

Acton • Mickelson • Environmental, Inc.



May 2007 Newsletter

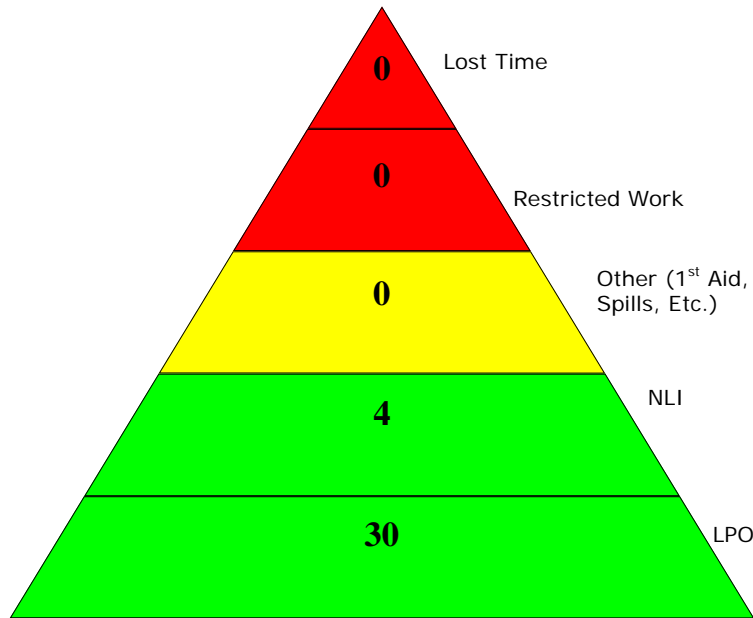
From the President

I welcome the return of our newsletter and encourage everyone at AME to participate in the use of this great communication tool. **Read** the newsletter and

contribute your input. Technical articles, project milestones, safety alerts, and marketing initiative should be shared throughout AME and the newsletter is the perfect vehicle to use.

Safety Matters

2007 YTD (through April)
AME ExxonMobil Field Hours Worked YTD (2007): 1,905



May Health & Safety Summary

For another month "NO ONE GOT HURT." This may sound repetitive, but it is important to recognize such outstanding performance in the field. In April AME performed 6 LPOs while working 580 field hours. That is one LPO per 96.6 field hours, well below the one LPO per 400 field hours that Dr. Jim Bennett cites as a guideline for low-risk field work. NLI production has

tapered off in recent months. This does not mean that potential NLIs are not occurring in the field. So remember to report all potential NLIs to your Project Manager, and the determination will be made by the LPS team whether or not to report the NLI to ExxonMobil. Thank you all for continued safe operations.

Trends Analysis

Production of Near Loss Incident Reports and Loss Prevention Observations is as follows:

| Month | NLI's Produced* | LPO's Produced* | Field Hours Worked* | Field Hours per LPO* |
|----------|-----------------|-----------------|---------------------|----------------------|
| January | 3 | 9 | 283 | 31.4 |
| February | 0 | 6 | 610 | 101.6 |
| March | 1 | 9 | 432 | 48 |
| April | 0 | 6 | 580 | 96.6 |

*Major Projects plus Retail combined

The following table presents the distribution of root causes identified in LPOs.

| LPO Root Causes Identified | January | February | March | April |
|---------------------------------------|---------|----------|-------|-------|
| 1. Lack of Skill or Knowledge | 6 | 1 | 1 | 0 |
| 2. Takes More Time or Effort | 5 | 4 | 3 | 0 |
| 3. Short-cutting tolerated | 0 | 0 | 0 | 0 |
| 4. Procedure Not Followed/No Incident | 3 | 7 | 6 | 7 |
| 5. Lack of or Inadequate Procedure | 1 | 0 | 2 | 3 |
| 6. Inadequate Communication | 0 | 0 | 0 | 0 |
| 7. Inadequate Tools/Equipment | 0 | 2 | 0 | 0 |
| 8. External Factors | 0 | 0 | 0 | 0 |

