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See pg 6

ACCIDENT INVESTIGATION

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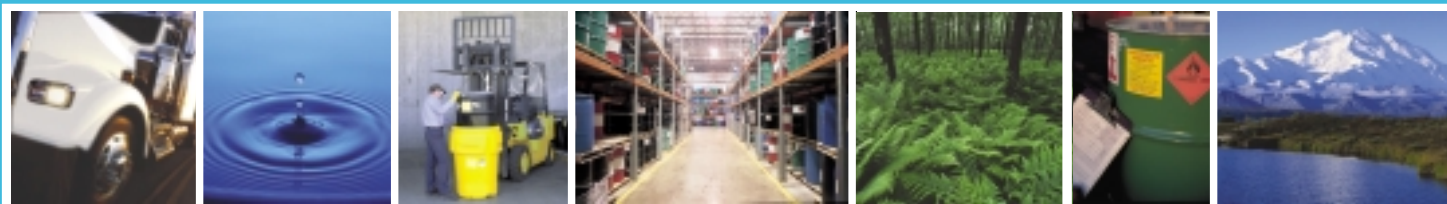
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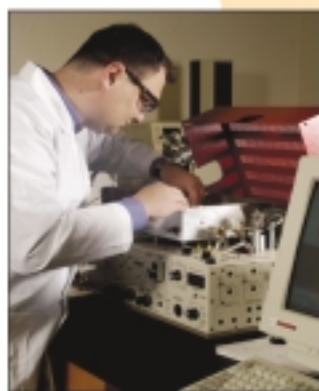
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From the Editor



ADEQ has been working very hard lately to spread the word about the new state Performance Track program and to encourage new applicants for membership. Wayne Nastri, US EPA Region 9 Administrator, visited the state recently (see article on page 22) to lend his support for the program and, along with ADEQ Director Steve Owens, spoke to over 100

prospective members at a Performance Track / EMS seminar recently in Scottsdale.

If your business or organization considers itself an "environmental leader," and if you have a track record to prove it, you may want to consider applying to the program. Membership provides a state recognized level of achievement, and a growing list of tangible incentives including, for example, reduced inspection frequency, advance notice of enforcement, no action for minor violations, notice prior to inspection (case-by-case, cbc), permit flexibility (cbc), reduction in reporting requirements (cbc), expanded hazardous waste accumulation time, and more. For information give Ian Bingham a call at ADEQ (602-771-4322).

Have you been putting off writing an article for the Journal? Remember, a good article does not have to be an extensive thesis on a subject — 4 or 5 good points on a topic in your field of expertise may be all you need to create a valuable, time-saving article for readers!

Sincerely,
Jim Thrush, M.S. Environmental Management

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Chemical Facility Vulnerability Assessment

How will the new
US DHS chemical
facility vulnerability
assessment requirements
affect YOU?

by William R. Benson and
Stephen R. Melvin, PE, CSP

The US Department of Homeland Security (DHS) proposed new interim Chemical Facility Vulnerability Assessment Regulations on December 28, 2006. After a comment

period, the interim regulations were finalized on April 22, 2007. Appendix A of this regulation, which should be finalized any day now, will list the threshold quantities of chemicals subject to these regulations. If a chemical facility has more of a chemical than the quantity listed in Appendix A, they will be required to submit critical information to DHS 60 days after Appendix A has been finalized. These regulations were developed by DHS after soliciting input from regulatory agencies, special interest groups and private industry.

"If a chemical facility has more of a chemical than the quantity listed in Appendix A, they will be required to submit critical information to DHS 60 days after Appendix A has been finalized."

Both the final interim regulations and Appendix A can be found at http://www.dhs.gov/xprevprot/laws/gc_1166796969417.shtm.

Determining if your facility must complete a Security Vulnerability Assessment and Site Security Plan

This information will be submitted to DHS using a web-based interface called the Top Screen. Based upon the information provided by the chemical facilities, DHS will determine whether or not a given facility is subject to completing a Security Vulnerability Assessment (SVA) and a Site Security Plan (SSP). Facilities failing to submit Top Screen information will be presumptively classified as "High Risk". "High Risk" facilities will be the first required to submit a Security Vulnerability Assessment (SVA) and Site Security Plan (SSP). In addition to collecting chemical inventory data, DHS may later choose to group facilities into categories (i.e.: Ammonia Refrigeration, Petrochemical Refineries, etc.) but are not grouping them yet. Not all facilities will be required to develop an SVA and SSP – only those notified by DHS will have to complete the process. If a facility is determined to be a high risk facility, they will be categorized in one of four Tiers. To register your facility and begin the Top Screen process, point your web browser here: http://www.dhs.gov/xprevprot/programs/gc_1169501486197.shtm.

Currently, the Chemical Security Assessment



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Tool (CSAT) is the only listed method for conducting SVAs (although DHS may choose to approve others in the future). (In the proposed regulations from December, this methodology was referred to as RAMCAP.) Although the CSAT SVA methodology specifies that studies can be either scenario or asset based, it leans towards an asset based analysis. The methodology appears (to us) to determine a facility's vulnerabilities based upon what the facility contains, versus analyzing probable threat scenarios to the facility. One point of interest for facilities that have completed safety studies or that may have already completed security assessments, is that the risk rankings used by this methodology differ from those normally used in chemical Process Hazard Analyses (PHAs). For Likelihood, DHS states that "international terrorism is possible at any facility . . ." so it seems as if the probability of attack from a terrorist should be 100%. The scale for determining the severity of consequences differs as well. Normally, a chemical facility's highest severity is a single death. The CSAT methodology has anything less than 100 casualties as a "low" classification, giving it a 1 on a scale of 1 to 10.

From a practical perspective, the SVA should be completed as a team-based study. Required members include a Facilitator, Operator, and Engineer as in most safety studies. The new regulations add the requirement of a representative knowledgeable in Security and if required, outside subject matter experts may also augment the team.

Performing the SVA

The first step performing an SVA according to the CSAT methodology is characterizing the facility's assets. An asset is basically anything that could be used to impact the public, or that could be stolen from the facility and used elsewhere. Assets include physical assets (inventory, equipment), personnel, information, support processes, etc. Once the facility's assets have been identified, the team develops scenarios (in relation to assets present at the facility - The methodology states that scenarios may be defined, but starts the description by saying that ". . . each asset must be reviewed . . .") The team proceeds similar to a PHA (developing Causes, Consequences, Severities, Safeguards, and Likelihoods). The threats that a facility will need to protect against will be stipulated by DHS.

