



## OUR 2 CENTS

### FAST FACTS ON FREEPUMPLoan™



**Mary Unangst**  
Senior Vice President

Like all good ideas, FreePumpLoan™ started as a few scribbles on the back of a cocktail napkin during a plane ride in July 2000. We were trying to come up with another program that would be beneficial to our clients, and we knew—from speaking with many of you—that inexpensive access to sampling pumps would be a great help.

We felt that the two key aspects of this program should be “free” and “guarantee”—as in, we’d have pumps available to borrow whenever clients called. This guarantee changed our napkin idea into FreePumpLoan.

We started with seven used pumps and rented additional ones when we needed to fill your orders. Early on, a client ordered 40 pumps—unheard of at the time for us—but we bought, begged and borrowed to fill this order. That proved to our clients *and us* that we could pull this off, and a program was born!

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## IN THE SPOTLIGHT

### THIS WEEKEND WARRIOR DOESN'T HAVE TO BE A WEEKEND WORRIER

EnSafe Inc., as you might imagine from the name, is a company that has made the environment and safety its business. A large part of that business is safety and industrial hygiene consulting for a variety of clients across the country and overseas, including many governments.



**Steve Skipper**  
EnSafe, Inc.

Since municipalities and many companies work five-day weeks, they have to confine their maintenance to that little window that creeps up after Friday, known as the weekend. Problem is, that window closes abruptly before the start of work Monday morning, so these clients rely on the expertise of EnSafe to get all necessary monitoring done in a timely fashion. With so much at stake, however, there’s no such thing as fashionably late.

That is why EnSafe, headquartered in Memphis, TN, relies on Galson Laboratories.

“Basically, if we need something done,” says Steve Skipper, senior

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## FEATURED INSTRUMENT

### MULTIRAE PLUS



The MultiRAE Plus combines a PID (Photoionization Detector) with the standard four gases of a confined space monitor (O<sub>2</sub>, LEL, and two toxic gas sensors) in one compact monitor with sampling pump. With more than 10,000 units in the field today, its versatility makes it the gas meter of choice for some of the highest profile HazMat/WMD teams in the United States. The MultiRAE Plus is quickly and easily changed from a sophisticated technician instrument to a simple text-only monitor. The same monitor can be used as a personal monitor, a hand-held sniffer, or as a continuous operational area monitor.

The MultiRAE Plus can be used in a number of indoor air quality applications and is particularly adept at confined space applications as found in the mining and petroleum industries and public works organizations that test and evaluate sewers, underground piping, etc.

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In our second year, we improved the pump packaging that made it much easier to ship back and forth with a reduced risk of damage. As we progressed, we had to allocate more dedicated physical space to house all of our pumps, batteries, chargers and accessories, and we've continued to hire more people to maintain the equipment and fill orders. We're currently working on improving the performance of our pumps, batteries, chargers and accessories. With the amount of equipment we now have and the quick turnaround times required, we are developing a better testing program, which we will implement shortly. Your feedback from FreePumpLoan surveys has helped us tremendously to pinpoint areas for improvement. Please keep sending your feedback!

We're now in our seventh full year with FreePumpLoan and the numbers are staggering. We now have over **1,300 pumps** and we'll send out **23,000 pumps** to clients this year!

With growth, however, come challenges. One of our biggest is turnaround; getting pumps back in a timely fashion, maintaining them, and then getting them out to new clients quickly and accurately. Even with the number of pumps we now own, we often have no pumps on our shelves as we work to fill your orders every day.

When you use FreePumpLoan, we simply ask you to keep a couple of things in mind:

- **Order pumps when you need them and when your sampling event is imminent.** If circumstances change after your order is sent and the sampling event is delayed, we'd appreciate if

you could send the pumps back to keep them available; we'll send them *right* back to you when you're ready to sample! (We know this means extra shipping costs to you, but we'll work with you on this; having the pumps available to clients is critical.)

- **Please ship the pumps back to us when your sampling event is done by two-day courier service or sooner, as outlined in the program, and please do so as soon as possible.** There's no additional cost to clients for keeping pumps longer, and sometimes we have a little difficulty getting our pumps back on a timely basis.

Thanks, as always, for your business *and* for your help in making this program a success for us and you, our clients! For more information on FreePumpLoan, go to [www.galsonlabs.com](http://www.galsonlabs.com) or call us at **888-432-5227**.



project manager, "Galson has always been able to rise to the occasion."

Those occasions involve a wide variety of analytes. EnSafe often uses Galson for hexavalent chromium and silica analysis, among many others. Perhaps more importantly, such occasions involve a wide variety of people. During outages, there are several activities such as cleaning, equipment repairs, welding, painting, confined space entry and even asbestos exposures in older plants. Since a lot of subcontractors are brought in, plant liability becomes a significant issue. These folks are usually monitored at each outage, and while they are working, they're required to wear respirators until it is determined that air levels are below criterion levels.

#### "I can't say enough"

During his career, Skipper has been impressed with Galson. "Their overall responsiveness and service to their clients sets them apart," he says. Part of that responsiveness takes the form of Tonya Lancaster, Skipper's client service representative in the Charleston office. "Tonya is one of the best customer reps in any of the labs we use," says Skipper. "I can't say enough good about her. I have worked with Tonya for more years than either of us would like to admit."

EnSafe performs many other services as well. For example, they conduct compliance audits, and work with clients to rectify OSHA audits after the fact; and sometimes they need something that Galson simply doesn't do. Lancaster's service instincts always prevail. "If it's something we need and they don't do it," says Skipper, "Tonya can point me in the right direction."

## IN THE SPOTLIGHT *continued from pg 1*

Most of the time, of course, the situation is more like a weekend she recalls from the end of last year, when EnSafe had a mad rush of analyses needed over the weekend. “We would receive samples on Saturday,” she says, “provide results on Saturday and even Sunday, and I would follow up to make sure they got their data and it was understood.”

It’s a story that underscores Tonya’s and Galson’s philosophy about client service: we’re here for our clients, *seven days a week*. And that’s something Steve Skipper and the good folks at EnSafe *already* understood.

