRA
- Waste Packaging & Handling
- Transportation Requirements
- Universal Wastes/Recycling

Afternoon Track:

- Inspections & Compliance
- Self Auditing & Liability
- Contingency Planning
- Pollution Prevention

Sponsorship Packages

EXHIBITOR: \$350

- Booth space for table top display
- Company & logo in conference binder
- One conference registration

BREAK SPONSOR: \$500

- Exhibitor package
- Sign at break buffets displaying sponsor name

For more sponsorship
information, contact
Craig Boudle
cboudle@eurofresh.com

For more information contact Shari Bauman at sbauman@turnerlabs.com

Seminar Registration *(please print clearly - one registration per person)*

Name: _____

Title: _____

Company: _____

Address: _____

City/State: _____

Phone/Fax: _____

Email: _____

Mail registration with **check payable to SAEMS** to
SAEMS, PO Box 41433, Tucson AZ, 85717. Attn: RCRA Seminar
or

Credit card (Visa, MasterCard, or American Express)

Fax form to 520.882.9788. Attn: Shari Bauman

Credit Card No.: _____ Exp. Date: _____

☐ RECEIPT REQUESTED

Please check appropriate boxes

- ☐ \$130 Members
- ☐ \$140 Non-members
- ☐ \$180 New Membership (\$50) and seminar
- ☐ \$160 Late registration (after May 1, 2008)
- ☐ \$350 Exhibitor
- ☐ \$500 Break Sponsor

Total \$ _____

Lunch Included

- ☐ Vegetarian Lunch

From the Editor



Like in a game of musical chairs, people in the environmental management field in Arizona often leave one organization and pop up in another! This reflects, for the most part, the normal career cycle as people progress from one position to another. However, it also leads to one of the main continuing

challenges to the Journal — keeping track of where our readers are! While some readers have chosen to receive the Journal at their home address, for those who receive the Journal at work, a change in jobs (even within the same company, sometimes), requires a subscription update to keep receiving your copy of the Journal!

Please take just a few minutes to go online (at www.ehshomepage.com) and update your subscription information! Even if you have made no changes in the past year or more, it is very helpful if you log on once a year and confirm that your information is correct. This saves the Journal the time it takes to either call, email, or contact you to verify the information. Thank you!

If you have not yet already, consider joining MP Environmental and others as they support the National Environmental Education Week with a “5K Run/1Mile Walk” on April 26, 2008 at the Phoenix International Raceway. Great fun for adults & children. Information is available at 602-278-6233.

Sincerely,

Jim Thrush, MS Environmental Management
Publisher & Editor

LEGAL DISCLAIMER Information presented in the Journal of Env. Mgmt. AZ 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 is for informational purposes only, and should not be considered as legal or professional advice. 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.

Journal of Environmental Management Arizona

EDITORIAL: Publisher & Editor: James Thrush, M.S. Env. Management
jimthrush@cox.net or call 480-422-4430 x42

COLUMNISTS: Regulatory Developments: Michael C. Ford, *Bryan Cave LLP*; *Sustainable Development*: Nicholas R. Hild, PhD., *ASU*; *It's All About Chemistry*: Larry Olson, PhD., *ASU*; *Prospecting*: Joe C. Holmes, *EDM*.

SUBSCRIPTIONS: Subscribe at ehshomepage.com or call 480-422-4430 x42.
RATES: FREE to Qualified EHS Professionals. Others, call 480-422-4430.

MAILING ADDRESS: Journal of Env. Management Arizona, 3145 E. Chandler Blvd, Suite 110-641 Phoenix, AZ 85048. Phone & Fax: 480-422-4430

ADVERTISING Call 480-422-4430 x42. *The Journal is published 6 times a year.*

Copyright © 2007 by the Journal of Environmental Management Arizona. All rights reserved.

CLEAN HARBORS ENVIRONMENTAL SERVICES

Rely on Clean Harbors

Clean Harbors, North America's leading provider of environmental services, is at the forefront with a commitment to customers in all industries throughout Arizona.

Diverse Services:

- Waste Transportation & Disposal
- CleanPack® Laboratory Chemical Packing
- Field Services
- Emergency Response
- Household Hazardous Waste Collection
- Industrial Cleaning & Maintenance Services

CleanHarbors
ENVIRONMENTAL SERVICES®

Arizona Service Center • 602.258.6155 • www.cleanharbors.com



Carter
Affiliates, Inc.
Resources for the
Environment



www.cartercare.com/care

- * Hazardous Waste Management
- * Pollution Prevention Programs
- * Environmental Consulting / Regulatory Support
- * Waste Reduction / Recycling Equipment
- * Compliance Audits / Training

(520) 323-1100

715 N. Belvedere Ave., Tucson, AZ 85711

Environmental Compliance Solutions, Inc.

Create your Emergency Response Plan on-line, in a user-friendly, secure SSL, web-based, environment. Be in compliance with local, state & federal emergency plan reporting requirements, while providing your EMERGENCY RESPONDERS with up-to-date, vital information about your facility. Visit our website at:

www.encompsol.com

Or, call us toll-free at 877.655.6952



"PROVIDING VITAL EMERGENCY RESPONSE
INFORMATION IN THE 21st CENTURY"

JOURNAL OF Environmental Management

ARIZONA

April / May 2008

Volume 6 Number 2

Contents

FEATURES AND ARTICLES

- 6 2008 GATEKEEPER/REGULATORY ROUNDUP**
PHOTO-LAYOUT
- 14 POWERED INDUSTRIAL TRUCKS**
CRITICAL SAFETY TRAINING REQUIREMENTS
CHUCK PAULAUSKY, CHMM

COLUMNS

- 16 SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT**
"WATER, WATER, EVERYWHERE, BUT . . ."
NICHOLAS R. HILD, PHD.
- 17 IT'S ALL ABOUT CHEMISTRY**
PHARMACEUTICALS IN YOUR DRINKING WATER
LARRY OLSON, PHD.
- 12 REGULATORY DEVELOPMENTS**
SOLAR ENERGY CLIMATE HEATS UP FOR ARIZONA BUSINESSES
MICHAEL C. FORD, ATTORNEY
- 16 PROSPECTING: FOR ENV. BUSINESS**
SELLING DURING MERGERS/ACQUISITIONS
JOE C. HOLMES, ATC ASSOCIATES

DEPARTMENTS

- 4 FROM THE EDITOR**
- 8 NEWS BRIEFS**
- 9 ADVERTISERS INDEX**
- 10 ASSOCIATIONS PAGES**



Powered Industrial Trucks - Critical Safety Training *page 14*



2008 Gatekeeper / Regulatory Roundup *page 6*

DISASTER HAPPENS
WATER MOLD FIRE CONTENTS
ASBESTOS BIO HAZARD HVAC CLEANING

EMERGENCY RESTORATION EXPERTS

Phoenix: 480.507.9082 623.773.1111
Tucson: 520.743.4500
Statewide: 877.746.3443

ER
mergency
estoration
Experts

ERexperts.net
"Disaster Relief, Guaranteed."