Similar to a PHA, each scenario will be ranked according to a Risk Matrix (A sample is provided in the original proposed regulations.) As mentioned before, this Risk Matrix differs from traditional Safety-related Risk Matrices in severity/likelihood. Once the team has determined the risk of each scenario, they can identify "countermeasures" (in a PHA, these are called "recommendations") to reduce the likelihood or severity of the scenarios. Countermeasures fall into four categories: Deter, Detect, Delay, and Respond. (Note that countermeasures that "Mitigate" the event are not listed in the categories the regulations describe.)

Once DHS notifies a facility that they will have to complete a SVA and SSP, the facility has 90 days to submit the SVA to DHS. Based upon our experience of the effort required in completing safety studies for chemical facilities, we highly recommend a facility starting this process before DHS notifies them that they need to begin. Three months isn't much time to

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Accident Investigation: Solving the Mystery

by Chuck Paulausky, CHMM

The first time the German three-year-old got behind the wheel of his father's Honda, he took the keys to the car, stuck them into the ignition, and plowed into a Toyota. The child was fine, but the accident caused \$8700 damage. A TV crew (including the boy's father) reported on the story four days later. They reconstructed the incident, placing the boy behind the wheel for a camera shot. Yes, the keys were in the ignition. This time there was only \$1700 damage. (Reuters)

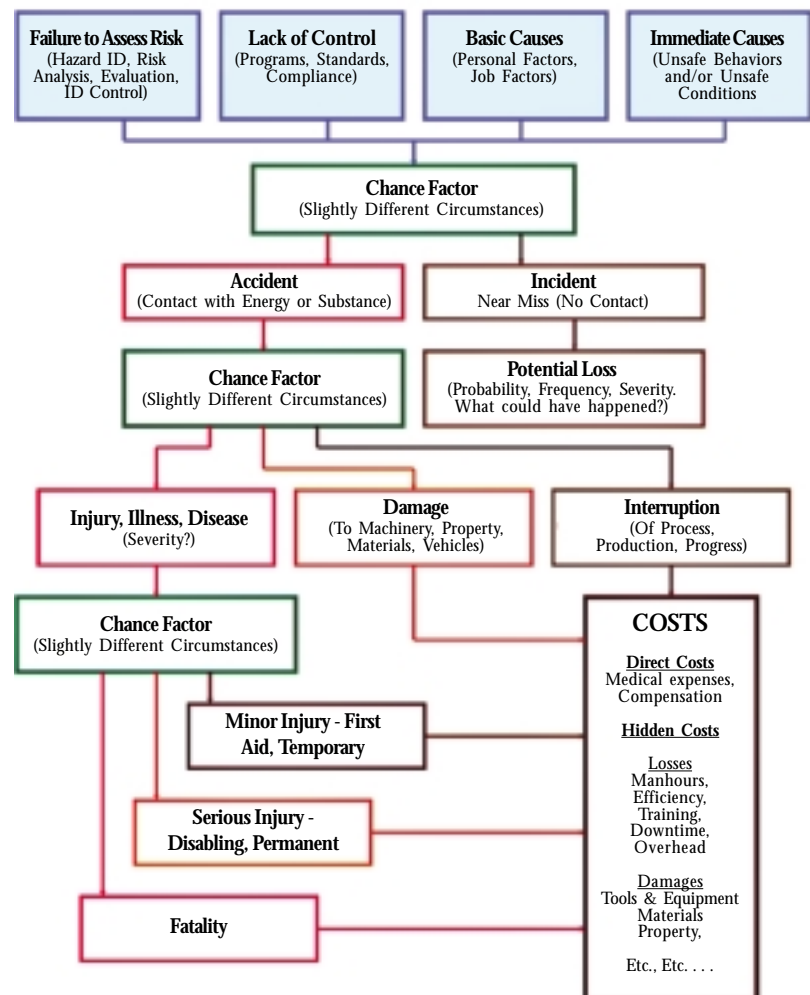
Accidents happen, and most accidents can be prevented. If someone had paid attention to WHO left this 3-year-old unattended, WHAT caused the accident, WHEN the car was left open, WHERE the keys had been left allowing the child access, WHY the car was unlocked, and HOW the child got out of the house and into the car, this would not have happened twice! If someone had given the possibility any thought, it wouldn't have happened the first time.

But when accidents happen, one of the best ways to prevent re-occurrence is to learn from them by performing

a thorough, detailed investigation. An effective investigation will go the extra mile by identifying causes and corrective actions. Here are some basic rules that will help make the process more effective:

- Start the investigation as soon as possible. Witnesses will be able to recall more while it's fresh in their minds.
- Enlist the help of others to perform the investigation. Supervisors can and should play a key role. They will have more insight into the people and processes involved. You can also use members of your

Loss Cause & Effect Model



Safety Committee for this. It's important to provide investigation training for those employees who will fill this role.

- Be careful not to place blame and point fingers. This can put people on the defensive and make it harder to get to the facts. Remember, the purpose is to find fact, not fault.
- Ask the right questions. There are six basic questions that you need to get answers to: Who, What, When, Where, Why, and How!

The questions that you ask will help you determine causes, identify corrective actions, and most important: **PREVENT RE-OCCURRENCE!**

WHO . . .

- was injured?
- witnessed the incident?
- was working with the injured employee?
- had instructed, trained, assigned work to the employee?
- else was involved?

WHAT. . .

- was the injury?
- was being done at the time of incident?
- tools or machinery were being used?
- operation was being performed?
- instructions had been given?
- safeguards were necessary?
- protective equipment was required and used?
- did witnesses see?
- did others do to contribute to the incident?
- problems or questions were encountered?
- safety rules were violated?
- safety rules/procedures are needed?

WHEN . . .

- did the incident occur?
- did the employee begin the task?
- was the employee assigned to the task?
- were hazards pointed out to the employee?
- did the Supervisor last check the employee's progress?
- did the employee notice something was wrong?

WHERE . . .

- did the incident occur?
- was the employee at the time of incident?
- was the Supervisor at the time?
- were co-workers at the time?
- were other persons involved at the time?
- were witnesses when incident occurred?
- else does this condition exist?

WHY . . .

- was the employee injured?
- did the employee or others behave that way?
- wasn't protective equipment used?
- weren't specific instructions given to the employee?
- was the employee in that position/place?
- was the employee using that machine or tool?
- did the employee continue working under the circumstances?
- was the employee allowed to continue?
- wasn't the Supervisor there at the time?

HOW . . .

- was the employee injured?
- could the incident have been avoided?
- could co-workers avoid similar incidents?
- could the Supervisor have prevented it?

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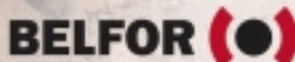
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Accident Investigation: Solving the Mystery

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Once you have gathered information, it's time to determine the causes. Causes of accidents usually can be identified and are almost always preventable; how bad they are is sometimes a matter of chance.

Many accidents are caused by one of two things: Unsafe Behaviors or Unsafe Conditions. However, there are other causes to consider. The Loss Cause and Effect Model takes into account these other causes, and factors in the element of chance.

CAUSES OF ACCIDENTS

Failure to Assess Risk

There are steps that a company can take to prevent accidents up-front. Job Safety Analysis is a good example. JSA is the process of evaluating hazards and conditions to anticipate the causes and effects, and putting preventive measures in place. If the hazards have not been assessed to begin with, injuries are sure to follow.

Lack of Control

This is a matter of failing to implement engineering and administrative controls, such as exhaust systems, lockout/tagout programs, equipment and facility inspections, training programs, PPE requirements, etc.

Basic Causes

This involves the personal side. Things like employee morale, health, and attitude can have an effect on how safe, aware, and alert an employee is. Pressure to get the job done at all costs, can also be a factor that results in taking chances and cutting corners.

Immediate causes

Unsafe conditions. These are those conditions that exist which can lead to an accident. For example, a defective machine guard a slippery floor, a loose railing, poor workstation design, and improper maintenance. These are all potential causes that can be fixed.

Unsafe behaviors. These are the actions that employees take that lead to accidents. For example, failing to wear required eyewear or other PPE, violating safety rules, improper lifting, drug or alcohol abuse. These usually require some employee-related action, such as re-training, or employee discipline.

These causes will have different effects, depending on the chance factor. A near miss from a cause, under slightly different circumstances might have resulted in an accident. That accident, under different circumstances, might result in an injury, damage to equipment or property, or simply an interruption to the operations. Or any combination of these. The injury that results, depending on the chance factor, could be minor, severe, or fatal.

The purpose for identifying causes is to reduce that chance factor and to identify and implement corrective actions to prevent re-occurrence.

Documentation

An accident investigation needs to be more than just filling out an injury reporting form for your worker's compensation insurance company. Too often, the claim forms provided only focus on who got injured and what was the injury; Information for the claim. You

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should find or develop an investigation form that covers all the bases. The form can also include a method of documenting the follow up, insuring that the corrective actions are implemented. And don't forget to include NEAR MISSES; these are the "early warning system" for your accident prevention program. I have used a form that also guides me through the OSHA-recordability process to help determine if it should be entered on the 300 Log.

An effective form provides a guide to the investigation, documentation that you have identified cause and effect, corrective actions and follow-up. All of these combined will help reduce workplace injuries, and reduce the related costs.

Chuck Paulausky, CHMM, is President of CP Safety & Environmental, a Member of the Board of the Arizona Chapter of the Academy of Certified Hazardous Materials Managers, and a member of the Chandler Chamber and AZ Small Business Association Safety Committees. Chuck can be reached at: 480-694-1975, or by email at cpaulausky@cpsafety.net.

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Chemical Facility Vulnerability Assessment: Benson/Melvin

Continued From Pg 7

assemble the resources, perform the SVA and complete the report to send to DHS.

Generating the SSP

Once the team has determined appropriate countermeasures, they will then generate an SSP that will be implemented to reduce the threat from an attack by an adversary. The facility has 120 days from their original notification to submit their SSP. Note that this is only 30 days after completing the SVA. This short time frame is another reason to begin working on the SVA before being notified by DHS.

DHS lists 19 performance standards for the SSP to address:

- Restrict Area Perimeter
- Secure Site Assets
- Screen and Control Access
- Deter, Detect, and Delay
- Secure and monitor the Shipping, Receipt, and Storage of hazardous materials
- Deter Theft and Diversion of potentially dangerous chemicals
- Deter Insider Sabotage
- Deter Cyber Sabotage
- Develop and exercise an emergency plan to respond to security incidents internally (with assistance of local law enforcement and first responders)
- Maintain effective monitoring, communications and warning systems
- Ensure proper security training, exercises, and drills of facility personnel
- Personnel Surety (background checks)
- Escalate the level of protective measures for periods of Elevated Threats
- Address specific Threats, Vulnerabilities, or Risks identified by the Assistant
- Secretary for the particular facility
- Report significant Security Incidents to DHS and to local law enforcement officials
- Identify, investigate, report, and maintain records of Significant Security Incidents and Suspicious Activities in or near the site
- Establish official(s) and an organization responsible for security and for compliance with these standards
- Maintain appropriate records
- Address any additional performance standards the Assistant Secretary may specify

Once the Site Security Plan is received by DHS, they will issue a Letter of Authorization to the facility, letting the facility know that their submission is complete. DHS will conduct a Compliance Inspection to ensure that the facility does meet the regulatory requirements. At that time, DHS will issue a Letter of Approval. In short, the Letter of Authorization lets the facility know that the submission is complete, the Letter of Approval lets the facility know that their plan is adequate.

When it comes to updates, Tier 1 and 2 Facilities are required to update their Vulnerability Assessments every 2 years.

Tier 3 and 4 Facilities are required to update every 3 years. Additionally, any major modifications to the facility will require that the VA be updated, and a VA audit is required annually. At this point, DHS will not be charging fees required for overseeing this regulation, but they may be required in the future.

Failure to comply / Security information

What if a facility misses their deadline or fails to comply? Facilities failing to meet submittal deadlines and/or who fail to comply with the regulation may be assessed penalties of up to \$25,000/day/violation, or even ordered to cease operations. Note that in these cases, the burden of proof of non-compliance rests with DHS, however the official responsible for evaluating non-compliance will be from DHS.

Some facilities are concerned that their security information might fall into the wrong hands. The regulations provide a new classification of information called "Chemical Vulnerability Information" or CVI. While there are penalties if a federal official (or other party who is privy to this information and has a duty to protect it) releases CVI, at this time, a facility may still release their own information (for example, as part of a public outreach program.)

In conclusion, these new regulations are quite similar to safety regulations that we've seen before, but there are some significant differences of which you need to be aware. The deadlines are much shorter, the methodology is new, and the risks may not match up with what you've seen in the past. Resources will be tight, especially when facilities first begin to implement the regulations and you'll want to be on top of them to make sure that you don't get stuck being unable to finish your SVA or SSP by your deadline. Good Luck!

Stephen R. Melvin is a Professional Engineer and Certified Safety Professional with over 13 years experience in the field of Security, Risk, and Safety. He can be reached by telephone at 951-764-3626, or by email at stephen.melvin@oursafetowns.com

William R. Benson is began working in the Process Safety Field in 1996 and is a 13 year verteran of the US Marine Corps. He can be reached by phone at 509-280-0937, or by email at william.benson@oursafetown.com.

Stephen and William work with SRM Associates, Inc., which works with and trains businesses, municipalities, and communities to prepare for, respond to, and recover from man-made and natural disasters. SRM Associates maintains a website at www.oursafetown.com.

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Sincerely,

Jim Thrush
Publisher
480-422-4430 x42
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Associations Pages



AAI

AAI will hold its annual environmental summit on August 9, 2007 at the Loews Ventana Canyon & Golf Club at 7000 N. Resort Drive in Tucson. The summit will be preceded by a reception the evening of August 8th and followed by the annual AAI Golf Tournament on Friday August 10th. The Golf tournament will also be held at Loews Ventana resort. Sponsorship opportunities are available for both the summit and the golf tournament. Contact AAI President Stuart Banks at 602-252-9415 or Jeff Homer at 480-441-6672 for more information.

*Jeff Homer,
EHS Committee
Chairman*



AAI's 2007 Environmental Summit promises to be packed with timely information about emerging environmental issues affecting manufacturers and industry in Arizona and will be attended by representatives from many industries and companies across the state. Mark your calendars and plan to attend.

Reservation information can be obtained at AAI's web page at www.azind.org or by calling Stuart Banks at 602-252-9415.

**American
Society
of
Safety
Engineers**
Southern AZ Chapter

The Arizona Society of Safety Engineers Southern Arizona Chapter closed the year with the Awards Banquet on May 18 at the Savoy Opera House in Traildust Town in Tucson.

Dave Baker, Safety Supervisor at Tucson Electric Power, was honored as the Safety Professional of the Year. Dave has worked in the safety field for more than 20 years and has been an active member of ASSE. Dave served as the Chapter's President from 2004 to 2006. He also was a founder of the Southern Arizona Safety Council and a driving force in establishing the Chapter's partnership with the University of San Diego OSHA Training Center.

*Shari Di Peso,
Secretary*



The Community Safety Award was presented to Pima Community College's Motorcycle Rider Education Program. Starting in the early 1970's, the Motorcycle Safety Foundation began to develop a research-based curriculum to train both new and experienced riders to improve their knowledge and skill sets to reduce the frequency and severity of crashes. Pima Community College began its formal motorcycle rider education program in 1977. Since that time, the College has taught thousands of riders to learn to operate their machines in ways to reduce risk while maximizing the enjoyment of the mode of travel.

A special Recognition Award was presented to Granite Construction Company for its generous support of the Southern Arizona Safety Council.

**AZ Chapter
Semiconductor
Environmental
Safety & health
Association**

For Info about a
SESHA Membership
please visit us at:
www.seshaonline.org

The Semiconductor Environmental Safety and Health Association (SESHA) held its 29th Annual International High Technology Environmental Safety and Health Symposium and Exposition at the Santa Clara Marriott for the second straight year. The conference hosted 349 registered participants from as far away as the Pacific Rim this year. Captivating speakers presented on a range of topics from high technology manufacturing, nano-science advances and the ever changing environmental regulatory arena. Attendees also enjoyed the beautiful surroundings of the Bay area and various after conference activities.

*Marty Fekete,
President*



The Arizona Chapter of SESH A will hold its' second quarterly meeting on June 14th 2007 at 2:00 pm on the campus of Arizona State University. The meeting will be held at the University Club, located at 425 East University Drive Tempe, Arizona, next to the "Old Main" Building. The quarterly meeting is graciously being hosted by Arizona State University's Center for Solid State Research (CSSR).



*Bob Estes,
President*

It has been a busy year for SAEMS! Our annual RCRA seminar, held on May 17 at the University Marriott, was a success. Elections were held for the new board members for FY 2007/2008. They are: Shari Bauman – President Elect (will be President for the 2008/2009 FY), Sarah Sillman – Vice

President, John Barr – Treasurer (a 2-year term), Sue Dickinson – Secretary, and Pamela Beilke – Communications Coordinator. Jeff Christensen, elected President-Elect last year, will assume the duties as President.

The annual meeting, where the new slate of officers will be installed, will be held at The Manning House, 450 West Paseo Redondo, in Tucson at 11:30 AM on Wednesday, June 27. It has been a challenging year for me as President, especially living in Phoenix and with increasing operational and business development roles at URS. However, I leave with full confidence that the new board possesses the energy, enthusiasm and dedication necessary to move this organization forward.

SAEMS



If you have any questions about SAEMS please VISIT OUR WEBSITE AT WWW.SAEMS.ORG



*Jeanie Merideth
Society Manager*

Greetings from the Arizona Hydrological Society.

AHS is having a very busy year with each Chapter offering interesting and informative meetings. The Flagstaff Chapter has recently held 2 very successful field trips to Bellemont to visit the Bellemont Production Wells. The Phoenix Chapter hosted a Soil Gas Technical Session held at the Arizona

Department of Water Resources. This was a "sold out" event.

The Tucson Chapter has some exciting meetings scheduled this summer. The Fall promises to be even more busy with the 2007 Annual AHS Symposium scheduled in August at the Westin La Paloma in Tucson. Registration is now available online by visiting our web site.