## FEATURED INSTRUMENT *continued from pg 1*

Two of the available gases (LEL and oxygen) for the MultiRAE Plus are options that can be turned on or off but are not interchangeable. The PID feature is also an option but is not interchangeable. Any two of the gases (NH<sub>3</sub>, CO<sub>2</sub>, HCN, H<sub>2</sub>S, NO, NO<sub>2</sub>, SO<sub>2</sub>) are interchangeable based on sensors that are installed. Please make sure to indicate your required configuration when you order. Based on our experience, the most common configuration for confined space monitoring is a 4-Gas Monitor with LEL, O<sub>2</sub>, CO and H<sub>2</sub>S. A PID option can be added to this configuration to form a 4-Gas Monitor with PID (or 5-Gas Monitor).

Some of the key features of this instrument are:

- O<sub>2</sub>, LEL, PID, and any two plug-in “smart” toxic sensors: CO, H<sub>2</sub>S, SO<sub>2</sub>, NO, NO<sub>2</sub>, Cl<sub>2</sub>, HCN, NH<sub>3</sub>, PH<sub>3</sub>
- 0-2,000 ppm measurement of VOCs (volatile organic compounds) with 0.1 ppm resolution

## FEATURED INSTRUMENT *continued from left*

- Measures more chemicals than with any other PID: With over 60 Correction Factors built into the MultiRAE Plus memory and the largest printed list of Correction Factors in the world (300+), RAE Systems offers the ability to accurately measure more ionizable chemicals than any other PID!
- Drop-in Battery: When work schedules require putting in more hours than the 14 hours supplied by the advanced Lithium ion (Li-ion) battery.
- User friendly screens make it easy to use for simple applications and flexible enough for sophisticated options.
- Rugged Rubber Boot assures that the MultiRAE Plus survives the bumps and knocks of tough field use.
- Strong, built-in sample pump draws up to 100 feet (30m) horizontally or vertically.
- Large external filter and automatic low flow alarm protect the MultiRAE Plus from damage.
- Large keys are operable even with three layers of gloves.
- Easy-to-read display with backlight.
- Store up to 80 hours of data at one minute intervals for all five sensors for download to PC (with the optional datalogging).
- Loud audible alarm that varies for different alarm conditions.

## HERE’S WHAT YOU ARE SAYING

### About Galson’s FreePumpLoan™ Program

“I have used Galson several times. Everything always arrives as requested. Staff is very friendly and helpful.”

*Erik Irwin, AG Aegis Co.*

“Great service, always available for info and advice. Thank you!”

*Phyllis Low, All-Tech Environmental*

“As usual, user friendly and great quality.”

*Greg Ertel, Arcadis*

“I feel confident that the program benefited my sampling and I love the quality of the equipment that was utilized.”

*Brian Jackson, Colden Corporation*

“This program is very convenient and the customer service is excellent.”

*Tom McClintock, Montenay Islip*

“Your services help us manage project costs that can’t be passed on to our clients. The equipment is always on time and in good condition. A service I can rely on!”

*Sandford Eguchi, Eguchi & Associates*

“Service is always great and shipments always arrive on time.”

*Deborah Kravatz, Avogadro Environmental*

“Always a great experience, very fast and professional, highly knowledgeable.”

*Jay Schwall, Stephen B. Ogle & Associates*

## MONITORING SOLUTIONS

### ISOCYANATES—CHOICES AND MORE CHOICES

Have you ever gone into a restaurant and after looking at the menu said, “There are just too many items to pick from, what should I do?” Well if you have, this may be how you feel about sampling for isocyanates. There are many different isocyanate compounds, different chemical forms, and they exist in different physical forms. Many methods have been developed in response to the wide variety and types of isocyanates. What is a health and safety professional to do?

Isocyanates are a group of low molecular weight aromatic and aliphatic compounds containing an isocyanate group (-NCO). They are the raw materials from which all polyurethane products are made. They are used in the manufacture of flexible and rigid foams, coatings such as truck bed liners and elastomers. The most common isocyanates found in the workplace are MDI, TDI, IPDI, HMDI and HDI.

In the workplace, isocyanates exist primarily as:

Monomers—single isocyanate molecular compounds or

Oligomers—a finite number of monomer units—usually 2 (called dimers) or 3 (trimers).

Depending upon the application of the isocyanate product, the individual isocyanates can be airborne as a gas, aerosol, or both.

Now you can see the menu analogy. There could be five or more different isocyanates present. They may exist as monomers, oligomers, or both, and they can be in a gas or aerosol physical form. The good news is that there are laboratory

methods available to handle any of these conditions. So how do you choose which method is the most appropriate for the type of isocyanate present?

First, let’s categorize and compare methods. Table 1 gives a brief comparison of the most common isocyanate methods. All of the methods use a derivatizing reagent, either as impinger solutions, treated filters or treated tubes. This helps stabilize the isocyanates after collection and prevents the loss of the isocyanate during shipment to the laboratory.

Each of the methods listed in Table 2 has a place in sampling for isocyanates, but each method has its own advantages and disadvantages. In some cases there may be two or more methods that would be appropriate for a sampling event. In those cases, you may want to choose the method that has the highest ease of use in the field or greatest sample stability.

As with any sampling method, not only must the sampling requirements be taken into account, but also any special shipping and handling

procedures. This is especially true with isocyanate samples.

Temperature, light and potential spillage or breakage of the samples during transport will need to be accounted for. Table 3 shows shipping and handling requirements of the various isocyanate sampling methods.

So how do we navigate through this menu of isocyanate sampling methods?

Step 1—Use the tools available to determine what sampling needs to be done. That is, look at the MSDS sheets for the products being applied. If this is a re-sampling event, look at past analytical sampling reports from the laboratory. If the reports cannot be found, call the laboratory and request another copy. You can also make use of the company’s chemical inventory to see what products are being used and in what quantity.

Step 2—After determining what isocyanates are present, you will need to determine what chemical form they will take in the atmosphere. Will they be monomers, oligomers, or both?

Step 3—In what physical forms will the isocyanates manifest themselves?

Table 1

Method	Media	Analytical Method	Monomer	Oligomer	Vapor	Aerosol	Detection limit	STEL	Isocyanates Listed
OSHA 42/47	1-2PP coated GFF	HPLC	yes	no	yes	yes	0.1 ug to 0.3 ug per sample	yes	TDI, MDI, HDI
NIOSH 5521	1-2MPP in Toluene	HPLC	yes	yes	yes	no	0.1 ug per sample	yes	TDI, MDI, HDI, NDI
ISOCHek	PTFE filter, GFF Treated with MAMA	HPLC	yes	yes	yes	yes	0.03 ug per sample	yes	TDI, MDI, HDI, IPDI
OSHA 18	nitro reagent in Toluene	HPLC	yes	no	yes	no	0.02 ug sample	yes	TDI, MDI
NIOSH 5522	Tryptamine and DMSO	HPLC	yes	no	yes	yes	0.1 ug to 0.3 ug per sample	yes	TDI, MDI, HDI
NIOSH 2535	n-4nitrophenyl methylamine treated tube	HPLC	yes	no	yes	no	0.1 ug per sample	yes	TDI, HDI
NIOSH 5525	MAP filter or MAP impinger or both	HPLC	yes	yes	yes	yes	0.017 ug as HDI	yes	TDI, MDI, HDI, HMDI, NDI, IPDI
OSHA Oregon 01010	MAMA treated filter and MAMA impinger	HPLC	yes	yes	yes	yes	0.2 ug monomers 0.2 ug oligomers	yes	TDI, MDI, HDI, IPDI

Will they be applied as aerosols, gases, or mixtures of both?

Step 4—Now that the information about the isocyanates is determined, the decision on how many samples, type of samples (area or personal), and whether or not to collect TWA or STEL samples or both, can be made.

Step 5—Finally after all the above information is gathered, any shipping

and handling issues, hold times, ease of use in the field, and worker acceptance can be factored in.

Isocyanate sampling is not as straightforward as other airborne contaminant sampling, like lead or benzene, but it need not be that complicated. Use the charts and the five steps above and you'll better manage isocyanate sampling.

Table 2

Method	Ease of Use in Field	Interferences	Media Stability	Sample Stability	8 Hour Sampling
OSHA 42/47	Easy	Anhydrides, Amines,	6 months Keep cold	At least 18 days from collection	No up to 4 hrs
	Uses filter	Alcohols			
	Must sample open face	Carboxylic acids			
NIOSH 5521	Difficult	Same	Unknown	Unstable Even if kept cold less than 7 days	Yes
	Impinger with 1-2MPP in Toluene		Impinger solution is difficult to make		
	Transfer to vials in field		Purification required		
ISOCHCK	Ship cold	Same	6 months	3 months	No up to 30 min
	Moderate				
OSHA 18	Transfer 1 filter to Toluene stabilizing solution	Same	30 days Protect from light, Keep cold	18 days	No 20 min
	Difficult				
NIOSH 5522	Impinger with Nitro reagent in Toluene	Same	6 months Protect from light	28 days	No up to 6 hrs
	Difficult				
	Impinger with Tryptamine/DMSO				
NIOSH 2535	Area sampling only	Same	Very unstable Protect from light	14 days	No up to 1.5 hrs
	Moderate				
	Coated tubes				
	Must be protected from light				
NIOSH 5525	Unstable	Same	6 months Protect from light, Keep cold	Once extracted 3 months	Yes
	Easy-Filter only				
	Difficult-Filter with impinger solution of MAP				
OSHA Oregon 1010	Difficult	Same	2 weeks	2 weeks	No up to 45 min
	MAMA treated filter and MAMA impinger				

Table 3

Method	Post Sampling Requirements	Potential Problems
OSHA 42/47	None	None
NIOSH 5521	Transfer impinger solution to vials ship cold	Loss of sample due to spillage breakage in transit
ISOCHCK	Transfer untreated filter to vial with toluene	Breakage in transit
OSHA 18	Transfer impinger solution to vials	Loss of sample due to spillage breakage in transit
NIOSH 5522	Transfer impinger solution to vials	Loss of sample due to spillage breakage in transit
NIOSH 2535	Keep samples away from light	Photo degradation
NIOSH 5525	Transfer impinger solution to vials	Loss of sample due to spillage breakage in transit
OSHA Oregon 1010	Transfer impinger solution to vials	Loss of sample due to spillage breakage in transit

**Important OSHA 215 Method Revision for Hexavalent Chromium (Version 2)**

OSHA has issued a revised version of the OSHA ID-215 method for hexavalent chromium sampling. Method Number ID-215 (version 2), Control Number T-ID215-FV-02-0604-M. The significant modification (related to sample collection) in the method is that when using the 37 or 25 mm PVC filter with cellulose pack-up pad for welding operations, or chromium plating operations, special handling requirements have been added.

A summary of the new special handling requirements follows:

1. Samples collected on PVC filters must be shipped overnight to the laboratory within 24 hours of sampling.
2. Samples collected on PVC filters from welding operations must be analyzed within eight days of sampling.
3. Samples collected on PVC filters from chromium plating operations must be analyzed within six days of sampling or be stabilized at the laboratory upon receipt.

The Salt Lake Technical Center has done studies, since the original fully validated method was promulgated, that show sample loss/degradation on welding operation samples due to interaction of the Cr(VI) and Fe(II) after collection. They also found that chromium plating operations typically had significant amounts of sulfuric acid that reacts with the Cr(VI) after collection to form Cr(III). These interferences have caused OSHA to modify the method to reduce potential bias. If the samples are not treated according to these requirements, the results may be biased low. Their studies show up to

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## AIHCE CLIENT APPRECIATION PARTY 2007

It was another great evening at the 11th Annual Galson Laboratories Client Appreciation Party at AIHce 2007. Who knew the Academy of Natural Sciences in Philadelphia could be so much fun? Thanks to good food, drink, music, prizes and very most of all the best clients in the industrial hygiene and any industry, a great time was had by all. Thanks for coming and we look forward to seeing you next year in Minneapolis.



For more party photos, go to [www.galsonlabs.com](http://www.galsonlabs.com).

# PUZZLER

Here's an all-American brain teaser that you'll no doubt need some time to solve. So take the whole summer, it's on us. Submit your correct answer by **September 7, 2007** and you'll receive a great Galson prize. Good luck.

## A MEETING OF FRIENDS—A LOGIC PROBLEM

by Shelly Hazard

Five friends from across the United States planned to meet at AIHce in Philadelphia. Each friend came from a different city and each was employed in a different profession. Use the clues to determine the full name of each friend, their home city, and each one's profession.

1. The doctor and Mr. Cross both arrived a day early.
2. By coincidence, the secretary from San Diego and the doctor, Ms. Forest, arrived at the hotel together.
3. The lawyer arrived late. He was delayed by a case and had to catch a later flight from Baltimore.
4. Jane, Mr. Smith, Mark, the mechanic, and the friend from Chicago all planned to spend the weekend after the convention together. Then on Monday, Ms. Trent and Tom

would leave to return to work. Dan, the teacher, and Cindy would leave on Tuesday.

5. Dan Richards does not live in Baltimore. Cindy does not live in St. Louis.
6. Ms. Trent laughed when asked if she was a teacher. "No, he's from Atlanta," she said. "I'm from San Diego."

**Last Puzzler Answer:** Monty Hall Problem

One way to think about this problem is to consider the sample space, which Monty alters by opening one of the doors that has a goat behind it. In doing so, he effectively removes one of the two losing doors from the sample space.

We will assume that there is a winning door and that the two remaining doors, A and B, both have goats behind them. There are three options:

1. The contestant first chooses the door with the car behind it. She is then shown either door A or door B, which reveals a goat. If she changes her choice of doors, she loses. If she stays with her original choice, she wins.
2. The contestant first chooses door A. She is then shown door B, which has a goat

behind it. If she switches to the remaining door, she wins the car. Otherwise, she loses.

3. The contestant first chooses door B. She then is shown door A, which has a goat behind it. If she switches to the remaining door, she wins the car. Otherwise, she loses.

Each of the above three options has a 1/3 probability of occurring, because the contestant is equally likely to begin by choosing any one of the three doors. In two of the above options, the contestant wins the car if she switches doors; in only one of the options does she win if she does not switch doors. When she switches, she wins the car twice (the number of favorable outcomes) out of three possible options (the sample space). Thus the probability of winning the car is 2/3 if she switches doors, which means that she should always switch doors.

### Fall 2006 Winners:

Congratulations to these winners from the last Puzzler, all of whom received another grand Galson giveaway: Darin Cates, Jim Detwiler, Gary Hubbard, Brett A. Losey, Leslie Welch, and Keith Anthony.

## THANK YOU TO OUR NEW CLIENTS

ANTHC-DE (AK)  
HEC Environmental Group (AK)  
Knik Landscaping & Excavating (AK)  
M&M Constructors (AK)  
Nortech (AK)  
Southeast Roadbuilders, Inc. (AK)  
University Redi-Mix (AK)  
Veco Alaska, Inc (AK)  
Enerplus (AL)  
GE Fanuc Huntsville (AL)  
Guardian Systems, Inc. (AL)  
Safety Guidance Specialist (AL)  
Safety Source, Inc. (AL)  
AmerCable (AR)  
Delta Manufactures (AR)  
Eaton Hydraulics Corporation (AR)  
El Dorado Chemical Co. (AR)  
Future Fuel Chemical Company (AR)  
Great Dane Trailers (AR)  
Honeywell Corporation (AZ)  
K and R Safety (AZ)  
Maricopa County Risk Management Dept. (AZ)  
McArthur Consulting (AZ)  
Modern Industries (AZ)  
Phase One Environmental Consulting (AZ)  
Phoenix Police Department (AZ)  
Zachry Construction Corporation (AZ)  
Action Environmental Management Services (CA)  
Aero Environmental Services (CA)  
BD Biosciences (CA)  
Black & Veatch (CA)  
Blue Sky Environmental (CA)  
Celgene Corporation (CA)  
City of Berkeley (CA)  
Clean Harbors Env. Services, Inc (CA)  
Crane Company (CA)  
Disneyland Resort Safety (CA)  
Eaton Aerospace, LLC (CA)  
Environmental Safety Solutions (CA)  
ERC, Inc (CA)  
General Dynamics-NASSCO (CA)  
Hirst & Chanler, LLP (CA)  
HRA Environmental Consultants, Inc (CA)  
Industrial Compliance Corporation (CA)  
Irwin Industries, Inc (CA)  
Kaiser Permanente (CA)  
Kleinfelder (CA)  
Lacroix Davis (CA)  
Macs Laboratories (CA)  
Northern Aggregates (CA)  
Penhall Company (CA)  
PH Hall & Associates (CA)  
Sensient Technologies (CA)  
SHN (CA)  
Specialty Technical Consultants (CA)  
Sutter Health (CA)  
Traylor-Shea JV (CA)  
University of California, Riverside (CA)  
Ushio America Incorporated (CA)  
Cabalistic Consultants (Canada)  
Comtex Environmental (Canada)  
Dow Chemical (Canada)  
DST Consulting Engineers, Inc (Canada)  
ECOH Management, Inc (Canada)  
Ellipsis Bio Therapeutic Corporation (Canada)  
Fracflow Consultants, Inc.  
Golder Associates, Ltd (Canada)  
HDS Environment (Canada)  
Inventures Technologies (Canada)  
Kennametal LTD (Canada)  
Nova Steel Processing (Canada)  
OEHL McMaster University (Canada)  
RPC (Canada)  
T. Harris Environmental Management Inc (Canada)  
FAW Eaton Transmission Co., Ltd (China)  
Golder Associates, Inc (CO)  
Health & Environmental Technology (CO)  
Indoor Environmental Solutions Inc (CO)  
Kiewit Western Co (CO)  
North Colorado Medical Center/  
Banner Health (CO)  
Quest Environmental (CO)  
Raytheon Polar Services (CO)  
TMSS, Inc (CO)  
Wastren Advantage, Inc (CO)  
Arkema, Inc (CT)  
Chemtura Corporation (CT)  
Fairfield Cnty Restoration & Remediation (CT)  
Grove Hill Medical Center (CT)  
Homeguard Environmental (CT)  
LVI Environmental (CT)  
Nova Research, Inc (DC)  
US Army Corp of Engineers (DC)  
AIG Consultants Inc (DE)  
Barrett Occ. Safety & Health Mgmt (DE)  
Christiana Care Health Svcs (DE)  
CPC America (DE)  
GE Energy (USA), LLC (DE)  
Armor Environmental Services, Inc (FL)  
Buckeye Florida (FL)  
Clean Harbors Environmental (FL)  
Donzi Marine (FL)  
Environ International (FL)  
Envirosafe Restoration, LLC (FL)  
Grove Scientific & Engineering (FL)  
Gulf Breeze Hospital (FL)  
HSA Engineers & Scientists (FL)  
ITT Corporation, Systems Division (FL)  
Lockheed Martin (FL)  
Mold-Ex Inc (FL)  
Occupational Health Conservation, Inc (FL)  
Palm Beach County Risk Management (FL)  
Pasco County - Board of County Commission (FL)  
PCL Construction Services (FL)  
Professional Environmental Solutions (FL)  
Progress Energy (FL)  
Safety Training And Consulting (FL)  
Southern Earth Sciences (FL)  
United States Air Force, TSU (FL)  
W.W. Gay Mechanical Contractors (FL)  
American Industrial Hygiene Technology (GA)  
ATC-AIG (GA)  
Diversified Fabricators, Inc (GA)  
Eaton Toccoa Plant (GA)  
Georgia Pacific Corporation (GA)  
Great Dane Trailers, Inc (GA)  
Gulfstream Aerospace (GA)  
Holder Construction (GA)  
Lockton Companies (GA)  
Quickstar (GA)  
United Natural Foods, Inc (GA)  
US Army Corps of Engineers (GA)  
Wayne Farms (GA)  
Youmans Chevrolet (GA)  
American Piping and Boiler Company (HI)  
American Welding & Tank (IA)  
Armour Eckridge (IA)  
Eaton Engineering Components (IA)  
ENVIRON Corporation (IA)  
Great River Medical Center (IA)  
Atlas Mechanical & Industrial, LLC (ID)  
BYU Idaho (ID)  
J Tech Industrial Hygiene Services (ID)  
Premier Technology (ID)  
Aquaterra Environmental Solutions, Inc (IL)  
ASC Fireproofing, Inc (IL)  
Chicago Safety Institute (IL)  
Continental Placer Inc (IL)  
E.D. Elnyre & Co (IL)  
ERM (IL)  
Fehr-Graham & Associates (IL)  
Health & Safety Associates, Inc (IL)  
J. L. Allen Company (IL)  
JABCO Industrial Services (IL)  
Nascote Industries (IL)  
Standard Boiler Tank & Testing (IL)  
Stepan Company (IL)  
Steris (IL)  
Teepak USA, LLC (IL)  
TRW Automotive (IL)  
UGN Inc (IL)  
Van Drunen Farms (IL)  
Vapor Bus International (IL)  
Zachry Construction Corporation (IL)  
410W2nd EHS (IN)  
Dermatology Center of Southern Indiana (IN)  
Eaton Corporation (IN)  
Farbest Foods Inc (IN)  
Great Dane Trailers, Inc (IN)  
Hendrickson Trailer Suspension Systems (IN)  
Indianapolis Power and Light (IN)  
Kinder Morgan - Evansville Plant (IN)  
Owens Corning - Fabwel (IN)  
Perdue Farms Inc (IN)  
pH2, LLC (IN)  
Rogers Group, Inc (IN)  
Sevenson (IN)  
Specialty Coating Systems (IN)  
Sullair (IN)  
Thermatru (IN)  
Tru-Flex Metal Hose (IN)  
Ulrich Chemical, Inc (IN)  
Van's Industrial (IN)  
Industrial Plating, Inc (IN)  
GE India Industrial Pvt Ltd (India)  
Ecotest Ltd (Israel)  
APCom Power (KS)  
Arkema - Louisville (KY)  
C2K Safety & Chemical Co (KY)  
Diversified Piping Systems (KY)  
EnSafe (KY)  
Freeman Corporation, The (KY)  
Good Shepard School (KY)  
H&R Mechanical Contractors (KY)  
JHB, LLC (KY)  
Kentucky Utilities (KY)  
Kimberly-Clark Corporation (KY)  
Louisville Gas & Electric (KY)  
NSS Environmental, Inc (KY)

Old Republic Insurance Company (KY)  
 Pernod Ricard USA (KY)  
 Plummer and Plummer, LLC (KY)  
 Plymouth Engineered Shapes (KY)  
 Air Environmental Services (LA)  
 ATC Associates (LA)  
 Bechtel Corporation (LA)  
 Bollinger Shipyards (LA)  
 CAM Environmental Services (LA)  
 Citgo (LA)  
 Clean Harbors (LA)  
 Compliance Solutions Group (LA)  
 Dow SCO (LA)  
 Gly-Tech Services, Inc (LA)  
 Louisiana Hydroelectric (LA)  
 MTP Drivetrain Services, LLC (LA)  
 Pilgrim's Pride - Natchitoches (LA)  
 Shaw Stone and Webster (LA)  
 Tetra Tech, Inc (LA)  
 US Veterans Affairs-Medical Center (LA)  
 Antigenics, Inc (MA)  
 Cogniscent, Inc (MA)  
 Electrochem Commercial Power (MA)  
 Enpro Services, Inc (MA)  
 ERM, Inc (MA)  
 Evergreen Solar (MA)  
 Insulet Corporation (MA)  
 University of Massachusetts (MA)  
 Weston Solutions (MA)  
 Baltimore Air Coil (MD)  
 City of Baltimore, Office of Risk Mgt (MD)  
 Datanet Engineering (MD)  
 ECS Mid-Atlantic LLC (MD)  
 McNichols Company (MD)  
 Naval Medical Research Center (MD)  
 North America Ship Recycling (MD)  
 Northrop Grumman (MD)  
 Southern Research Institute (MD)  
 US Tennessee Valley Authority (MD)  
 Velsicol Chemical Corporation (MD)  
 Walter N. Yoder & Sons, Inc (MD)  
 Catevenis Consulting (ME)  
 Poland Spring Bottling (ME)  
 GE Man. & Services, S de RL de CV (Mexico)  
 AFC-Holcroft (MI)  
 Analytical Testing & Consulting Services (MI)  
 Arkema Inc (MI)  
 Asama Cold Water Manufacturing (MI)  
 Cabot Corporation (MI)  
 Delphi HQ and CC (MI)  
 Dow Chemical Company (MI)  
 Haworth (MI)  
 Kelly Services (MI)  
 Optera, Inc (MI)  
 Performance Environmental Services, Inc (MI)  
 Perrigo (MI)  
 Scott Fetzer Company (MI)  
 Sharp Funeral Home (MI)  
 Traverse Group, Inc, The (MI)  
 Vertellus (MI)  
 AMEC (MN)  
 API Construction (MN)  
 Arkema (MN)  
 Cherne Contracting Corp (MN)  
 Jamar Company, The (MN)  
 Mayo Clinic Rochester (MN)  
 Midwest Safety Counselors, Inc (MN)  
 Nordic Health and Safety, Inc (MN)  
 Rock Tenn (MN)  
 Safe Operation Service Inc (MN)  
 Sandblasting Services (MN)  
 Schwans Food Co (MN)  
 X-Cel Optical Co (MN)  
 American Railcar Industries (MO)  
 APComPower, Inc (MO)  
 Dynacraft (MO)  
 Dyno Nobel (MO)  
 Flex-O-Laters (MO)  
 Kansas City Missouri School District (MO)  
 Kraft Foods, Inc (MO)  
 KV Pharmaceutical (MO)  
 LaBarge Products, Inc (MO)  
 Lees Summit R-7 School District (MO)  
 Sensient Technologies (MO)  
 Standard Machine & Mfg Co (MO)  
 University of Missouri Columbia (MO)  
 Watlow Columbia (MO)  
 Hunter Engineering (MS)  
 Sanderson Farms, Inc (MS)  
 US Environmental Services (MS)  
 Alpha Environmental Sciences (NC)  
 Arcadis (NC)  
 Balance Env. & Safety Solutions, Inc (NC)  
 Carolinas HealthCare System (NC)  
 Chemical Specialties, Inc (NC)  
 Closure Medical (NC)  
 Cook Endoscopy (NC)  
 Duke University (NC)  
 Eaton Corporation (NC)  
 EHS Technical Inc (NC)  
 Estrell EHS LLC (NC)  
 Freightliner Corporation (NC)  
 Froehling and Robertson (NC)  
 GE Aircraft Engines (NC)  
 GEL Engineering (NC)  
 Herrick Engineering, Inc (NC)  
 Merck & Company (NC)  
 NC State-IES (NC)  
 Perdue Farms Inc (NC)  
 Praxair Healthcare Services (NC)  
 RF Micro Devices (NC)  
 Southern Industrial Constructors (NC)  
 Trigon Engineering Consultants (NC)  
 Warren Wilson College (NC)  
 Wood Brothers JTG Racing (NC)  
 Earthworks, Inc (ND)  
 Arps Red-E-Mix Inc (NE)  
 Bechtel Construction (NE)  
 Eaton Corporation (NE)  
 Great Dane Trailers (NE)  
 Husker Ag, LLC (NE)  
 Maxim Technologies (NE)  
 Aavid Thermalloy LLC (NH)  
 A&B Restoration Remediation (NJ)  
 Actavis (NJ)  
 American Safety Consultants (NJ)  
 Central Sheet Metal (NJ)  
 Chappy Corporation (NJ)  
 Environmental Compliance, Inc (NJ)  
 Gerard Sheet Metal (NJ)  
 Hensel Phelps Construction Co (NJ)  
 HMHTTC Response, Inc (NJ)  
 Infineum (NJ)  
 Kiker Sheet Metal Corp (NJ)  
 Kleinfelder (NJ)  
 Mallinckrodt (NJ)  
 New World Development Inc (NJ)  
 Pars Environmental, Inc (NJ)  
 Paul J Price & Associates (NJ)  
 Thomas J. Clark Safety & IH Services (NJ)  
 Total Safety Consulting (NJ)  
 United Energy Systems, Inc (NJ)  
 Dade Moeller and Associates (NM)  
 MV Industries Inc (NM)  
 Clean Harbors (NV)  
 GE Energy - Minden (NV)  
 MACTEC Engineering & Consulting (NV)  
 Mt. Moriah Stone Quarries, LLC (NV)  
 NVCI (NV)  
 ABC ChemDry (NY)  
 Abdo Tile Company (NY)  
 Alantic Testing Laboratories (NY)  
 Ametek Rotron (NY)  
 Arcane Associates (NY)  
 Arkema, Inc (NY)  
 Camroden (NY)  
 Canadian Salt Company, Ltd (NY)  
 Cattaraugus-Little Valley Central School (NY)  
 CIMS - Rochester Institute of Technology (NY)  
 City of New York (NY)  
 City of Saratoga Springs (NY)  
 Colgate University (NY)  
 Complete Painting (NY)  
 Congregation Beth Shalom-Chevre Shas (NY)  
 Crosby-Brownlie, Inc (NY)  
 CSEA Local 657 (NY)  
 Diamond Roofing (NY)  
 ECR International (NY)  
 Fillmore Central School (NY)  
 Geomatrix Consultants, Inc (NY)  
 Hohl Industrial Services, Inc (NY)  
 Industrial Fabricating Corporation (NY)  
 Intermagnetics (NY)  
 Jamestown Electroplating (NY)  
 Lawrence Environmental Group, LLC (NY)  
 Maximum Environmental Management (NY)  
 MG Industrial Painting Co, Inc (NY)  
 Microbac (NY)  
 National Environmental Services (NY)  
 New York City Transit Authority (NY)  
 North Engineers (NY)  
 Osmose Corporation (NY)  
 Peak Environmental (NY)  
 Pro Safety Services (NY)  
 Quality Risk Solutions (NY)  
 Rand Engineering (NY)  
 Recondite Industries (NY)  
 Remington Arms Co (NY)  
 Rockland County CSEA Local 844 (NY)  
 Roswell Park Cancer Institute (NY)  
 SA Hovanec Inc (NY)  
 Selective Insurance (NY)  
 SGD Environmental Services (NY)  
 St. Gobain Performance Plastics (NY)  
 Stickley Furniture (NY)  
 Syracuse Castings (NY)  
 Syracuse Housing Authority (NY)  
 Tennessee Gas Pipeline Co (NY)  
 Unity Health System (NY)

*continued on page 10*

## THANK YOU TO OUR NEW CLIENTS *continued from pg 9*

VA NY Harbor Healthcare System (NY)	DASET, Inc (PA)	Clean Harbors (TN)	Atlantic Constructors (VA)
Western NY Artificial Kidney Center (NY)	Eaton Aerospace (PA)	Custom Mechanical Contractors (TN)	Atrium Environmental Health Services (VA)
Yonkers Contracting Corp-Oragado-JV (NY)	Edifice Rx (PA)	Eaton Electrical (TN)	Clean Harbors (VA)
Aleris (OH)	Environmental Matters, Inc (PA)	Energy Solutions (TN)	Coastal Training Technologies (VA)
Alliance Casting Company, LLC (OH)	Fiberblade East (PA)	Environmental Concepts (TN)	Commonwealth Property Restoration (VA)
American Analytical Laboratories, Inc (OH)	FMC Technologies (PA)	Jake Marshall, LLC (TN)	Dewitt Davis (VA)
American Showa (OH)	Foster Wheeler Zack (PA)	Keystone Automotive Industries, Inc (TN)	Eaton Corporation (VA)
Arcadis (OH)	Gamesa Wind (PA)	Knoxville Utilities Board (TN)	Hardwood, Plywood & Veneer Association (VA)
Atlantic Plant Maintenance (OH)	Herr & Sacco (PA)	Olson and Associates, LLC (TN)	NEPMU2 (VA)
Eaton Corporation (OH)	Hillmann Environmental Group (PA)	Ridge Environmental Solutions (TN)	Nixon Land Surveying, LLC (VA)
FirstEnergy Corp (OH)	Kleinfelder (PA)	S & ME, Inc (TN)	RECO Constructors, Inc (VA)
FMC of Plymouth, Ohio, Inc (OH)	O'Brien & Gere (PA)	Shield Environmental Safety and Health (TN)	Riggins Company (VA)
Kinder Morgan Terminals (OH)	Pennsylvania Machine Works (PA)	TAG Manufacturing, Inc (TN)	Rock-Tenn (VA)
Lanxess Corp (OH)	Polytek Development Corp (PA)	VA Medical Center (TN)	Southeast Virginia Safety Services (VA)
McGean (OH)	RA West Associates (PA)	Velsicol Chemical Corporation (TN)	Textron Fastening Company (VA)
Norcold Inc (OH)	Rock-Tenn (PA)	Viskase Corporation (TN)	VSE Corporation (VA)
Parker Hannifin (OH)	Spotts, Stevens and McCoy (PA)	AEHS, Inc (TX)	Rhodia Acetow (Venezuela)
Partners Environmental Consulting, Inc (OH)	Towers & Metallic Structures (PA)	Aero-Marine Engineering, Inc (TX)	Green Mountain Electromagnetics (VT)
Reserve Marine Terminals (OH)	US Army Corp of Engineers (PA)	AMEC Earth and Environmental, Inc (TX)	Bechtel - TNC (WA)
Schiff Kreidler Shell (OH)	Vertellus Specialties (PA)	American Acryl LP (TX)	Duratek Federal Services, Inc (WA)
Sherwin Williams Co (OH)	West Chester University (PA)	Areva Np Inc (TX)	Environmental Risk Management (WA)
Skyline Chili, Inc (OH)	WRC Safety & Risk Consultants (PA)	Arkema, Inc (TX)	Obayashi Corporation (WA)
Smith's Medical (OH)	Bristol-Myers Squibb (PR)	Armor Holdings (TX)	Quality Inspection Services, Inc (WA)
Stephen B. Ogle Associates, Inc (OH)	Eaton Corporation-Arecibo (PR)	Bechtel (TX)	Shannon & Wilson Inc (WA)
Thermatru.com (OH)	Cooley Group, Inc (RI)	Bechtel Construction (TX)	Air Tech Environmental Services, Inc (WI)
Timken Company (OH)	MITKEM (RI)	Building Air Quality Inc (TX)	Bechtel Power Corporation (WI)
Biocheck Corporation (OK)	Able Machine Company (SC)	Conestoga-Rovers & Associates (TX)	Bradley Corporation (WI)
ConocoPhillips Company (OK)	Eaton Hydraulics (SC)	CRRC (TX)	Metro Welding & Fabrication (WI)
Jeff Wyatt Incorporated (OK)	ECS Limited (SC)	Dow Chemical Company (TX)	MWH (WI)
Stanley Environmental, Inc (OK)	Fisher Tank Company (SC)	Duke Energy Field Services (TX)	Petra Environmental Consultants, Inc (WI)
Armstrong World Industries (OR)	Florence Concrete Products (SC)	E & IH Services (TX)	Roloff Manufacturing Corp (WI)
Bremik Construction (OR)	Grant Allendale (SC)	Envirotest (TX)	Tetra Tech, Inc (WI)
ESCO Corporation (OR)	HESS Solutions, LLC (SC)	Hagemeyer Vallen - Knowledge Systems (TX)	American Institute Insulation Inc (WV)
OHSU (OR)	Hi-Tec Plating, Inc (SC)	Hygeia Laboratories Inc (TX)	American Woodmark (WV)
US Army Corps of Engineers (OR)	Honeywell, Inc (SC)	Kellogg Brown & Root Services, Inc (TX)	Dow Chemical (WV)
AAQS, Inc (PA)	Lanxess (SC)	Mayan Pigments, Inc (TX)	Ryan Environmental (WV)
Abate Irwin (PA)	MOR-PPM (SC)	Mohawk Field Services, Inc (TX)	Triad Environmental Consulting (WV)
Affordable Service Inc (PA)	Nicca USA (SC)	Moore Wallace/R.R. Donnelly (TX)	West Virginia University (WV)
Alliance Environmental Systems (PA)	Rhodia Inc (SC)	Plant Performance Services (TX)	
Allied Tube Conduit (PA)	Safe Job Solutions (SC)	Rock-Tenn (TX)	
Allomet Corp (PA)	Schaeffler Group USA (SC)	Sanden International (TX)	
Apex Fabrication & Design, Inc (PA)	Tate Metal Works, Inc (SC)	TIC (TX)	
Arkema, Inc (PA)	Terex Light Construction (SC)	Turnstone EH&S, Inc (TX)	
Armstrong Cabinet Products (PA)	Accurate Machine Products, Inc (TN)	Webb, Murray & Associates, Inc (TX)	
Armstrong World Industries (PA)	Acme Industrial Piping (TN)	Zachry Construction Corporation (TX)	
Bayer Material Science (PA)	Arkema, Inc (TN)	DNV (United Arab Emirates)	
Cleaveland/Price, Inc (PA)	BAE Systems (TN)	EG&G DMI Defense Material Inc (UT)	
Columbia Gas of Pennsylvania (PA)	Bechtel Corporation (TN)	Energy Solutions (UT)	
Dept of Public Welfare (PA)	Ben Parker Company, Inc (TN)	Gem Buildings (UT)	
Compliance Management International (PA)	Chattanooga Boiler and Tank Company (TN)	USANA Health Sciences (UT)	

## STANDING ON THE ROOF OF AFRICA

By Ed Stuber, CIH



Ed takes a breather three days from the summit of Mt. Kilimanjaro.

Sitting in a hot tub in July 2005, we were reminiscing about running with the bulls in Pamplona, Spain the year before, wondering what our next adventure should be. We decided to climb Mt. Kilimanjaro. It took another 18 months for us to make it to the mountain.

Having never climbed a mountain before and not knowing anything about Kilimanjaro, we had to do a lot of research. At 19,385 feet, Kilimanjaro is the highest mountain on the African continent and sits only three degrees south of the equator in Tanzania, East Africa. It's also a dormant volcano with 80-foot glaciers at the top. Every year, 25,000 people attempt to climb Kilimanjaro. Less than half of them make it to the summit, and 10 to 12 people die, so it's not taken lightly. Three Americans were killed by a rockslide on Kilimanjaro the previous year.

Although you don't need technical experience to climb the mountain, you do need to be physically and mentally fit to make it to the top. (Without any mountains near us, altitude training was impossible, so we trained the best we could with running and hiking.) It was the most difficult thing I have ever done, but one of the most rewarding.

Our climbing party consisted of six people: my two brothers-in-law, two friends, my 18-year-old son, and me. The rest of our group included our guide and many porters, who carried the majority of the equipment needed for the trip, including tents and food. We carried daypacks with extra clothes, water, camera equipment, and other essentials.

The trek started in the hot and humid tropical rain forest and went through five climate zones. It is said



Ed, lower left, and crew, reach the summit.

that climbing Kilimanjaro is like going from the equator to the arctic in seven days.

Each day we climbed an average of eight to ten miles and burned 5,000–8,000 calories. After the third day, the temperature dropped below freezing every night and the water froze in our tents. Between the hiking, the calorie expenditure, lack of sleep, cold, and lack of oxygen, it became harder and harder to go on. Just getting out of the tent was enough to make you stop and catch your breath.

But it was well worth it. The views were spectacular and more amazing each day. Because the air was so clear and thin, everywhere you looked was like a high-definition picture.

We had a harder time than most getting to the summit due to a very heavy snowstorm that dumped about three feet of snow. It covered the top and continued down about 1,000 feet. This made the final stage of hiking very difficult since the normal switchbacks were not available. The guide took us straight up the mountain for the last 4,000 feet.

The climb took seven days to the summit and one-and-a-half days to descend. It is possible to ascend faster, but that does not give your body time to acclimate and you run the risk of developing Acute Mountain Sickness (AMS). Once that happens, the only cure is to descend immediately. We saw others who developed it and they looked like zombies.

The same snows that made hiking up so difficult made it easy for anyone willing to slide down on their backside. It was the world's longest sledding hill: very little control and lots of speed. My son took advantage of this, but most of us took the slow-and-sure way down.

Standing at the top of Africa, looking down at the clouds and the Serengeti Plains, and being within feet of massive glaciers was something I will never forget. Being on top with friends made it even more special, and being there with my son made it the trip of a lifetime.

If you would like to see more photos and read daily updates of the whole trip, it's documented at [www.humanedgetech.com/expedition/kili2007](http://www.humanedgetech.com/expedition/kili2007) or e-mail me with your questions at [estuber@galsonlabs.com](mailto:estuber@galsonlabs.com).

approximately 25% negative bias after 14 days.

You can determine the amount of time between sampling and analysis from our analytical report. The date of analysis is provided in the top header information on the hexavalent chromium results page. The date sampled may also be found there if provided to us—or it may be on the chain of custody. At this time we are uncertain how OSHA will treat samples collected from welding or chromium plating operations under Version 1 of the method. If you have collected samples from welding or chromium plating operations for hexavalent chromium and have not met the special handling requirements of the new version of the method, you should contact OSHA to determine their opinion on the validity and usability of the results. Samples from other operations are not affected. Complete details on "Hexavalent Chromium in Workplace Atmospheres" can be found at [www.osha.gov/dts/sltc/methods/inorganic/id215/id215.pdf](http://www.osha.gov/dts/sltc/methods/inorganic/id215/id215.pdf).

Please contact our client services group at (888) 432-5227 with any questions you may have.

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