The following table presents the root cause distribution for NLIs.

| NLI Root Causes Identified | January | February | March | April |
|---------------------------------------|---------|----------|-------|-------|
| 1. Lack of Skill or Knowledge | 2 | 0 | 1 | 0 |
| 2. Takes More Time or Effort | 4 | 0 | 1 | 0 |
| 3. Short-cutting tolerated | 0 | 0 | 0 | 0 |
| 4. Procedure Not Followed/No Incident | 0 | 0 | 0 | 0 |
| 5. Lack of or Inadequate Procedure | 0 | 0 | 1 | 0 |
| 6. Inadequate Communication | 0 | 0 | 0 | 0 |
| 7. Inadequate Tools/Equipment | 0 | 0 | 0 | 0 |
| 8. External Factors | 0 | 0 | 0 | 0 |

Spring & Summer Weather Precautions

By Mike Redfern: The long, sunny days are upon us once again (unless you work out of the Washington office). With the beautiful days also comes the risk associated with working in the sun and heat. Sun exposure, or UV radiation exposure, can occur any time during the day and any season but is most intense during the summer and 2 hours either side of solar noon. Effects of UV radiation on the skin vary from redness to skin cancer and some people are more susceptible to the effects of exposure.

How do we protect ourselves from UV exposure? The best way is to stay inside, but that is not possible. The second best way is to wear clothing that prevents sun

exposure. This can be a hat with a wrap around brim, long sleeved shirt, pants, and closed toe shoes (have you ever burnt the top of your feet? It hurts.). The next step to take is to protect any exposed body parts with sunscreen. A sunscreen with a minimum SPF 15 is recommended but a higher SPF may be more appropriate if you burn easily. Also remember that sunscreen has to be reapplied throughout the day depending on the humidity and amount of sweating that you do.

When working outside in the spring and summer it is also necessary to protect yourself from heat related illnesses such as heat stroke, heat exhaustion, and heat cramps.

The best way to prevent heat stress is to minimize or eliminate heat in the work place. But doing so is

impossible when a task requires outside work, such as ground water sampling. But there are ways to lessen stressful conditions. The first and most important step in preventing heat stress is proper water intake. In the course of a day's work in the heat, a person may produce as much as 2 to 3 gallons of sweat. Because so many heat related disorders involve excessive dehydration of the body, it is essential that water intake during the workday be about equal to the amount of sweat produced. Most people exposed to hot conditions drink less fluids than needed because of an insufficient thirst drive. A person, therefore, should not depend on thirst to signal when and how much to drink. Instead, the person should drink 5 to 7 ounces of fluids every 15 to 20 minutes to replenish the necessary fluids in the body. There is no optimum temperature of drinking water, but most people tend not to drink warm or very cold fluids as readily as they will cool ones. Whatever the temperature of the water, it must be palatable and readily available to the worker.

Rattlesnake Precautions

By Mike Redfern: Spring is here and summer is right behind. With these seasons comes an increased risk of snake encounters and snake bites. Poisonous snakes of one type or another, chiefly rattlesnakes, do exist in all states in which AME has a work site.

There are ways to treat a snakebite where medical attention will take an hour or more to get to the victim. The first step to take when treating a snakebite on yourself or someone else is to call 911 immediately. There are several things to do while waiting for medical attention, such as: calm the victim,



gently wash the area with soap and water, remove any jewelry or clothing that may constrict swelling, apply a cold, wet cloth over the bite if possible, and wait for medical attention. Several things to avoid are: application of a tourniquet, packing the bite in ice or water, cutting the wound with a knife or razor, sucking out the venom by mouth, or letting the victim drink alcohol.