RECOVERING TODAY'S RESOURCES FOR A CLEANER TOMORROW

We specialize in the treatment of non-hazardous liquid waste through physical separation, chemical treatment, biological treatment and sludge de-watering technologies.

- Waste disposal solution that is both economical and environmentally sound.
- On-site laboratory for profiling waste / sample technicians.
- After treatment, reclaimed water is returned to Arizona.
- Manage liquid waste for thousands of clients including some of Arizona's largest companies.
- Ask us about a cost effective alternative to your current waste disposal method.

liquid
ENVIRONMENTAL
SOLUTIONS

Call Us Today
602-278-3442
www.liquidenviro.com

COVER IMAGE: JOURNAL PHOTO ILLUSTRATING POWERED INDUSTRIAL TRUCK AT A LOCAL FACILITY.



Above: Attendees enjoy lunch and listen to Dr. Jim Holway, Keynote Speaker, day 2 of the conference.

2008 Gatekeeper/ regulatory Roundup

Hundreds of Arizona EH&S professionals gathered at the Chaparral Suites Resort on January 28th and 29th for the Fourth Annual Gatekeeper Regulatory Roundup 2008. The conference is presented by the Environmental Professionals of Arizona

(EPAZ), the Thunderbird Chapter of ACHMM, and the Arizona Emergency Response Commission (AZSERC). Brad Cross, LFR, served as Conference Chairperson, and Mike Ford, Bryan Cave LLP, Co-Chairperson. ADEQ Deputy Director Patrick Cunningham presented opening remarks the first morning, followed by regulatory updates from ADEQ Division Directors. Throughout the two day conference attendees choose from a wide selection of break-out session topics, with an optional 8-hour HAZWOPER & RCRA Update on day two.

Exhibitor booths, lunches, refreshment breaks, and an outdoor reception with entertainment by the band "The Shammy's" added to the fun while facilitating networking & relationship building among Arizona environmental professionals.

Phoenix Rillito El Paso Mexico

Chemical Transportation, Inc.

... more than the name implies

As the environmental industry has grown more complex and the regulatory climate more demanding, CT's scope of service has grown to include:

Transportation Services

Including Specialty Tankers, Roll Offs, & Vans

Waste Management Services

Ranging from Large Quantity to CESQG Generators

On Site Services

Industrial Pipeline Services

Air Movers & Hydroblasting

Safety & Compliance Services

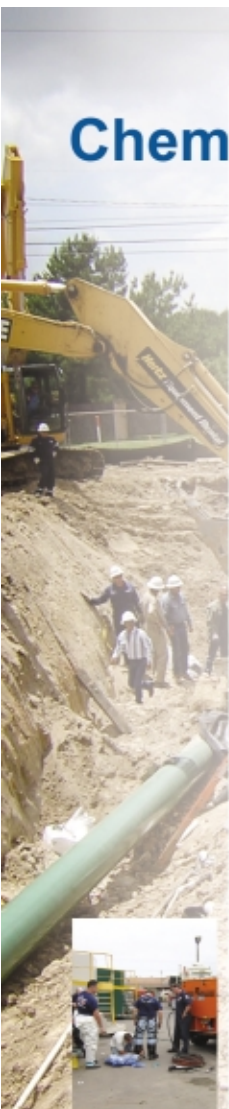
CT: maintaining a solid reputation for quality service.

CT inc.

Phoenix, Arizona Toll Free: 888-444-7077

El Paso, Texas Toll Free: 888-999-2260

Rillito, Arizona Toll Free: 800-634-4828





Gatekeeper/Regulatory Roundup

Provides EH&S Professionals with vital regulatory updates and an opportunity to network & interact with regulators, vendors, and other EH&S Professionals.



GRR Planning Committee (Above)

Left to right: Lisa Culbert, Eddie Martinez, Nancy Nesky, Brad Cross (Conference Chairperson), Sylvia Castillo (in front), Melissa Bauer (in back), Laura Malone, Jennifer Thomason, Mannie Carpenter, Julie Hoskin, Chuck Paulausky, and Dwight Clark. Not shown: Dan Roe and Mike Ford (Co-Chairperson)



2445 N. Coyote Dr., #104
Tucson, Arizona 85745
520 882-5880
Fax 882-9788
www.turnerlabs.com

- ♦ Drinking Water, Waste Water, Hazardous Waste, Compliance Testing
- ♦ Inorganic, Organic, Microbiological Analysis
- ♦ MBE/WBE/SBE Laboratory
- ♦ Waste Water Sampling Services

TURNER LABORATORIES, INC.

A Full Service Environmental Laboratory
Celebrating Over 24 Years in Tucson

news briefs

EPA Rel eases 2006 Arizonaa Toxics Rel ease Inventory Data

❖ US EPA Region 9 announced recently that according to the latest data released recently by the U.S. Environmental Protection Agency, industries operating in Arizona report an overall increase of 52 percent of toxic releases in 2006 compared to 2005. This increase was due primarily to on-site land disposal in the metal mining industry. Phelps Dodge Miami, a copper mine, reported a 33 million pound increase in on-site land disposal in 2006.

The data comes from the EPA's Toxics Release Inventory (TRI), an annual measure of toxic chemical releases and waste generated by facilities in the United States. Total releases include toxic chemicals discharged to air, water, underground injection, land -- including landfills -- and

the amount transferred off-site for disposal. Data provided does not mean that facilities with elevated levels are out of compliance with state, local or federal environmental regulations.

"This inventory is a powerful tool for helping to protect public health and the environment. Safe communities depend on well-informed citizens," said Wayne Nastri, the EPA's administrator for the Pacific Southwest region. "This annual report also helps us see trends over time."

Data from 2006 in Arizona show:

- 300 facilities operating in Arizona reported a total of 98.7 million pounds of toxic chemical releases.
- In 2006, metal mining and metal industries accounted for 87 percent of the total releases and 94 percent of on-site land disposal. Many mines extract, move, store, process, and dispose of large amounts of waste rock and ore materials that often contain low concentrations of naturally occurring metals. The vast majority of this material is placed on the land, and the metals are reported as on-site releases to land.
- Air emissions increased 4 percent, from 4.3 million pounds in 2005 to 4.5 million pounds in 2006.
- Water releases rose substantially from 6,300 pounds in 2005 to 688,000 pounds in 2006. This increase is primarily due to a large increase in water releases reported by Phelps Dodge Miami.
- Off-site releases rose 122 percent, from just over one million pounds in 2005 to 2.4 million in 2006.
- Land releases increased 3 percent, from 60 million pounds in 2005 to 90 million pounds in 2006.
- The state ranks 17th in the nation for total toxic releases.

In 2000, the Toxics Release Inventory expanded to include persistent bioaccumulative and toxic chemicals, or PBTs, and to require reporting for these chemicals at ranges from 0.1 grams to 100 pounds. PBT pollutants are toxic chemicals that remain in the environment and bioaccumulate in food chains, posing risks to human health and ecosystems.