No rest for the ambitious with the 6th International Symposium on Managed Aquifer Recharge that will be held in Phoenix in late October. You may visit www.azhydrosoc.org to find out information on all these events.

Arizona Hydrological Society



please visit the AHS web site: <http://www.azhydrosoc.org>



*Chuck Paulausky,
Board Member*

The Thunderbird Chapter has just completed another CHMM Overview Course. We had seven EHS professionals attend this time, and hope all of them successfully achieve certification.

Special thanks to all those who volunteer their time and expertise in teaching the 26 different modules. The course covers a lot of information and we couldn't get this done without your help!

The Chapter is currently in the planning stages for a CHMMunity Outreach Project. Watch for details!

It's not too late to register for the ACHMM National Conference on August 12-15 in Washington, DC. For information: <http://www.continuinged.ku.edu/achmm/dc07/>

Don't forget the **Thunderbird Happy Hour** on 1st Thursdays, 5:30 PM - ??

The ACHMM/EPAZ monthly lunch meetings are held at the ASU MERCADO, 502 E. Monroe Street (SE of 7th St & Van Buren) from 11:30 ~ 1:00 on the second Thursdays of each month. Meeting details: www.thunderbirdchmm.org or www.epaz.org.

ACHMM Thunderbird



Calendar Items:

- July 12 - Luncheon Meeting hosted in Flagstaff
- July 12 (Tentative) - T-Bird Happy Hour, Flagstaff- Time/ Loc. TBD
- August 2 - T-Bird Happy Hour, Gordon Biersch Brewery, 420 S Mill Ave, Tempe
- August - No Meeting
- August 12-15 ACHMM National Conference, Washington, DC
- September 6 - T-Bird Happy Hour, Four Peaks Grill & Tap, SE Frank Lloyd Wright & Hayden, Scottsdale

Arizona Environmental Strategic Alliance



Websites:

www.azalliance.org

www.reuseaz.org

Contact the Alliance:
480-422-7392

The Alliance, US EPA Region 9, and ADEQ co-sponsored a Performance Track / EMS seminar on April 3rd at the Scottsdale Stadium. Over 100 representatives from Arizona businesses met with and heard presentations from environmental leaders including US EPA Region 9 Administrator Wayne Nastri and ADEQ Director Steve Owens. City of Scottsdale Mayor Mary Manross welcomed speakers and guests to the event. The City of Scottsdale hosted the event and provided guests with a great breakfast and lunch. The Alliance thanks the City of Scottsdale and all those that helped make this seminar possible. *(See related article and photos on page 22.)*

Rob Barnett,
Chairman



The Arizona Resource Exchange program has a new name — it is now called “ReUseAZ” to reflect our emphasis on the *reuse* of materials that would otherwise go to waste. As you may know, Sue Diaz (formerly of the ADEQ Pollution Prevention Unit) is our ReUseAZ program administrator. Sue recently reported that as of April (of the current grant year) ReUseAZ has helped divert 10,583 lbs of various materials from landfills, with a transaction value of approximately \$30,698. If you have materials that might be reusable or recyclable, let us help you. Call ReUseAZ at 602-325-4705.

More news on ReUseAZ — the Alliance is launching a website to support the program, located at: www.reuseaz.org. You will hear more about the new site soon!

EPAZ



Website:

www.epaz.org

Our June meeting featured Katherine Gosiger with Arizona Department of Occupational Safety and Health. She gave our audience a brief OSHA update, presented recent OSHA related-fatalities and frequently cited standards in Arizona.

Our July 12th meeting will be held in Flagstaff. Our plans had not been confirmed at the printing of this article, but we expect to schedule a facility tour and end the day with happy hour at a local pub and a private tour of Lowell Observatory. We recommend staying overnight if you plan to attend the evening festivities.

Eddie Martinez,
President



During the month of June, EPaz members will elect our new officers. Installation of our new Board of Directors will take place in September. Please keep an eye on our web-site for further information.

EPaz holds monthly luncheon meetings on the 2nd Thursday of the month from 11:30 am to 1:00 pm. Cost is \$20 members/\$30 non-members. EPaz also gathers on the last Wednesday 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 Eddie Martinez at (602) 708-9179.

EIA-AZ



EMAIL:
info@eia-az.org

The past month has been spent organizing a series of EIA-sponsored events, seminars and presentations. The current challenge has been putting together the Lunch-on-Lead seminar up in Flagstaff next month. This is a 4-hour seminar spread over the lunch hour 10 a.m. until two p.m. leaving plenty of time for attendees to duck into the office before and after if necessary.

The Lunches-on-Lead feature three to four speakers presenting on the various aspects of lead, lead-based paint, lead poisoning and lead removal/disposal. This event is put on three times per year in Yuma/Tucson, Phoenix, and Flagstaff. Since the next one falls on June 15th, we thought Flagstaff would be a mighty fine place to host the event. The great thing about having multiple speakers is that the subject matter usually contains a little, “Something for everybody and a lot of information for somebody!”

Bill Caveness,
President





Sustainability and Sustainable Development

Nicholas R. Hild, PhD.

The Dilbert School of Management: Lessons in Sustainability

In a recent "Dilbert" cartoon, an employee speaks with his manager:

Employee: *"I have finished my projects, what's next?"*

Manager: *"Make a spread-sheet and track something."*

Employee: *"Track what?"*

Manager: *"I think you'll find it doesn't matter."*

(Scott Adams, "Dilbert", 2007)

The Dilbert cartoon strip quoted above got me thinking about how much of our time is spent conducting "unsustainable" tasks in our workplaces. Within the university, in particular, and most companies and agencies where EH&S professionals work, time-wasting bureaucratic tasks are rampant. The most egregious example that almost everyone can relate to is meetings, meetings, and more meetings—for every reason from the mundane to the most trivial—but, a great percentage of meetings are a drain on productivity and even a morale *downer* that can not be measured in real dollars wasted at the bottom line.

Dilbert raises a very real-world issue—in workplaces and bureaucracies (like University complexes) across the US—where we are frequently asked to perform ridiculous tasks just to provide "management" with new data they can use to cut our funding—what's up with that?

Oh sure, they may call it *information* needed to help them reorganize everything into a more efficient hierarchy but, seasoned professionals recognize the symptoms, the minute a newly minted "manager" arrives and starts pontificating like those "nattering naybobs of negativity..." that former Veep Spiro Agnew talked about in the late '60's—

In bureaucracies, that's called "management" and the

people that *get to* "manage" usually want to start in a new management position by reorganizing something—just to show the underlings that the new boss is in town and—well, mostly, just because s/he can! Such edicts usually involve countless hours of our time and meaningless forms to fill out that take faculty and staff time and generates absolutely nothing of value except more "data" that never gets used. Bureaucracy for the sake of being bureaucratic—or, maybe it's the other way around? No matter—the end result is the same: morale goes down along with productivity.

One department chair I know calls it "*administrivia*" and, in total, it takes a lot of time that otherwise would be devoted to students and course preparation. In an industrial setting, the worker-bee hours wasted results in the same loss of morale and productivity, yet newly minted "bosses" forget all about how they were disgruntled by such administrivia before they made the "team." Somehow, they justify wasting our time, and continue perpetuating the myth that 'busy people are happy people.'

Recently, I have been thinking about all this in the context of *sustainability*. It occurs to me that, in our collective efforts to create an awareness about greening the future and reducing our carbon footprint, our whole mission to *implement* environmental sustainability initiatives is beginning to look a lot like we were trained at the Dilbert School of Management. In academia, we are caught up in the *administrivia* of proving that our research needs more research (i.e. conducting studies to justify more studies) and all we need to accomplish is acquisition of more data—*any* data because, in Dilbert's School, data *acquisition* IS the goal!

Scientists who become "managers" are ill-equipped to argue that their research findings have value except for other scientists who mostly are studying the very same things. Now, make this successful researcher a "manager" and you've just caused a perfectly productive professional to reach his level of incompetence—most have no experience in "managing" anything (except projects) so what do they do? Call meetings, ask for productivity reports, seek "data" about performance indicators (i.e. fill out the forms and reduce the data to a single paragraph summary statement) and, in short, deal with *familiar* "forms" so it appears "management" is really happening!

Dilbert reminds us, however, that what we need to do is take a fresh look at what our responsibilities are, for helping reduce our fossil fuel dependency and making things work in the real world; not just to perform studies for the sake of advancing the theoretical worth of concepts that will be left to the private sector to implement.

Unfortunately, the Dilbert management mentality thrives in academia and workplaces everywhere and that means it is unlikely to change. Just as unfortunately, if we don't recognize the unsustainable Dilbert management style lurking in the shadows soon, we are guaranteeing a bleak future for 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.



Larry Olson, PhD.

It's All About Chemistry

Waste Not, Want Not

World vegetable oil and fat production is over 200 billion pounds per year. Much of this is used for deep frying and disposal becomes a major economic and environmental problem. Approximately 2.5 billion pounds per year of waste oils and fats are collected just from restaurants in the U.S. each year.

It is possible to recycle used vegetable oils into soap or lubricating oils. Some has been used in animal feeds. But much of this used oil is considered a waste. The possibility of using waste vegetable oils and fats as a feedstock for biodiesel production, however, presents another alternative that could decrease our dependence upon fossil fuels, improve air quality, and decrease the cost of wastewater treatment by diverting a pollutant.

As we have discussed in previous columns, fats and oils are triglycerides, where three long chain fatty acids (carboxylic acids up to 18 or 20 carbons long, or even longer) form an ester bond with glycerol. The high molecular weight makes a triglyceride very viscous while increasing its boiling point and flash point. All of these properties make vegetable oil itself unsuitable as a fuel in a compression ignition engine. But reacting a triglyceride with methanol converts it to a fatty acid methyl ester (FAME), otherwise known as biodiesel. The properties of biodiesel are much closer to those of petroleum diesel fuels and they can be used directly or in a blended fuel without modifying a diesel engine.

Most biodiesel currently being produced is made from virgin oils such as soybean, canola, or palm oil and so far the cost has not been competitive with petroleum diesel. But since as much as 78% of the cost of biodiesel can be due to the raw feedstock, a cheaper source such as waste oils or fats could dramatically affect the economics.

The problem with waste oils, especially from deep frying, is that the triglyceride can react with water at high temperatures to form large amounts of free fatty acids (FFA). If the oil contains C=C double bonds, these react with O₂ at high temperatures to produce a variety of oxygen free radicals which can polymerize and change the density, viscosity, and other properties of the oil. The transesterification reaction with methanol is much harder under these circumstances than it would be with virgin oils.

Waste oils can be categorized as yellow grease which can contain up to 15% free fatty acids, or brown grease if the FFA content is higher. Animal tallow can contain from 1-15% FFA. Trap greases can contain 50-100% FFA as well as all manner of other materials. There is no market for these and now they are just landfilled.

Several research groups have reported on techniques to convert oils and fats with high FFA content into methyl esters. The work has focused on different types of catalysts, including e n z y m a t i c catalysts, multi-step processes to try to improve yields, and various pre-treatment steps which separately convert any free fatty acids into methyl esters before the triglyceride is reacted. The biodiesel product from these used frying oils and animal fats has been indistinguishable from that using virgin oil.

So the concept works. Now the challenge is to develop cost effective methods that can be used on a large scale and bring the price down. Who knows? Someday soon you may be eating some McDonalds' french fries while driving your car on last month's used frying oil.



Larry Olson, PhD., Associate Professor, Arizona State University Environmental Technology Management Program. Dr. Olson holds a Ph.D. in Chemistry from the University of Pennsylvania, and is an environmental chemist with interests in remediation technologies and international env. mgmt. He can be reached at 480-727-1499, or by email at Larry.Olson@asu.edu

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news briefs

Clean Harbors to Pay \$45,000 Penalty for Hazardous Waste Violations in S. Phoenix

❖ Arizona Attorney General Terry Goddard and ADEQ Director Steve Owens recently announced that Clean Harbors Arizona, LLC (Clean Harbors) has agreed to pay a \$45,000 penalty for hazardous waste violations at the company's south Phoenix facility.

Clean Harbors operates a hazardous waste treatment, storage and disposal facility in south Phoenix.

ADEQ's hazardous waste inspectors observed several violations of environmental regulations during an inspection in July 2005. ADEQ issued a Notice of Violation to Clean Harbors in September 2005, citing several hazardous waste violations including failure to conduct daily inspections of tanks, failure to transfer hazardous waste from a leaking or compromised container, failure to amend the contingency plan and failure to minimize the possibility of fire, explosion or release of hazardous waste.

Two violations were repeat violations initially discovered during an inspection of the facility in 2004, for which the company received a Notice of Violation in September 2004.

"These were serious violations of our hazardous waste laws," Owens said. "Clean Harbors must ensure that violations like these do not occur again."

"I am committed to enforcing the laws that protect human health and the environment. Companies that violate these laws will be held accountable," Goddard said.

Clean Harbors' Phoenix-based facility is located at 1340 West Lincoln St. The consent judgment is subject to court approval.

S. Phoenix Wood Furniture Manufacturer Agrees to \$40,000 Penalty for Haz Waste Violations

❖ Attorney General Terry Goddard and ADEQ Director Steve Owens recently announced that Trendwood, Inc. has agreed to a \$40,000 penalty for hazardous waste violations at the company's S. Phoenix facilities.

Trendwood, Inc. is a wood furniture manufacturer based in south Phoenix with locations at 2402 S. 15th Ave. and 261 E. University.

"Hazardous waste violations that put employees or nearby residents at risk are unacceptable," said ADEQ Director Owens.

"These violations created significant safety risks," Attorney General Goddard said. "The fact that they are longstanding makes them all the more serious."

ADEQ conducted inspections of both facilities following two fires in April 2001 at the S. Phoenix facility. The fires resulted from improper handling and disposal of filters that were saturated with a nitrocellulose-containing stain. The waste burst into flames inside an improper disposal unit. After the first fire, on April 15, the Phoenix Fire Prevention Unit ordered the company to stop putting waste in dumpsters and to contact ADEQ for assistance on proper handling and disposal. The company failed to do as ordered by Phoenix Fire, and the second fire occurred April 29.

Following the inspections, ADEQ issued two Notices of Violation to Trendwood for failure to perform waste determinations, failure to prevent fires and disposal of hazardous waste without a permit. Trendwood stored unlabeled hazardous waste near an outside break area for employees, and failed to take appropriate precautions to prevent a fire at their facility. Further, the company had been improperly disposing of hazardous waste for several years. The consent judgment is subject to court approval.

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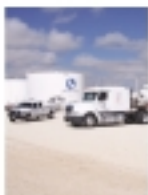
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ARCADIS Business Development Manager Receives President's Award from SESH

ARCADIS announced recently that Arizona Business Development Manager Bernard Frist has been awarded the Semiconductor Environmental, Safety, Health Association's (SESHA) President's Award during their 2007 Symposium Expo in Santa Clara, California.

Frist accepted the SESH President's Award in recognition of his unique performance and significant service to SESH across several years and for his substantial contributions to the fields of environmental health & safety (EHS) in the semiconductor industry. He served as president of the association from 2005 to 2006 and recently completed his second three-year term on the SESH board of directors. In 2006 he was recognized by the SESH board for his outstanding service and leadership.



Bernard Frist, ARCADIS Business Dev. Mgr.

Frist is responsible for marketing ARCADIS's consultancy, engineering and management services to infrastructure, environment and facilities clients in Arizona and select national clients.

ARCADIS is an international company providing consultancy, engineering and management services in infrastructure, environment and facilities, to enhance mobility, sustainability and quality of life. ARCADIS develops, designs, implements, maintains and operates projects for companies and governments.

Bernie Frist can be contacted at ARCADIS at 602-821-9579 or by email at Bernie.Frist@arcadis-us.com.

4 AZ Students win one of 10 President's Environmental Awards

The U.S. EPA recently presented one of 10 national President's Environmental Youth Awards to four Arizona students who give Mahatma Gandhi's famous motto, "Think Globally, Act Locally," a whole new meaning. Sophomore high school students Smitha Ramakrishna, Pooja Ramesh, Amol Lingnurka and Akash Khare follow their own adage that one must "Think and Act Globally and Locally."

"These students are to be applauded for their commitment to making the environment in their communities and across the globe better," said Wayne Nastri, EPA Region 9 Administrator. "Due to their creative work, the environment and communities will benefit for years to come."

After a visit to India shed light on the lack of drinking

water for kids living in slums, the four students, in conjunction with Asha for Education, a non-profit organization dedicated to helping children in India, formed their own Asha Kid's Chapter to raise money for underprivileged children in India.

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The students raised \$5,400 through 3 walk-a-thons that funded 3 projects in India to promote basic education for under-privileged children, and bought and built reverse osmosis systems for schools and neighborhoods. By collecting rainwater and purifying it with the systems, over 3,000 children have clean, potable water.



Former EPA Administrator William D. Ruckelshaus with Students Akash Khare, Amol Lingnurka, Smitha Ramakrishna, and Pooja Ramesh

In addition to helping children in India, the students also began the Arizona Water Activists Karing for the Environment (AWAKE) to aid the Save the Peaks Coalition effort and raise awareness on pressing local water issues in their communities. To support the coalition, the students took four water samples from over thirty lakes and ponds in the range and its drainage area three times over a one-year period. Their data showed the reclaimed water contained high levels of many contaminants, especially coliform. To publicize their findings, the students wrote letters to the governor and other state and local officials.

They collected over 300 signatures against using artificial snow, which is now an ongoing court case. And, as reclaimed water in Arizona is used to irrigate many parks, the students believe that periodic testing of reclaimed water is critical for public health.

Performance Track / EMS Seminar

Over 100 attendees, representing 29 Arizona businesses and organizations participated in an April 3rd Performance Track / EMS seminar sponsored by the Arizona Environmental Strategic Alliance, US EPA Region 9, and the Arizona Department of Environmental Quality.

Performance Track member companies were on-hand to discuss their experiences and offer mentoring assistance to companies considering participating in Performance Track or becoming an environmental leader. Participation in the Performance Track program requires that the organization meet certain high environmental standards. Organizations that qualify



Above: Director Steve Owens, at podium, speaks to seminar attendees



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Above, L to R: US EPA Region 9 Administrator Wayne Nastri, Rob Barnett (Ping), Jim Larson (Intel), ADEQ Director Steve Owens, Scottsdale Mayor Mary Manross, Len Drago (Intel), Sean Aldrich (Intel), Beverly Westgaard (AES), and Jim Thrush (AES).

are rewarded with a growing list of incentives, including, for example, increased storage times for hazardous waste generators, as well as public recognition.

Speakers included US EPA Region 9 Administrator Wayne Nastri and ADEQ Director Steve Owens. The seminar was hosted by the City of Scottsdale at the Scottsdale Stadium facility. City of Scottsdale Mayor Mary Manross welcomed speakers and guests to the seminar.

Copies of the speaker presentations are available for download on the Alliance website at www.azalliance.org.

For more info. contact the Alliance at 480-422-7392.



Above, US EPA Region 9 Administrator Wayne Nastri

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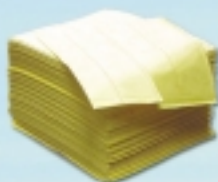
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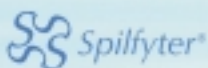
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About AAI

The Arizona Association of Industries (AAI) is the only manufacturing/industrial trade association in the state of Arizona. Founded in 1964, AAI is the National Association of Manufacturers (NAM) state affiliate. In keeping with our mission, AAI and our member companies work to strengthen the economic, social, environmental and governmental conditions that concern manufacturing and allied industries throughout the state of Arizona. The resulting efforts include an enlarged business base, stimulated economic growth and the creation of new jobs.

Loews Ventana Canyon Resort

August 8, 2007 – Cocktail Reception 5:30 PM

August 9, 2007 – Environmental Conference
7:30 AM - 5:00 PM

Loews Ventana Canyon Golf Club - Mountain Course

August 10, 2007 – Registration 6:30 AM

Shotgun Start (Scramble) 7:30 AM

Awards Presentation/Lunch (following tournament play)

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For more information contact Stuart Banks at (602) 252-9415 x 1001 or sbanks@azind.org.





The City of Tucson has Environmental Technicians "Ready for Hire"

The City of Tucson has received a \$200,000 Environmental Protection Agency Brownfields Job Training Grant and is partnering with Pima County Community College (PCC) and the Southern Arizona Environmental Management Society (SAEMS) on this grant project. The City of Tucson is providing job training as environmental technicians to 40 students over three training program cycles.

The Job Training Program includes 163 hours per training cycle, consisting of both classroom instruction and hands-on field training. Each training cycle will comprise 18 weeks of college-level curriculum including:

- 40-hour HAZWOPER certification course
- Asbestos Operations & Maintenance certification
- OSHA for General Industry
- Groundwater and soil sampling
- Environmental site assessments, site characterization and remediation techniques
- Introduction to Environmental Compliance
- Introduction to innovative technologies
- Introduction to Wastewater Sampling

The 2007 Brownfields Job Training class graduated on May 17, 2007

If you are interested in hiring an Environmental Technician or are interested in applying for the Brownfields Job Training Program, please contact Lisa Manzanedo, City of Tucson, Environmental Services at (520) 837-3720 or via email at Lisa.Manzanedo@tucsonaz.gov.

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SAEMS RCRA 2007

The Southern Arizona Environmental Management Society (SAEMS) held its 2007 Annual RCRA Seminar on May 17, 2007 at the Marriott Tucson University Park in Tucson.

Over 200 attendees participated in the two-track RCRA conference, making the event once again one of the most successful and valuable environmental conferences in Arizona. For more information on the conference and SAEMS, visit the organization's website at www.saems.org.





Left, Mario Lattanzio, Right, Dr. Danny Peterson

ASU Student Receives Award

Mario Lattanzio, ASU Graduate Student, was recently presented with the Outstanding Graduate Student of the Year award for the Arizona State University Department of Technology Management by Dr. Danny Peterson.

The award is based upon distinguished academic achievement and exemplary contributions to subject area knowledge. Congratulations Mario!



Clean-Burning Fuel Bus Arrives

Phoenix Public Transit recently celebrated the first arrival of more than 126 new clean-burning fuel buses — a 40-foot bus made by New Flyer Industries. Phoenix Public Transit will welcome 30 60-foot articulated buses and 96 40-foot standard-size buses. The other large buses in the fleet use liquefied natural gas.

Mayor Phil Gordon and Phoenix Public Transit Department Director Debbie Cotton joined Starbucks green apron partners in distributing green Earth Month T-shirts and serving complimentary beverages to passengers as they deboard their morning buses at Central Station in downtown Phoenix.

PROSPECTING:

For Environmental Business

More on Our Changing Market



From my soap box, two Journal issues ago, I discussed how public awareness and opinion is influencing the way business is looking at environmental issues and the potential for huge growth because of it (Feb/Mar 2007). The idea is that the volume of media coverage we see every day relating to conservation, preservation, and responsible care for our environment is being delivered by corporate America, not through public service announcements or non-profits pushing an agenda. This is helping progress our marketplace toward a time of growth driven by public demand for environmental responsibility. In this installment, I'd like to present an interesting example of how philosophies are changing.

There has been an increase in inquiries for our EMS products and services coming from, oddly enough, marketing departments of companies looking to leverage the swelling public opinion in their favor. Interestingly, some of these inquiries come, not from heavily regulated industries, but from companies that simply want to explore the business case for improving their operation by reducing impacts on their surrounding environment and then promoting the results and the effort itself. One company asked us to develop and promote their "green image". A closer look revealed there was little substance behind it and what they really needed was a PR firm. I think this might be going a little far, and companies should remain focused on establishing systems and procedures that produce measurable results and real environmental impact. Then promote it.

This relates directly to the original discussion of how the business of the environment is changing. Imagine five years ago a marketing department in a mid-sized company pushing for an EMS; first, I'm not sure it would have even been considered and second, if it was considered I can only imagine the look on the CEO's face while reading the cost proposal. Now, however, that same CEO might look at things differently. You can argue that marketing exposure is the wrong reason for a company to invest in environmental performance, maybe so. But if an organization truly commits money and resources to *real* conservation and operates responsibly by going "above and beyond" basic compliance, why not brag about it a little?

Thanks for reading and, as always, keep the suggestions coming.

Joe Holmes is National Director of Sales & Marketing with Environmental Data Management. Joe can be reached by email at Joe.Holmes@edm-usa.com



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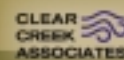
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