Eric Chase adds: In many years of field work in the West I have encountered rattlesnakes in electrical vaults, above-ground utility boxes, under pallets, under plywood and corrugated metal sheet goods lying flat on uneven ground, under parked vehicles, in tall grass, in short grass, and in rocky terrain. Pretty much anywhere mice, lizards, and other small creatures can live and feed, you may encounter rattlesnakes. A myth about rattlesnakes is that they are not active in winter months. While it is true that snakes are less active in cold weather, they can be active in winter as well as the other seasons, particularly in milder southern climates. Another myth is that juvenile rattlesnakes have more potent venom than adult rattlesnakes. The venom is the same, but a juvenile rattlesnake may lack the muscular control to retract after a strike, and is therefore more likely to remain on you with fangs sunk in, in which case venom is continually pumping into you by reflex, resulting in a more serious envenomation than with the quick strike of an adult snake. Another caution, if you do encounter a rattlesnake, do not move quickly, but instead move slowly away so as not to trigger the striking impulse. Rattlesnakes are provided by nature with very effective camouflage, and are very hard to spot, especially as it is in their predatory nature to lie very still. Be aware at all times of where your hands and feet are, as the hiding places of these animals will definitely surprise you!

A rattlesnake was recently discovered in the dumpster enclosure at the El Dorado Hills office. The snake was captured by Ramirez Rattlesnake Control and will be released in a remote area. A video and pictures are posted on the FTP site for all to see and hear. Pay special attention to the sound of the rattles; if you hear this while outside, move in the opposite direction.



Submissions for NGWA Meeting

AME has submitted two abstracts for the upcoming National Ground Water Association (NGWA) meeting in Houston this fall.

Enhanced MTBE Degradation and TBA Production Resulting from Ethanol Releases at an Operating Retail Service Station

Barbara Mickelson, Acton • Mickelson • Environmental, Inc.

Jeffrey A. Johnson, Ph.D., Acton • Mickelson • Environmental, Inc.
Timothy Strawn, ExxonMobil

Abstract: Although the use of MTBE as an additive in gasoline has recently been reduced, it remains a widespread contaminant in the subsurface. Under anaerobic conditions, MTBE may partially degrade to tert-butyl alcohol (TBA), a compound that is more soluble and more difficult to remove from water than MTBE. Recent studies indicate that releases of ethanol

into the subsurface produce strongly anaerobic conditions. Concerns exist that recent releases of ethanol-enriched gasoline may act to promote the transformation of remnant MTBE to TBA. This paper documents data from a retail site, which include stratigraphic information, vapor and ground water sample results, and isotopic analyses, that indicate releases of ethanol have enhanced the degradation of MTBE and production of TBA.

The site is an active retail facility characterized by a perched ground water unit approximately 45 feet bgs. Low levels of MTBE were reported in perched zone samples from November 1997 to February 1999, prior to the introduction of ethanol. TBA was not reported in ground water samples collected during this period. Elevated TBA to MTBE concentrations were initially detected in site wells in April 2005 with concentrations of MTBE up to 17,000 ug/L and TBA up to 160,000 ug/L. Elevated concentrations of TBA relative to MTBE are observed in samples from monitoring wells nearest the USTs, the likely source of the ethanol. Similar trends are not observed in samples from monitoring wells distant from the USTs. In 2006 ethanol was detected in soil vapor and perched ground water. Vapor phase ethanol appears to have migrated within the vadose zone and dissolved into perched ground water enhancing the degradation of MTBE to TBA. Isotopic analyses of samples from monitoring wells nearest the USTs indicate that MTBE degradation is occurring while samples from the distant monitoring wells indicate MTBE degradation has not occurred.

Approaches to Evaluate Impacts at a Public Drinking Water Well

Jeffrey A. Johnson, Ph.D., Acton • Mickelson • Environmental, Inc.
Shari Lin, Acton • Mickelson • Environmental, Inc.
Barbara Mickelson, Acton • Mickelson • Environmental, Inc.
Timothy Strawn, ExxonMobil

Abstract: Technically evaluating future impacts from contaminants released within the capture zone of a public drinking water wells is one of the most important analyses conducted by environmental professionals. The results of these analyses are critical as they are the basis for determining remedial strategies, capital and operating costs, implementing timing, and preventing potential impacts to human health. The analyses are particularly critical when uncertainty exists in characterization of the contaminant mass and distribution and the remedial options are limited. This paper documents how an understanding of fundamental aspects such as plume geometry and travel time calculations can provide value to sophisticated approaches such that a high level of certainty can be obtained in determining the magnitude of future impacts at a public drinking water well field.