In Arizona, 15.7 million pounds of total on-site and off-site releases of persistent, bioaccumulative and toxic chemicals were reported -- a 136 percent increase over 2005. Lead and lead compound releases increased 135 percent, to approximately 9 million pounds.

The reporting of data to the Toxics Release Inventory is required under the federal Emergency Planning and Community Right-to-Know Act, passed in 1986. This program has been credited with arming communities with valuable knowledge and encouraging facilities to reduce their releases of toxic chemicals into the environment through source reduction, or pollution prevention measures.

First enterprise in US to receive 3 management standard certs simultaneously

❖ On February 5th, 2008, Arizona's Pima County Regional Wastewater Reclamation Department's Conveyance Division (PCRWRDCD), which serves a population of more than one million, was the first enterprise (public or private) in the United States to receive three management standard certifications simultaneously -- ISO 9001:2000 for Quality; ISO 14001 for Environmental; and OHSAS 18001 for Safety.

Business Enterprise Mapping Inc., a process improvement consulting company, collaborated with the public utility throughout

Putting innovation
into practice...

At ARCADIS, we believe successful innovation requires collaboration across many disciplines, including ex-situ and in-situ engineering, remediation hydrogeology, geochemistry, risk assessment and geotechnical science.

We foster the exchange of knowledge and harness the power of collective energies to create new and innovative solutions for our clients. We balance business and regulatory objectives with sound technical methods to deliver dynamic results, quickly and cost-effectively.

For the best solutions to your remediation
challenges, count on ARCADIS.

www.arcadis-us.com



2007 in preparation for simultaneous management audits that were conducted by independent auditing company, TUV SÄD America during October and November 2007.

Reported to the Journal by Edward Collette, Environmental Planning Manager, PCRWRDCD.



Edward J. Collette

Eloy Facility Tarome, Inc. to Pay \$70,000 for Hazardous Waste Violations

❖ ADEQ Director Steve Owens announced recently that Tarome, Inc., a company that makes food supplements for the dairy industry, will pay \$70,000 for violations of federal hazardous waste regulations involving improper handling of calcium oxide materials that burst into flames. "Tarome's mishandling of these combustible substances presented unacceptable risks to its employees and the surrounding community," Director Owens said.

ADEQ investigators determined that the company improperly stored a ton of calcium oxide in a dumpster, where it was exposed to rain three times in 2005. When the substance is exposed to water, it undergoes a chemical reaction that releases heat. The dumpster was filled with a variety of combustible materials, resulting in a fire at the site.

The first fire occurred on Aug. 10, 2005, when the Eloy Fire Department responded. Fire personnel also observed large amounts of calcium oxide stored outdoors, including in a water-retention basin. ADEQ inspected the site two days later, but before the company took steps to store the calcium oxide in a safe, dry place, two more fires occurred the following month. Calcium oxide is mixed with palm oil to produce cattle feed.

Advertiser Index

Aero Automatic Sprinkler Co.	9
ARCADIS	8
Az State University EH&S Seminars	2
Belfor Environmental	2
Carter Affiliates, Inc.	4
Chemical Transportation, Inc.	6
Clean Harbors	4
Clear Creek Associates	19
Conestoga-Rovers & Associates	16
Diggins Safety Consulting, Inc.	9
Diversified Transportation Inc.	15
Eddie Martinez, Realtor	15
EIA Arizona Chapter	2
Emergency Restoration Experts	5
Env. Compliance Solutions, Inc.	4
Environmental Response, Inc.	14
Envirosure Solutions	9
Grizzly Trackout Control	2
Hazard Prevention Institute	9
LFR Inc.	19
Liquid Environmental Solutions	5
MP Environmental	19
N. Weiss Associates, Inc.	9
PSC	16
SAEMS 2008 Annual RCRA Seminar	3
Transwest Geochem	15
Terracon	9
Turner Laboratories, Inc.	7
Univar USA Inc.	20



**DIGGINS
SAFETY
CONSULTING**
INC.

Sam Diggins, ASP
www.dsc-ehs.com

1409 East Verlea Drive
Tempe, AZ 85282
(480) 517-1674 office
(480) 510-7977 cell
sam@dsc-ehs.com

Jason Bolen

Cell 602.739.0083
jbolen@aerofire.com

623.580.7800

Fax 623.434.0029



21605 N. Central Ave.

Phoenix, AZ 85024



envirosure
SOLUTIONS, LLC.

Phone 480-784-4621

smart, sustainable solutions

- HazMat Inventories
- EPA SPCC Plans & Training
- HazWaste Management & Disposal
- Sustainable Development "Go Green"
- OSHA Safety Programs & Training
- Site Assessment & Remediation
- DEQ Storm Water Plans & Training
- Clean Construction

1979 E. Broadway Road, Suite 2
Fax 480-784-2207

Tempe, Arizona 85282
www.envirosure.com

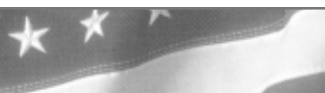
N. Weiss Associates, Inc.

Environmental Compliance Services

Experience Counts

Contact: Norm Weiss @ (602) 870-5504

Web Site: www.nweissassoc.com



Hazard Prevention Institute (HPI)

Safety, Environmental & Emergency Management Solutions

Training & Consulting Services

Miguel A. Rodriguez
President

Office: (520) 887-0355
Cell: (520) 440-1352
Fax: (520) 887-0180; Toll Free: (800) 915-2492
E-mail: miguel@hazardprevention.com
Website: www.hazardprevention.com

Terracon

www.terracon.com

Geotechnical ■ Environmental ■ Construction Materials Testing ■ Facilities

Phoenix
480.897.8200

Tucson
520.770.1789

More than 95 offices nationwide

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.



EPAZ

www.EPAZ.org

At our February meeting, Neil Calfee, Deputy Manager for the City of Tempe Community Development Department, provided attendees with an overview of the Brownfield success story surrounding the Tempe Marketplace. The challenges and how they were able to overcome them were particularly interesting and informative to those contemplating similar developments.

The March meeting revolved around clean-up of clandestine drug labs. Detective Jim Smith of the Arizona Department of Public Safety discussed the hazards associated with these illegal activities, including an excellent visual presentation. Joining Detective Smith were Lisa Lawhorn and Manuel Maltose of the Arizona Board of Technical Registration. The AZ BTR oversees the firms that clean up these environmental nightmares with volunteer assistance of members of the Arizona Rangers.

EPAZ holds monthly luncheon meetings on the 2nd Thurs. of the month from 11:30 am to 1:00 pm. 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 or contact Mannie Carpenter at (602) 393-4800.

Mannie Carpenter,
President



SESHA AZ Chapter Semiconductor Environmental Safety & Health Association

www.seshaonline.org

Presentations included information on ANSI-Z359 Fall Protection Standard, Storm Water Management and Permits, and Wellness Programs in the Workplace. Presenters represented MSA, Gallaher and Kennedy, and Kronos Optimal Health Company, respectively. Meeting refreshments were provided by DOD Technologies.

The Chapter is planning a one-day miniconference to be held on Earth Day, April 22nd. It will be held at the Hilton Garden Inn at 3422 E. Elwood St. in Phoenix from 8-5. The morning's topics include silane gas safety and technology. The afternoon's lineup includes GREEN topics such as solar energy technology, sustainability programs and LEED. Please RSVP, or get more information, about the miniconference by calling 602-470-4408 or emailing me at cpomerence@rohmmaas.com.

Christine Pomerence,
President



Hello! My name is Christine Pomerence and I am the current President of the Arizona local chapter of SESH. We held our quarterly chapter meeting at the Air Products and Chemicals facility in Tempe on March 12th from 2-5pm.



www.azchamber.com

The Arizona Chamber of Commerce and Industry's Board of Directors recently announced the formation of a Green House Gas Task Force to focus on the emerging issue of green house gas emissions and climate change and their potential impact on business in Arizona. In addition, the Arizona Chamber's April 9th Environment Committee Breakfast Meeting will also focus on this important topic.

The Arizona Chamber continues to co host monthly Brown Bag Forums with Maricopa County's Air Quality Department. These meetings are open to the public and feature air regulatory topics presented by Air Quality Department officials with opportunities for questions and comments. These meetings generally occur on the third Thurs. of the month beginning at 11:30 AM. A conference call in number is also available for each meeting. Look for email notices from Maricopa County Air Quality Department for future meeting announcements. Any questions should be directed to Jeff Homer at 480-441-6672.

Jeff Homer,
Co Chairman
Environment
Committee



www.SAEMS.org



On Saturday, 3/15/08, 27 volunteers from SAEMS, Tucson Clean and Beautiful, and Scout Troop 206 began clean up of an Undocumented Migrant site. Over 200 bags of trash filling a 30 yd roll off were collected in 3 hours. Materials and equipment were donated by PDEQ, Southwest Hazard Control and SAEMS. Volunteers were awarded lunch at Chuy's for their efforts. Another big event for SAEMS is coming on Thursday, May 22, 2008. The annual SAEMS RCRA Seminar will be held at the Park Marriott. This is the crown jewel of the SAEMS sponsored seminars. Please mark your calendars and register as soon as possible. Nominations are underway for the 2008-2009 Executive Board. If you are interested in keeping the SAEMS standard of excellence going, throw your hat into the ring.

Jeff Christensen
President



American Society of Safety Engineers ASSE

The Five "C"'s of Community Acquired Methicillin Resistant Staphylococcus aureus (CA-MRSA): CA-MRSA skin infections can occur anywhere but some settings have factors that increase risk. **Crowding**, frequent skin-to-skin **Contact**, **Compromised** skin (cuts or abrasions), lack of **Cleanliness**, and **Contaminated** items and surfaces are the most common ways of CA-MRSA transmission. Locations where the 5 C's are common include schools, dormitories, households, and day-

The Five "C"'s of Community Acquired Methicillin Resistant Staphylococcus aureus (CA-MRSA): CA-MRSA skin infections can occur anywhere but some settings have factors that increase risk.

care centers. **Routes of Transmission:** MRSA is transmitted most frequently by direct skin-to-skin contact; the environment (contaminated surfaces) has not played a significant role in transmission. **Prevention:** Wash hands thoroughly with soap and water or use an alcohol-based hand sanitizer; keep cuts and scrapes clean and covered with a bandage until healed; avoid sharing personal items such as towels or razors. **Role of Safety Professional and Industrial Hygienist:** Obtaining wipe samples of surfaces is not currently recommended. Recommendation for sanitation of equipment in accordance with manufacturers recommendations is appropriate. Sanitizing large areas and buildings is not appropriate. Isolation of individuals with CA-MRSA infections is also not recommended unless they cannot follow basic procedures to prevent infection. *Courtesy of Shannon E. Newton, MPH, CIH, Health Effects Group, Inc.*



Shari Di Peso,
Secretary

Grand Canyon Section Air & Waste Management

www.awma-gcs.com

For the second year our February meeting was held in conjunction with the Environmental and Natural Resources Law Section and once again speaker Roger Ferland, Quarles and Brady LLP, gave an entertaining and informative presentation. This year's focus was on issues concerning environmental permitting of alternative energy projects. While it appears alternative energy projects are popular in almost every circle even green projects have to be economically feasible, compatible with the neighbors and obtain all those environmental permits and approvals.

A&WMA-GCS and ENRLS plan on combining resources again next year to offer insights into another interesting topic. Check out our website at www.awma-gcs.com for upcoming events including a meeting in Tucson and a site visit to a local environmental project.



Kale Walch,
President



ACHMM Thunderbird

www.thunderbirdchmm.org

Don't forget to mark your calendars for the "Essentials of Hazardous Materials Management," course being offered by the Thunderbird Chapter on May 5-8, 2008. This is a great course for all EHS professionals, as well as good preparation for CHMM candidates. Contact Dwight Clark at (602) 243-1600 or dclark@ninyoandmoore.com.

Don't forget the **Thunderbird Happy Hour** on 1st Thursdays, 5:30 PM - ?? The ACHMM/EPAZ monthly lunch meetings are held at ASU MERCADO, 502 E. Monroe St. (SE of 7th St & Van Buren) 11:30 ~ 1:00 on the 2nd Thurs. of each month. Meeting details: www.thunderbirdchmm.org or www.epaz.org. **CALENDAR: May 5-8** - "Essentials of Haz. Materials Mgmt", Phx. **May 8** - Luncheon Meeting, Greening of Frito Lay. **June 5** - T-Bird Happy Hour, TBD **June** - Luncheon Meeting, TBD **July 3** - T-Bird Happy Hour, TBD **July** - Luncheon Meeting in Flagstaff **Aug. 7** - T-Bird Happy Hour, TBD **Aug.** - NO Luncheon Meeting. **Sept. 7-10** - ACHMM Nat'l Conference, Minneapolis, MN.



Chuck Paulausky,
Board Member



www.eia-az.org

The EIA Southwest Regional Conference held last month in Las Vegas was a huge success. Our thanks to all of the organizers, presenters, vendors and attendees who made this conference one to remember!

The next quarterly dinner is scheduled April 29, 2008. The topic is "Global Warming: Legal Fact, Probable Fiction and Possible Science - Where Do We Go From Here?" Presented by Jerry D. Worsham Jr., with Gammage & Burnham, PLC. The dinner is held at the Sheraton Phoenix Airport Hotel, 1600 S. 52nd Street, Tempe, Arizona. Registration is at 5:30 PM and the cost for dinner is \$30.00.

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



Laura Adams,
President



Arizona Environmental Strategic Alliance

www.azalliance.org

The New Year is well under way and so are efforts at the Alliance. One of our main focus areas this year is to make a big push to increase visibility and usage of "ReUseAZ", our materials exchange web site and "direct assistance" program. ReUseAZ recently added two new Program Administrators in the Tucson area, Tim Jones and Pete Sabin. Both are available to help businesses with recycling and reuse information and to find users for materials or waste products. Call the Tucson area ReUseAZ number: 520-664-3550, or visit www.ReUseAZ.org.

The Alliance Board is also in the process of planning other future activities for the Alliance, so look for more information in coming editions of the Journal. Contact the Alliance at 480-422-7392 or visit www.azalliance.org.



Scott Davis,
Chairperson



www.azhydrosoc.org

The AHS is off and running this year with great events scheduled. April 15th is the deadline for submissions for Abstracts for the 2008 Annual Symposium. If you have submitted an abstract for consideration you will be notified by May 15th. The Annual Symposium is scheduled for Sept. 20-24, 2008 in Flagstaff. We have partnered with the American Institute of Professional Geologists to make this an outstanding event. Please visit www.aipg.org/2008/AIPG-AHS-3IPGC.htm for more info.

While the Flagstaff Chapter is working very hard on the Symposium the Tucson and Phoenix Chapters are busy hosting other seminars. The Tucson Chapter hosted a field trip to Kartchner Caverns on March 22nd. All aspects of the ecosystem were covered in the special tour. The Phoenix Chapter has scheduled a Surface Water Seminar on May 15th at the AZ Dept. of Water Resources. Seating is limited so register NOW at www.azhydrosoc.org.



Jeanie Merideth,
Society Manager



Michael C. Ford, Attorney

Regulatory Developments

Solar Energy Climate Heats Up for Arizona Businesses

Arizona now boasts an impressive array of solar energy incentives for all Arizona businesses (and homeowners for that matter) to take advantage of photovoltaic and solar water heating technology to generate a portion of their own electricity needs, reduce their utility bills, and provide a hedge against rising electricity costs.

The solar industry is undergoing a tremendous worldwide boom primarily as a result of mandates and incentives overseas (Japan, Spain and Germany) but also a number of states (led by California and New Jersey) and the overall increased level of attention and resources being devoted to renewable energy sources due to global warming fears. The average cost per kilowatt hour for solar power remains substantially above that paid by the typical retailer industry customer (12 cents), although the technology is evolving rapidly and some in the industry predict that photovoltaics will start to become competitive with retail electric generation as early as 2010.¹ The industry, for the time being, is highly dependent on government and utility incentives.

At the federal level, several key incentives were passed as part of the Energy Policy Act of 2005. These include a 30% investment tax credit (ITC) for capital projects involving solar energy generation, including photovoltaic (PV) and solar thermal systems.² The tax credit provision is also applicable to residential projects, although in a more limited manner. (The 30% factor applies but the total credit is limited to \$2,000 per year although it applies independently to PV projects and solar thermal projects.) The ITCs are the first that have been available since 1985. The second major incentive for commercial projects allows solar systems to be depreciated over five years.

Unfortunately, the federal credits were authorized only for limited time periods, initially only available for 2006 and 2007, and subsequently extended for one year (through 2008). The solar industry lobbied hard throughout 2007 to have the federal incentives improved and extended for at least an 8-year period to encourage investment in the industry and ensure long-term

stability. The incentives were part of the Energy Independence and Security Act of 2007 (EISA), but were stripped out at the last minute as part of the negotiation process (the incentives were being linked to the elimination of tax deductions available to the oil industry.)

The other very controversial provision of the EISA proposal that did not make it into the final act was a proposed Renewable Energy Portfolio Standard which would have required electric utilities to provide at least 15% of their electricity from renewable energy sources by 2020 (or purchase tradable credits). This provision thus would have "federalized" renewable energy targets similar to those currently applicable in Arizona (discussed below).

The tax incentive legislation was raised again in early 2008 as part of H.R. 5351, The Renewable Energy and Energy Conservation Act of 2008. Among other incentives, the bill would extend the 30% investment tax credit 8 more years for commercial projects and 6 more years for residential projects, and increase the residential cap to \$4,000. It passed the House on February 27, 2008, and as of this writing, the incentive package was expected to be heard before the Senate in March, and the prospects for passage appeared good. A broad-based coalition of business, environmental, and consumer groups, utilities, renewable energy companies and labor organizations were lobbying the Senate to pass the bill. According to their letter,

America is on the cusp of a new, clean energy economy. The clean energy tax incentives in H.R. 5351 would help our county make the transition to this economy – an economy powered by low-carbon technologies that help solve global warming, reduce energy prices for consumers and create new high-wage jobs.³

The most critical state-level initiative is the Arizona Corporation Commission's renewable energy portfolio standard, which requires regulated utilities to generate 15% of their electricity production from renewable sources by 2025, and a substantial portion of this must be from "distributed" sources, e.g., solar panels on your business' roof top. To encourage increased use of renewable energy, including solar, regulated utilities offer substantial incentives designed to reduce the significant capital investment required for the purchase and installation of equipment, including rebates that, when combined with other available incentives, can cover up to 60% of the system costs. The incentive funding available is limited and allocated between residential and commercial projects.⁴ These incentives also generally can be applied in addition to the other available incentives. Businesses may also be able to take advantage of special financing arrangements, and "power purchase agreements" to reduce the up-front costs of "going solar."

In the meantime, the Arizona legislature has been active the last two years in enacting measures designed to increase renewable energy use, particularly solar. Arizona has a tax credit provision similar to the federal commercial ITC that applies to solar energy systems, including PVs and solar water heating systems. The tax credit is 10% of the system cost, but is capped at \$25,000 and applies only to non-residential systems. The \$25,000 cap applies per building, but there is a per taxpayer cap of \$50,000 per year.⁵ The tax credit has currently been extended through 2012.

A number of renewable energy related bills have been introduced in the Arizona legislature in early 2008. Perhaps the most ambitious is the Omnibus Energy Act of 2008 (H2766)

Continued on next page.

Michael C. Ford is an Attorney with the Phoenix office of Bryan Cave, LLP, practicing environmental and occupational safety law. His practice is focused primarily on regulatory compliance advice and enforcement defense. He can be reached at 602-364-7417, or by email at mcford@bryancave.com.

Environmental Studies Scholarships Awarded

Six environmental studies students received EPAZ Scholarships, and three received ACHMM Scholarships presented recently at the GRR Conference.



ABOVE: ACHMM Scholarship Winners
Mike Ford (ACHMM Immediate Past-President), Kelly Jaramillo (ASU), Amanda Reeve (ASU), Dane Whitmer (U of A), and Chuck Paulausky (ACHMM Treasurer).

LEFT: EPAZ Scholarship Winners
Left to right: Julie Hoskin (EPAZ), Daniel Gabiou, Elsy Alejandrina Escobar, Cupress Stegall, Ramzy Kahhat Abedrabbo and Mannie Carpenter (EPAZ). Not pictured: Nabila Zine Filali and Anna Therese Carpenter.

It's a Small World

Some of our old friends from Romic have recently moved on to new positions but remain a vital part of Arizona's Environmental Community! Where are they now?

PHOTO, Left to Right:
Greg Romero, Environmental Response Inc. (ERI); Micki Schultz, Heraeus; Nick Christofferson, Kary Environmental; Joe Holmes, ATC Associates; Diane Abrams, Belfor; Scott Ewbank, Univar; Connie Herrera, Univar.



FORD: Solar Energy Climate

Continued From Previous page

which was introduced in mid-February. The bill endorses renewable energy as state policy:

It is the goal of this state to encourage the reduction of carbon emissions by the conservation of energy and the development of renewable and noncarbon emitting energy resources in conjunction with maintaining reliable and low cost electric service to utility customers in this state. This goal is that at least 15 percent of the electricity delivered to retail utility customers in this state shall be from renewable sources of energy.⁶

The target date for achieving this standard is 2025. The Act would also mandate a renewable energy standard for retail electricity providers not subject to the Corporation Commission's requirements (e.g. Salt River Project which, by the way, has already implemented its own renewable incentives similar to the ACC's).

As of this writing, several additional bills designed to encourage solar energy production were also pending in the

legislature, including H.B. 2614 which would allow renewable energy equipment to be taxed at 20% of its normal depreciated value until 2040; and H.B. 2738 which would establish a state grant program to fund installation of solar technology at schools.

The solar energy climate is changing at a furious pace – almost day-to-day – but the activity all points in one direction: towards increasing investment in and use of solar energy equipment to generate a portion of our energy needs, at the building, local, state, national and global level. It may be the right time for your business to consider the opportunities presented by the solar energy climate here in Arizona.

Footnotes:

- ¹ ARGUS Analyst Report, First Solar Inc. (created on March 7, 2008).
- ² Because these provisions are part of the tax code, they are of course much more complex, subject to caveats and interpretations. I am not a tax attorney so nothing herein should be construed as tax advice. To evaluate the potential incentives potentially applicable to your project and their impact on your tax liability, a knowledgeable tax attorney should be consulted.
- ³ <http://www.seia.org/solarnews.php?id=167>.
- ⁴ For more information, visit www.aps.com.
- ⁵ H.B. 2429 (2006), H.B. 2491 (2007).
- ⁶ H.B. 2766 (2008) A.R.S. Section 30-901.A.

Powered Industrial Trucks

Critical Safety Training Requirements



"The owner of a machinery and equipment training school was killed while filming a forklift safety video. He was thrown from the forklift and crushed. An investigation revealed that the fatality was due to driver error, high speed over rough terrain, and an unused seat belt."

by Chuck Paulausky

Unfortunately, the type of forklift fatality described at left is all too common. OSHA statistics indicate that there are ~85 forklift fatalities and 34,900 serious injuries each year. 42% of the forklift fatalities result in the operator being crushed by a tipping vehicle. The safest place for the driver to be is strapped into the seat with a seat belt. "OSHA's enforcement policy on the use of seat belts on powered industrial trucks is that employers are obligated to require operators of powered industrial trucks that are equipped with operator restraint devices, including seat belts, to use the devices. Compliance officers will enforce the use of such devices under Section 5(a)(1) of the OSH Act," the General Duty Clause.

PIT REGULATIONS

OSHA has established detailed regulations for operation of "powered industrial trucks", which includes all types of material-handling vehicles, from forklifts to powered pallet jacks to order-pickers. The **Powered Industrial Truck (PIT)** regulations can be found at 29CFR1910.178. Incorporated into the regulation by reference, ANSI B56.1-1969 covers the design and construction requirements for PIT's.

The OSHA regulation provides specific designations for PIT's, based on the type of power source and safeguards. In addition, "designated locations" are identified, such as hazardous atmospheres. The regulation also covers a variety of other topics, including operation maintenance and inspection of the vehicles, but one critical part of the regulation is for operator training.

OPERATOR TRAINING

PIT's can be especially unforgiving under the wrong conditions. Operators need to understand that PIT's are very different from regular vehicles in the way they maneuver and are balanced. Employees who have not ever driven a PIT will not have the innate knowledge and skill to drive one without training. For this reason, much of the required training is focused on operation,

Arizona Contractor's Licenses B-General ROC 130187, ROC AE-101060,
ROC C05-101110, EPA Haz. Materials Trans. Lic. # AZ0000303032

ER Environmental Response, Inc.

24-Hour Emergency Response

Soil Remediation

Hazardous Waste Trans. & Disposal

Facility Decontamination

Lab Packing

Excavation and Demolition

Mold Remediation

Lead Abatement

Landfill Closure

Household Haz. Waste Collection Events

Vapor Extraction System Installation

Brownfields Remediation



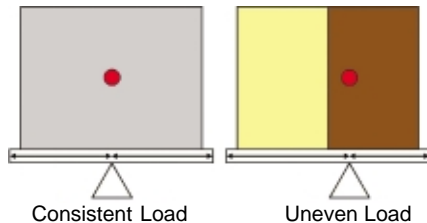
ER Environmental Response, Inc.
A Wholly Owned Subsidiary
of Spray Systems Environmental

2202 W. Medtronic Way, Suite 108, Tempe, AZ 85281
Arizona 24 Hours (480) 967-2802
www.spraysystemseri.com

load capacity, stability, and operating limitations.

Some of the key factors that should be covered to help operators understand technical aspects of forklift operation include:

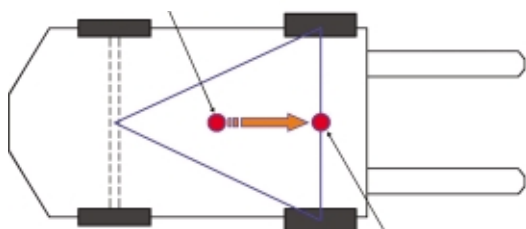
- **Center of Gravity** - The size and the center of gravity of a load can directly affect the safe lifting capacity of the PIT. Positioning the center of gravity as close as possible to the center of the PIT will help keep the vehicle from toppling sideways, especially when turning.



- **Load Center** - The load center relates to the distance of the center of gravity from the vertical face of the forks. Keeping the load as close as possible to the vertical face will help keep the load from overcoming the counterweight at the rear of the vehicle causing it to tip forward.

- **Stability Triangle** - This is a triangle formed by the front axle and the rear center point inline with rear axle. The combined center of gravity (load center plus vehicle center of gravity) must stay within the stability triangle to maintain stability. Speed of travel, centrifugal force from turning, load height, mast tilt, ground slope, and various other factors will also affect the location of the combined center of gravity.

Vehicle Center of Gravity (Unloaded)



Center of Gravity of Vehicle at Maximum Load

Operators must receive training for each type of PIT that they will be operating, including the use of any attachments, i.e. manlifts, drum attachments, etc. The training must also include the conditions under which the vehicle will be operated, such as surface conditions, ramps and slopes, hazardous locations, visibility, and pedestrian traffic. Since these factors

are different from workplace to workplace, OSHA requires the training to be site-specific.

Training must be conducted by "persons with the necessary knowledge, training, and experience to train powered industrial truck operators and evaluate their competence." The training must include both formal instruction and practical driver training. The trainees must also be evaluated initially and every 3 years to establish that they are qualified to safely operate the equipment. Refresher training is required: (1) whenever an operator is observed operating unsafely, (2) when an operator receives an unsatisfactory evaluation, (3) when an operator is assigned to a different type of PIT, and (4) when changes in workplace conditions could affect safe operation. As with any OSHA-required training, the training and evaluations must be documented.

The use of Powered Industrial Trucks is critical part of many industries. You need to be sure that this asset doesn't become a liability by implementing a forklift safety program and effective PIT training.

Chuck Paulausky, CHMM, is President of CPSE LLC, a consulting firm specializing in OSHA and EPA compliance and loss control for a wide range of businesses. Chuck is active with the A C H M M Thunderbird Chapter, and is a 2006 ACHMM Champion of Excellence Award winner. Chuck can be reached at: 480-694-1975, cpaulausky@cpsafety.net.

EDDIE MARTINEZ
www.eddiesellshomes.com
 Bus.: (480) 759-4300
 Fax: (480) 706-0000
 Mobile: (602) 708-9179
Eddiem4241@cox.net
 4621 E. Chandler Blvd Suite 160
 Phoenix, AZ 85048

KELLER WILLIAMS
 Sonoran Living
 Each Keller Williams Office is Independently Owned and Operated

"Personal Service With Integrity"

DT DIVERSIFIED TRANSPORTATION, INC.

100% WDBE 8@ Certified
 Now serving Las Vegas, NV Locally
WWW.DIVERSIFIEDTRANSPORTATION.US

Partial or Full Loads
 HAZ • NON-HAZ • Special Commodities
 20 - 40 Yard Roll-Off Bins • LiftGate Logistic Vans

Call or Email Dianne Sholl
602-455-0350
DTlinPhx@aol.com Phoenix, AZ

• Full Service Environmental Laboratory
 • Mobile Laboratories (screening & compliance)
 • Sampling Services
 • Testing for: CWA, RCRA, SDWA, TSCA

TRANSWEST GEOCHEM
www.transgeo.com

Phone: (602) 437-0330 (Phoenix)
 (520) 573-1061 (Tucson)
 Toll Free: (800) 927-5183

3725 E. Atlanta Ave., Suite 2, Phoenix, AZ 85040
 3860 S. Palo Verde Rd., Suite 301, Tucson, AZ 85714

PSC



PSC is the single source for industrial cleaning services:

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

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

What does PSC stand for?

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

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

PSC
2003 W. McDowell
Phoenix, AZ 85009
602.252.1186

www.PSCNow.com

PROSPECTING:

For Environmental Business

Selling During Mergers/ Acquisitions



It is safe to say that most of us have been affected, in some way, by a merger or acquisition during our career. It seems all but common-place and few are surprised by news of a company gobbling up another. For those involved it can be unsettling, to say the least. At most, it can set in motion life-changing events due to reorganization, relocation, culture change, or lay offs. Since I've been through it three times myself, I thought the idea of how a sales program is affected during such tumultuous times might make an interesting topic.

During a merger or acquisition, the only thing certain is uncertainty. Even with management's best intentions to communicate with staff and clients, a sense of un-easiness is unavoidable to some degree, not to mention a negative impact on productivity. How can a sales and marketing effort retain momentum during such times? As much as we might want our work day to be "business as usual", it is inevitable that the focus of sales efforts will be impacted. Here are a few tips that might help keep it to a minimum:

Don't overestimate the impact of culture change. Much of the stress caused by mergers and acquisitions stems from the simple fact that things will be changing. Change can be tough, but in most cases it isn't nearly as bad as we make it. Cautiously embrace the new environment and quickly look for opportunities for you or your staff.

Focus on the short term for awhile. If you are operating from a formal strategic plan, try to stick to it the best you can, but put long-term pursuits lower on your priority list. Work on the targets you can influence most and let the long term plan sit until you know better what the new organization will look like. Put a higher priority on communicating with existing clients too.

Team up with your clients. Establish open communication about the changes early and go through it together. Be honest and factual about the information shared with clients and make sure you have a high degree of comfort with what management is touting as the "company line". If you are not, do your best to get the facts and address discrepancies with management.

Mergers and acquisitions are a way of professional life, and can be disruptive and stressful. But, realize that such circumstances can also provide big opportunity. Stay involved, gather facts and look closely at how you will fit in to the new organization.

Thanks to Greg Romero for the suggestion for this column's topic.

Joe Holmes is Regional Manager of Business Development at ATC Associates. He can be reached at joe.holmes@atcassociates.com.



Joe C. Holmes



Worldwide Engineering, Environmental, Construction, and IT Services

- Agricultural Services
- Brownfield Redevelopment
- Construction / Design-Build
- Environmental
- Water / Wastewater



**CONESTOGA-ROVERS
& ASSOCIATES**

4050 East Cotton Center Blvd., Suite 49
Phoenix, Arizona 85040
Phone: (602) 749-9400 Fax: (602) 749-9500

1955 W. Grant Rd., Suite 210
Tucson, Arizona 85745
Phone: (520) 623-9221 Fax: (520) 623-3065

www.CRAworld.com



Larry Olson, PhD.

It's All About Chemistry

Pharmaceuticals in Your Drinking Water

Although it has been in the scientific literature for several years, only recently has the issue of drugs in drinking water hit the public consciousness. A recent series of articles in the *Arizona Republic* revealed that Phoenix and Scottsdale will begin testing for pharmaceuticals in drinking water, even though it is not required by EPA. So how big a problem is this?

There seems to be no question now that many watersheds, outflows and sludge from wastewater treatment facilities, and reservoirs contain detectable levels of a wide variety of prescription and over the counter drugs that can ultimately end up in drinking water supplied to the public. These chemicals pass through the body and are flushed down the toilet or can be discharged from manufacturing facilities. Evidence is accumulating that normal wastewater treatment processes are not effective in degrading many of these chemicals. Even percolation through soils does not prevent contamination of groundwater.

EPA regulates drinking water sources through MCLs (Maximum Contaminant Limits) that require testing for various microorganisms, disinfection byproducts, and a number of inorganic and organic chemicals, as well as radionuclides. Most of the organics are industrial chemicals such as solvents, pesticides, and herbicides. Anti-depressants, pain killers, tranquilizers, antibiotics, cholesterol medications, and

cosmetics are just a few of the modern day brew of chemicals found in many medicine cabinets. None of these are on the MCL list requiring testing.

One of the reasons why we seem to be behind the curve on this problem is that reliable methods for collecting, preserving, and analyzing environmental water samples for the hundreds of pharmaceuticals of potential concern have only recently been developed. Another is that we don't know much about the environmental fate of these chemicals – how they partition into water and sediments, bioaccumulate in aquatic species, or undergo abiotic or biodegradation. We need to be testing not only for the original chemicals, but for metabolites in order to truly understand what happens to the chemical once it is released. Finally, we know very little about the toxic effects of extremely small doses of these chemicals on humans, much less on other species.

The evidence that we do have seems to show that many pharmaceuticals are not effectively removed in wastewater treatment plants and they can be found far removed from their source. Concentrations of these chemicals are much lower than therapeutic doses for humans, but risk assessments for chronic exposures to small doses, and possible synergistic effects from a combination of these drugs, have not been done, so our understanding of risk is incomplete.

The bigger threat may not be to humans directly. Many are worried about the possibility of developing drug resistant bacteria. Aquatic species are directly at risk because they are exposed continuously throughout their life cycle. Not only have pharmaceuticals been detected in fish, mussels, algae, and birds but impairments ranging from reproductive problems, inhibited growth, and kidney failure have been observed. For these species, the effects are not just speculation.

So what do we do? Pharmaceuticals are not going to just disappear but we don't have a good way to dispose of them. We can't prevent the normal body elimination of drugs from entering the wastewater stream and putting unused drugs in a landfill still allows for the possibility of contamination of groundwater. Application of sludge from wastewater treatment plants on agricultural lands also increases the environmental burden of pharmaceuticals. Testing alone doesn't solve the problem, but may help us to understand the magnitude of the issue. Modifying wastewater treatment plant operations to better degrade pharmaceuticals may be possible, but could be very expensive, and we don't yet know what methods are effective for each target compound. This doesn't appear to be an issue that that is going away soon.

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



Sustainability and Sustainable Development

Nicholas R. Hild, PhD.

... Water, Water, Everywhere, But ...

If you've been in Arizona very long, you know that our water (supply) is diminishing and in danger of drying up altogether—this is particularly true for Tucson which depends on groundwater and the CAP (Colorado River) water that replenishes the aquifers of that metroplex which 1.2 million people depend upon.

It is also true of the entire arid southwest: with climate change (global warming), and more people to serve (Arizona has gained a million and a half people in just the past decade), water is becoming more precious every day as the volume of supplies from the Colorado River diminish.

Arizonans have been aware of our 'future' water shortage for over 40 years, politicians chose to 'solve' water shortage problems by bargaining with the devil, most notably the State of California, to get the CAP designed and built as a 'stop gap' measure to postpone the inevitable—that is, they postponed our (then) 'future' water shortage and saddled the state's major metropolitan areas with solving the problem on the backs future generations.

A recent Viewpoints article in the Arizona Republic, written by Brad Udall, who is the son of the late Representative Morris K. Udall, one of the great conservationists who helped Arizona become a place that is revered for its federally protected natural resources and habitats. Brad is director of Western Water Assessment at U. of Colorado who has been studying the Colorado River for some time. Among other things he has concluded is that climate change (warming) effects on states in the southwest, will likely require "unused" allocations of Colorado River water (which Arizona is NOW using from Utah, Wyoming, New Mexico and Colorado's share), to soon be cut back as those states need the water to meet their own increasing populations demand—and, to make it worse, Nevada (Las

Vegas) will tap Lake Mead water more and more, as its population soars toward 2 Million people, meaning even less water for Arizona.

What that all means, according to Udall, is a major CAP supply reduction for Arizona in the not-too-distant future. This is a result of Arizona's 1968 agreement with California which basically said that, in the event that water shortages in the Colorado River require a reduction in Arizona's allocation, it will not effect California's supply, in Udall's words, because... "*not a drop of California's allocation will be cut back until ALL Arizona's CAP has been totally shut off...*"

Thus, its time to make another deal with the devil—it seems prudent to suggest that Arizona should help California find alternatives to its source of water (supply) NOW, before our own CAP supplies begin to be reduced—a bold and unprecedented cooperative effort to help fund (yes, that means with real monies from Arizona coffers), the building of desalination facilities in strategic locations along the coast, from San Francisco all the way south to San Diego.

After all, they have the largest source of water in the world lapping at their western shores so why not use that instead of the Colorado River? Even the delivery system that has been in place for Mono Lake waters, can be interconnected for conveyance of those waters. And, at the same time, the California's use of Colorado River waters can be reduced, thereby giving that supply back to Arizona.

The '68 deal with the State can be renegotiated so Arizona gets the water from California's allocation just as soon as we pony up funding to help pay for the desalination facilities. And, with all the new energy-making technologies like ocean-wave-generated power and solar PV systems, those plants could all be powered with no carbon emissions contributing to global warming. What a 'sustainable' concept!

Jerry Grott, one of our Journal subscribers, wrote to me recently to share some proven and tested technologies and uses for the tons of salt that's generated in desalting plants (see waterrecycling.com). Among them are applications of brine waters to calcareous soils for root rot in irrigated agricultural areas up and down the Colorado River and EPA- permitted applications of salts for dust control and soil stabilization, to mention a few—waste 'salt' that previously was a major "cost" of desalination, can now be a cost recovery center to help offset costs of the desalination facilities.

Critics of desalination ranging from die-hard environmentalists to politicians who decry the high cost of construction and energy for operations can be swayed now by designing the facilities with alternative power generation technologies to run them and salt recovery/use opportunities that are already working—it's been done for decades in the Middle Eastern countries that have no other water supply choices—and its clear that desalination for California would solve the problem of future water needs in Arizona. It's a win-win for our children's, children's, children.

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



Tools of the trade

We've built our reputation on a foundation of strong professional capabilities, honed project coordination and communication skills, and extensive statewide experience.

Our environmental services are a key part of that foundation. They include:

- Groundwater monitoring and restoration
- Technical oversight for remedial actions
- Fuels/PCBs/VOCs investigation/remediation
- Contaminant transport modeling
- Site assessments and property transfers
- Regulatory compliance/permitting

**CLEAR
CREEK
ASSOCIATES**
*Practical Solutions in
Groundwater Science*

In Phoenix:

6155 E. Indian School Rd., Suite 200, Scottsdale, Arizona 85251
(480) 659-7131, (480) 659-7143 fax

In Tucson:

221 N. Court Ave., Suite 101, Tucson, Arizona 85701
(520) 622-3222, (520) 622-4040 fax

www.clearcreekassociates.com

*Offering comprehensive, hydrogeologic
services in five integrated areas:*

*Groundwater Development
Groundwater Modeling
Hydrogeologic Investigations
Environmental Services
Mining Support*

CLEAR SKIES (and compliance) AHEAD

Air quality consulting
Regulatory compliance
Title V/minor source permitting
BACT/LAER assessments
Dispersion modeling/risk assessment
Risk management planning
Continuous emissions monitoring
Indoor air/industrial hygiene surveys
Odor control
Process engineering

Contact Ned Overs or Sean Coury at 480.905.9311

14201 N. 87th Street, Suite 135
Scottsdale, Arizona 85260
480.905.9311/Fax 480.905.9353
www.lfr.com



LFR is a national environmental management and consulting engineering firm.



7 Terminals
throughout the
Western states

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



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



A World Leader In Environmental Services and Chemical Distribution

**ChemCare® is a comprehensive waste management
and disposal service from Univar USA.**

You can depend on Univar to help you select the most economical and environmentally sound waste disposal technology available anywhere. We manage and dispose of your hazardous and non-hazardous waste products safely, quickly and efficiently.

Univar - Phoenix

50 S. 45th Street
Phoenix, AZ 85043-3907
1-800-909-4897

Univar - Tucson

3791 E. 43rd Place
Tucson, AZ 85713-5403
1-800-909-4897

For more information, please call us or visit our Web sites
www.univarusa.com or www.chemcare.com