The case study well field is impacted by dissolved MTBE and TBA in a stratified sand and silt aquifer. Impacts at the well field were first detected in the

early 1990's at which time the well field was shut-down and characterization efforts were initiated. A series of wells were installed downgradient of the well field to capture dissolved mass in the vicinity of one of the source areas. Although the capture network extended over 150 feet wide, it was recognized that it would extract all of the dissolved mass.

Technical analyses were conducted to determine the potential dissolved concentrations that would impact the well field upon start-up to enable the design of a treatment system. An appropriate design required understanding of the peak, duration and location of the contaminants entering the well field. To address these issues, a series of different and in some cases independent methodologies were applied ranging from simple back of the envelope calculations to advanced reactive flow and transport numerical models and 3-D visualization.

New Field Equipment

By John Shaal: The Vancouver office recently purchased a portable scanner which can be used with a laptop in the field. The scanner is a Scanshell 2000NR and is capable of scanning business cards up to legal document size.

I have scanned approximately 50 individual pages since the purchase and have found the resolution to be very good (resolution is adjustable to control file size) and in conjunction with Adobe Acrobat a pdf file can be generated and emailed via your laptop. The scanner is not a high production unit (approximately 3 B&W pages per minute), but for scanning a few field forms it is adequate. A big advantage to this unit is that it is powered via your laptop's USB port and is not battery operated. It is very small and only weighs 12 ounces which makes it easy to carry with you.



Reminders

From John Matthey: I would like to remind everyone that the ASTM Standards that Ellen emailed a few weeks ago are tremendously useful. They cover just about everything and are very applicable to what we do. They are hands-on, user friendly documents.

Drilling Presentation

Written by John Matthey: RSI Drilling and the Adventus Group hosted a short seminar and field demonstration on Friday, May 18. RSI displayed several of their direct push and injection drilling tools including a new grout/soil amendment injection system. Also briefly displayed was a new limited access drilling rig. The rig is mounted on rubber tracks and has direct push and hollow stem auger capabilities. Depth of penetration can be expected to vary depending on materials drilled but considering the light weight of the rig, shallow projects in tight spots will be it's best use. The dimensions are five feet wide by eight feet long and 15 feet tall with the mast extended. The operator walks along next to the rig and steers by using a remote radio control.

The Adventus Group is an international company specializing in remediation products. Dr. Alan Seech, CEO and Director of Technology, explained some of the aspects of their product EHC which is a hybrid of Daramend, products used to remediate soil contamination. For additional information on Adventus please see www.AdventusGroup.com.



GPS - 101

Written by Tom Carroll: This is written for those individuals who are interested in learning to operate the Trimble GPS hand held unit and Laser Range finder. We have used this technology to collect data for incorporation into databases. The use of data dictionaries for this purpose is very important. We have used data dictionaries at the former Georgia-Pacific site in Fort Bragg and most recently at the Port of Oakland.

Instructions have been assembled that cover the field operation of both the GPS unit and the Laser Range Finder. The Laser is used in conjunction with the GPS unit for collecting offset data points. These instructions cover the basic operation of the equipment including: file preparation, data management, the collection of data points including the use of offsets, as well as trouble shooting problems encountered and the fixes implemented in the field.

How to navigate has been updated and field tested. To hone your navigation skills, a navigation course has been set up around the EDH office containing 15 locations.

The initial instruction will take approximately one to two hours for practice in learning the techniques needed to use the equipment.

Quotes

"If you are never scared, embarrassed or hurt, it means you never take chances." - Julia Soul

"The real winners in life are the people who look at every situation with an expectation that they can make it work or make it better." - Barbara Pletcher

Humor

Submitted by Ellen Frosch:

