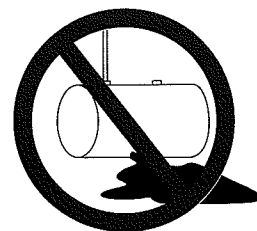


L.U.S.T.LINE

A Report on Federal & State Programs To Control Leaking Underground Storage Tanks



To Dream The Possible Dream: UST Compliance

by Marcel Moreau

Over the last few years, as part of UST inspector seminars I've presented, I've had the opportunity to review the leak detection compliance status of dozens of facilities across the country. By and large, the owners and operators who allow us to use their facilities for training exercises are well intentioned, knowledgeable, and quite certain that they are in compliance with leak detection regulations. Thus, it continues to amaze me how these people, who for the most part are making a sincere effort to be in compliance, fall so far short of the mark.

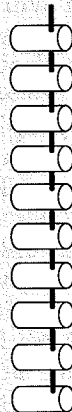
FOR EXAMPLE:

- The postal service facility in Hawaii whose managers thought they had an automatic tank gauge on the tank and continuously monitored double-walled suction piping. In fact, there was no leak detection on the tank or the piping. The device on the tank was an interstitial monitor with tank level measuring capabilities, not an automatic tank gauge with tank testing capabilities. The piping turned out to be single-walled pressurized piping equipped with a mechanical line leak detector. Neither the piping nor the leak detector were tested annually.
- The convenience store operator in New Mexico who had an automatic tank gauge, but never put it in test mode. This operator also thought he had—and had paid for—line leak detectors as part of his new installation, but they were conspicuously absent at the time of our visit, six months after the facility had opened for business. He also did not realize that his piping would need annual testing.
- The convenience store in South Carolina that had an electronic line leak detector on its new piping. The leak detector relentlessly indicated a leak. Believing that the leak detector was the problem, parts were relentlessly replaced, but an independent tightness test to verify the presence of a leak was never done. At the time of my visit, there were 6 inches of free product in one of the observation wells.

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- The ice cream factory in Texas whose operator was conducting annual tightness testing, monthly inventory control (but, no reconciliation), and groundwater monitoring with laboratory analysis of samples (every 6 months). He simply didn't know that he had a double-walled tank and piping, which meant all he had to do was inspect the interstitial space on a monthly basis.

- The unattended retail fuel facility in Louisiana with groundwater wells that were never monitored because, as the owner pointed out, "there's no water in them." Needless to say, he hadn't conducted the required site assessment for this facility either.

If these people are indeed trying to comply with the rules, what is going wrong? Why is it that, in my estimation, there are relatively few UST facilities in this country in full compliance with the leak detection requirements of the rule?

Joe's Story

Okay, okay, let's think about this for a moment. Let's say I'm a tank owner. My name's Joe Citizen and I've just inherited my uncle's business, a convenience store with USTs. Among my uncle's papers I find a notice from the state environmental agency that says a leak detection

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deadline is upon me. I check the date and...whoa!...my deadline's already passed. I need to get my regulatory act together fast.

So, I call my regulatory agency and say, "OK, what do I have to do?" They mail me some documents: the state UST regulations, "MUSTs for USTs", and "Straight Talk on Tanks." "MUSTs for USTs" is quite readable and tells me that I have to do something, and lists my options. "Straight Talk on Tanks" explains my options in more detail and gives me helpful advice like shopping around before I spend my money on leak detection equipment, but doesn't really tell me what I have to do.

The only document that spells out exactly what I have to do is the state rule...and it is very intimidating. (If you are a regulator, try to remember what it felt like the first time you tried to decipher exactly what your rule was saying. So it stands to reason that most owner/operators, are at least as confused and baffled by the regulatory format, endless cross-referencing, and unfamiliar vocabulary as you were.)

While I am pondering what to do, a salesman knocks on my door. He wants to sell me an automatic-do-everything-leak-detection-device-and-coffee-maker, which, he says, will get me in total compliance with the rule and then some. Buying this thing will cost me the rest of my inheritance from my uncle, but I say I'll think about it. Soon, like Scrooge, I am visited by a series of ephemeral salespeople, promising me compliance if I buy their tank test or automatic tank gauge, and telling me why their method is my best bet. The salespeople lead me to believe that once I buy their device or service, my leak detection duties are done.

After flipping a few coins and staring at my coffee grounds, I decide on the Brand X leak detection system because the price is right and

I like the color. The person who installs the system tells me which button to push to get a printout of the contents of my tanks. He hands me an instruction manual and says, "All you need to know is in here." I put the manual into my "in" box, where it's soon buried over by more urgent matters.

The Inspector Cometh

I've made my investment and figure I must be in compliance with all the rules. Until...one day, the UST inspector arrives. She asks to see my leak detection records. I point to the box on the wall. She asks, "Where are your monthly monitoring records? Where is your certification of equipment performance? Where are your inventory records? What are you doing for leak detection on your piping? Have you had your line leak detectors checked lately? I have no idea what she's talking about.

She attempts to explain all this to me, but customers are coming in and out, my mechanic is asking questions, the inspector's communication skills leave something to be desired, I'm upset at the leak detection salesperson for not telling me the whole story...I'm embarrassed and flustered because I'm apparently not doing what I'm supposed to do, and I'm really not in a very good learning mode.

The inspector is very nice. She leaves me a copy of the rules which, she says, tell me everything I have to do. She says I'll be receiving a letter warning me of enforcement action unless I get my act together. To top it all off, I see an article in the local paper a week later that lists my name among UST owners who are in violation of the rules. I feel helpless and hopeless. How will I ever figure out what I have to do?

The Answer Please?

Here are three scenarios for how compliance with UST regulatory requirements might be achieved:

A) UST OPERATIONS SCHOOL - Require all UST owner/operators to go to UST operations school to learn what needs to be done. In days of old, when major oil companies owned and operated their facilities, employees were required to go to school to learn things like terminology, how

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things worked, how to keep inventory, how to treat customers, and how to project the company image. Only UST operations school graduates were allowed to manage UST facilities. (Note: The State of Florida currently has on the legislative books a requirement to offer attendance at compliance school as an alternative to paying a fine for non-compliance. The schools must be sponsored by non-profit industry organizations. This program has yet to materialize, but it will be interesting to see what develops.)

B) SELF ASSESSMENT SHEET - Provide a concise (1 page) self assessment document listing all the regulatory requirements for a given leak detection method or upgrading strategy. Owner/operators simply refer to the leak detection method that applies to their facility. The document includes a glossary (perhaps with pictures) that describes and shows what things like line leak detectors, pressurized piping, and fiberglass tanks look like and how to identify them.

C) COMPLIANCE INSPECTIONS - Have regulatory inspectors conduct on-site compliance inspections that also serve to provide one-on-one owner/operator training (more than one visit is usually required). Turnover among owner/operators of course means that this task could continue indefinitely. Likewise, turnover among inspection staff means ongoing new inspector training. Most significantly, however, is the simple reality that many state regulatory agencies lack the resources to do as many inspections as they'd like.

Right now we are headed down the path of option C. But, as I gaze into my crystal ball, I can see that we'll run into the same problem doing three quarters of a million facility inspections on a routine basis as we have trying to clean up a quarter of a million LUST sites. The problem? Not enough resources to do the job.

What I'm suggesting is that the "faster, better, cheaper" mantra that the LUST folks have been chanting for years, needs to be applied to the UST side of the program if we're going to be serious about regulatory compliance. I don't believe that today's compliance inspection paradigm is going to serve us very well in

the future. We need to re-envision the whole inspection process.

The Inspection Paradigm

How do we do inspections? First, an inspector must be hired and trained. Once trained and on the job, the inspector travels to various sites, spending about 2 hours (conservative estimate) checking the facility components, reviewing facility

...although UST owner/operators are responsible for meeting the "quality control" requirements of the UST rules, regulatory agencies have failed to tell them in language that they can understand what it is that they have to do. As a result, inspectors discover shoddy work products (faulty leak detection procedures) and the overall quality goals of the UST program (a protected environment) suffer.

records, and attempting to educate owner/operators on regulatory requirements. Inspectors typically complete an inspection checklist; some may need to write up inspection reports; a few may issue field citations. All will need to do follow-up work on a large percentage of the facilities they visit. Soon, the backlog of facility follow-ups begins to restrict the number of new facilities that can be visited.

In most states, there's a high turnover in both the inspector population and the operator population. The result? Let's look at Florida. After 105,000 inspections over the last 8 years, with a current staff of 150 inspectors, the State of Florida has achieved about a 60 percent compliance rate at its UST facilities.

With the current inspection paradigm, we approach UST facility inspections in much the same way that quality control has been carried

out traditionally in many U.S. factories. It used to be that factories built things, and then (sometimes...) the "things" were inspected for quality just before they were shipped out the door. The result, a lot of labor and cost was wasted in producing too many defective items that would be rejected ultimately.

Today's newly touted quality control paradigm, total quality management (TQM), is one that's familiar to many UST program veterans. Using TQM principles, many manufacturers have learned that the people who perform the work need to check quality as part of the manufacturing process. The process, in turn, must be corrected so that mistakes or poor quality are avoided in the first place. Responsibility for quality lies with the person doing the work, because that person is the one most in control of the process.

Applying TQM principles to UST management, owners and operators are responsible for quality (i.e., conformance to requirements), and they must somehow be taught what quality is and how to achieve it. The UST rules incorporate the first part of this paradigm in that responsibility for compliance is placed squarely on the owner/operator, but what about the second part: teaching what quality consists of?

Many UST owner/operators are out there trying to meet the quality control (otherwise known as leak detection) guidelines set by the state or federal UST rules, but they often work pretty much in the dark until some regulatory person appears to do a quality control check. At this point they learn that they're failing in the quality department. So then what happens? They get a verbal lesson in regulatory requirements from the UST inspector, a threat of enforcement action, and a copy of unintelligible rules.

The UST TQM paradigm fails because, although UST owner/operators are responsible for meeting the "quality control" requirements of the UST rules, regulatory agencies have failed to tell them in language that they can understand what it is that they have to do. As a result, inspectors discover shoddy work products (faulty leak detection procedures) and the overall quality goals of the UST

■ continued on page 4

program (a protected environment) suffer.

To implement TQM at UST facilities, regulatory agencies should ask themselves: How can we encourage UST owners and operators to meet our standard of quality? The answer is two-fold: owner/operators need to be taught what quality is, how to identify it, and how to measure it, and they need to be motivated to implement what they learn in their daily tasks.

Bring on the Carrots

Present day motivational tools consist of threats of fines and "enforcement action", which most states are poorly equipped to carry out. While human nature requires that "sticks" be available to motivate the obstinate, most human behaviorists would agree that "carrots" are a much more benign and effective way of inducing people to modify their behavior.

Where are the carrots in the UST program? Are there any state or local UST programs that issue handsome little certificates of compliance to facility owner/operators who somehow succeed in achieving regulatory compliance? Do any state or local agencies issue press releases to say something like, "Joe's service station was inspected and found to be doing a great job at protecting the environment"? Has our enforcement strategy been so shaped by the Puritan ethic that hell-fire and damnation are our only compliance mechanisms?



The Possible Dream

Let's imagine environmental protection according to TQM principles. I'm Joe Citizen again. I've just inherited my uncle's convenience store. I call my regulatory agency, and I get back a bunch of the same documents. They're informative, but not specific. Among the documents, however, is a flyer advertising a tank owner's school, a one-day class describing UST owner responsibilities. It will be held next month in a city not too far away. I sign up and go.

At the workshop I learn about my registration and fee requirements, my leak detection options (from someone who is not a vendor), and the upcoming 1998 upgrading requirements. The leak detection and

upgrading options are explained in terms of what the site requirements are, the limitations of the equipment, the advantages and disadvantages of the technique, and the operational and recordkeeping requirements.

I receive copies of forms I can use to fulfill my leak detection recordkeeping requirements, and checklists I can use to verify that I'm doing everything I need to do for each available leak detection method. I get a list of certified contractors I can call to install and service the required equipment. I get to ask questions and meet my local regulator. I get a nifty little calendar with some neat pictures of gas pumps on it, along with a monthly regulatory tip like "don't forget your tank fees are due this month" or "have your meters been calibrated lately?" and my regulatory agency's toll free HELP

line number. I go home thinking, "Wow, this is a lot to do, but at least I know what I have to do."

I go home and evaluate my site. I decide on a leak detection method that I can afford and will protect both my neighbors and me from the consequences of contamination. I call up my local contractor and get the work I need done. He tries to sell me a bunch of stuff I don't need, but I know better. I set some money aside and plan to save so I can afford my upgrade for the '98 deadline.

A few months later, my friendly regulator comes to visit, looks over my facility and checks my records. She uses a checklist that's basically the same as the one I've been using to guide me in my compliance efforts. She notes that everything is in order, but that I don't have the required year's worth of records. I explain that I'm new to the business and started doing everything right after I attended the tank owner class. She says keep up the good work and gives me a nice little certificate that says I'm doing my part to help protect the environment.

Two weeks later, there's a little article in the local paper that says the state has been inspecting UST facilities and lists those that are doing a good job at managing their storage

The Service Provider Resource

Tank contractors and consultants are another potentially significant resource for steering UST owner/operators toward compliance. Oftentimes, tank contractors are the only people small owner/operators consult with concerning UST rules. Tank consultants, who's clients are generally mid-to large-sized tank owners, have a desire and an obligation to provide accurate information to their clients. But often, both consultants and contractors have a somewhat muddled view of the tank rules. UST contractors and consultants should be targeted for seminars designed to set them straight on leak detection requirements, much as consultant days have been used in many states to get cleanup contractors squared away with tank closure requirements on the LUST side of the program.

Field Notes

PEI Surveys Compliance with Federal Leak Detection Requirements

According to the federal UST rule, December 22, 1993 marked the end of a 5-year phase-in period during which UST owners and operators were to install or perform a method of leak detection. Last December, we conducted a brief survey of 24 of our distributor member firms, who operate in 41 states, to determine the extent of tank owner/operator leak detection compliance, the types of leak detection equipment being used at present, and reasons why some owner/operators didn't comply with the deadline.

Admittedly, the survey used a limited sample, but it did yield some interesting results. Here's what we found.

Question: What is your best estimate of the percent of the total number of regulated tanks in your marketing area that have met the federal release detection requirement?

Response:

Members estimate that only 65% (average) of the tanks in their area have met the release detection deadline.

Question: The EPA rule provides different options for meeting the release detection requirement. What is your best estimate of which leak detection options your customers have chosen for their existing USTs?

Response:

- 32% Automatic tank gauging
- 3% Soil vapor monitoring
- 11% Interstitial monitoring
- 9% Groundwater monitoring
- 34% Monthly inventory control combined with tank tightness testing
- 11% Statistical inventory reconciliation (SIR)

Question: What is your best estimate of which leak detection options your customers are choosing for new UST installations?

Response:

- 57% Automatic tank gauging
- 2% Soil vapor monitoring
- 23% Interstitial monitoring
- 7% Groundwater monitoring
- 9% Monthly inventory control combined with tank tightness testing
- 2% Statistical inventory reconciliation (SIR)

Question: To what do you attribute non-compliance with the leak detection deadline? Respondents were asked to provide up to three reasons. The total number of responses for each answer are in parenthesis.

Response:

- UST owners don't have the money to comply. (17)
- Owners know the rules, but don't think the regulations will be enforced. (16)
- Owners are confused about what the rules require. (13)
- Owners thought the compliance date would be postponed. (8)
- Owners don't know anything about what the UST rules require them to do. (8)
- Owners simply don't care about compliance. (5)
- Owners plan to close the location soon. (5)



Revised Version of PEI's RP100 Now Available

PEI's **Recommended Practices for Installation of Underground Liquid Storage Systems (PEI/RP100)** has been revised and is now available to individuals and firms interested in proper UST installation methods and techniques. Over 90 comments and suggested revisions were submitted to PEI's Tank Installation Committee by PEI members, oil company engineers, state and local regulators, EPA, environmental consulting firms, and oil marketing trade associations. Changes were made to 12 of the document's 13 chapters. In addition, 12 of the 36 drawings included in the recommended practice were modified in some manner. References to other industry publications, contained in Appendix C of the document, have been brought up to date.

RP100 has been widely accepted by federal, state, and local regulators. It is referenced in the federal UST regulations (40 CFR 280.20) as one of the publications that firms must follow when installing UST systems. RP100-1994 is a consensus document that reflects the many technological changes in equipment that the petroleum equipment industry has witnessed in the last 4 years. It supersedes and replaces the previous recommended practice published in 1990.

Copies are available from PEI for \$15.00 each at P.O. Box 2380, Tulsa, OK 74101-2380. Make checks payable to Petroleum Equipment Institute.

more Field Notes

The Scoop on Alternative Fuels Available on Video and Audio Cassettes

During March, 700 people attended PEI's first **Alternative Fuels Refueling Equipment Technical Conference and Trade Show**. PEI sponsored the conference to provide members with an opportunity to acquire a better understanding about the equipment used to transport, store, meter, and dispense such alternative fuels as compressed natural gas (CNG), liquefied natural gas (LNG), liquefied petroleum gas (LPG), methanol (M-85), and ethanol (E-85). A heavy emphasis was placed on equipment specifications, refueling station design and engineering, safety issues, construction requirements, and installation procedures.

It's hard to say how fast and in which areas of the country alternative fuel use will grow. Chrysler reports that 1,106 CNG vehicles have been sold so far this model year, compared to 445 vehicles in the 1993 model year. Customers currently have 2,200 flexible-fuel Ford Taurus vehicles on order. Most Taurus flexible-fuel vehicles will be shipped to California where the methanol refueling network is growing.

The time will come—probably within the next several years—when petroleum equipment contractors, installers, sales people, regulators, and fuel retailers will have to deal with the many issues surrounding alternative fuels. It's impossible for us to summarize the very comprehensive 9 hours of technical material presented at the conference. However, each of the five fuel sessions was recorded and is available on both audio and video cassette. Written transcripts of the five sessions are also available. This information is probably the most comprehensive information available on the equipment used to store, meter, and dispense alternative fuels.

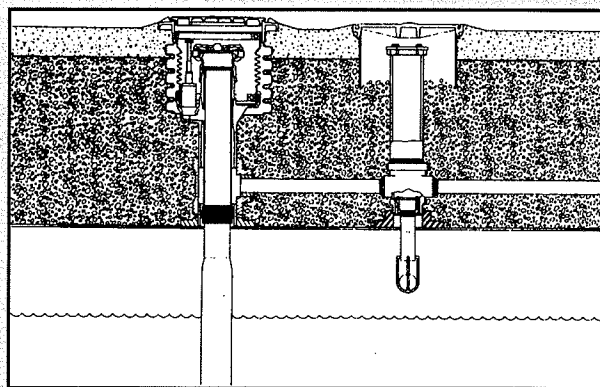
The video cassette series is available for \$75.00 per set, or \$20.00 per fuel subject. The audio cassette series is available for \$35.00 per set or \$10.00 per cassette. A transcript of all five sessions costs \$20.00. Make checks payable to Petroleum Equipment Institute and mail to P.O. Box 2380, Tulsa, OK 74101-2380. The prices above include shipping and handling. ■

New Video

Doing It Right, II: Installing Required UST Equipment

Doing It Right, II is a companion video to *Doing it Right: Proper Installation of Underground Storage Tanks and Piping*, produced in 1988, before EPA published rules requiring specific kinds of equipment to prevent pollution, detect leaks, and protect groundwater. *Doing It Right, II* focuses on the installation of:

- **Overfill Prevention Equipment**
 - fill pipe devices or automatic shut offs
 - vent line devices or ball float valves
 - alarm systems
- **Spill Containment Devices**
 - above and below grade spill containment manholes
- **Observation Wells**
 - site assessment
 - location and placement in backfill
 - sealing, securing, and labelling
- **Piping Leak Detection**
 - pressurized systems
 - suction systems



Federal UST rules require overfill prevention and spill containment devices as well as tank and piping leak detection on all new installations. UST systems installed before December 1988 must add spill and overfill equipment by 1998. This video highlights equipment operational characteristics and installation requirements, with the help of interviews with installers around the country who are "Doing It Right!"

This video was produced by the Environmental Media Center (EMC) under a grant from EPA OUST. OUST is providing copies to EPA regional offices and state UST program offices. Copies are also available from EMC. Call 1-800/552-0362 or send \$60.00 (prepaid, Visa or Mastercard) to EMC, Box 30212, Bethesda, MD 20814. Local, state, and federal government agencies receive a \$10.00 discount.

Prevention

TANKS IN FLOODS

Tips for UST Owners and Operators

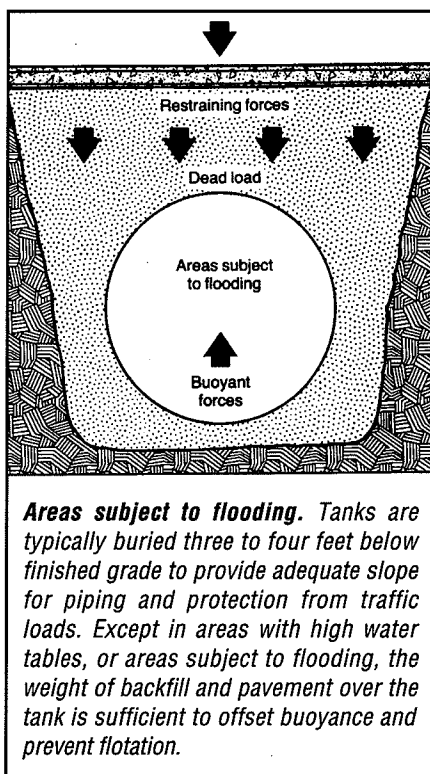
In response to the midwest's mega-floods last summer, Randy Nelson of EPA Region 7 prepared a series of "tips" for UST owners and operators so that future UST-related problems resulting from flooding might be averted. Better late than never! The following tips are organized under three headings which detail the steps UST owners and operators should take if a flood threatens, if tanks are flooded, and if tanks float out of the excavation. These tips do not cover aboveground storage tanks, which, word has it, were a bigger problem during last summer's floods than USTs.

Note: USTs located in areas subject to high water tables or flooding should always be properly anchored during installation. For information on tank anchoring, refer to the Petroleum Equipment Institute's Recommended Practices, PEI RP100-94, or the American Petroleum Institute's Recommended Practice #1615.

What Should You Do About Your USTs If A Flood Threatens?

If you haven't properly anchored your tank and if flood waters or rising groundwater levels threaten your UST system, follow these steps to keep your UST in the ground and prevent water from entering the system:

- Keep your tank full of product. This will add weight to the tank so it will not float out of the ground. (Do not fill the tank with water: you will have to dispose of the water properly later, and disposal of contaminated water can be very expensive.)
- Secure all the openings on top of the tank. Make sure the fill caps are in good condition and fastened securely in place. Also, check plungers in spill buckets, to make sure they are sealed well so water cannot get into the tank.
- Pressurized piping systems have shear valves. Close or "trip" the shear valve. This will prevent product from getting out of the pipelines if debris floats by and knocks over a dispenser. If you have a suction piping system with a check valve located under the dispenser (where it's supposed to be), loosen a fitting above the check valve so that if floating debris hits the dispenser, the valve will remain with the piping and not let water into the tank. If your suction system check valve is located in the piping, it will serve to prevent water from getting into the tank.



SOURCE PEI/RP100-94

- If it appears likely that flood waters may rise above your vent pipe, then add an extension with some kind of weather head to it to prevent water from entering the pipe. (If water enters the vent pipe, product will come out.) A second alternative is to temporarily cap off your vent pipes...**BUT FIRST:** shut down the system, including all power to any pumps, and shut all valves at the tank. Before you turn your system back on, be sure to remove the caps on the vents.

- Turn off the power (electricity) to the UST system. This includes power to the dispensers, pumps, lighting, and any other system components.

Precautions such as these will go a long way in preventing damage to your UST system and releases of product into the environment.

What Should You Do If Your UST is Submerged Under Floodwater or Subject to Abnormally High Groundwater?

In some instances tanks pop right out of the ground, but in other instances the tank and piping system may shift in the ground, threatening the integrity of the storage system. If your UST system has been submerged under floodwater or is subject to abnormally high groundwater, follow these steps when the floodwater or groundwater has receded:

- Before beginning any investigation, turn off the power (electricity) to any UST-related equipment. This includes power to the dispensers, pumps, release detection equipment, and other devices.
- Remove water from the sump(s) under the dispensers and the sumps above the tanks. Sumps at UST sites are commonly located around the fill pipe and the submersible pump. Inspect the piping and fittings for damage and possible leaks.
- Test the leak detection system on your tanks and piping. If you do

not have an installed leak detection system, run tightness tests to ensure the integrity of the entire system.

- Use waterfinding paste on the end of your gauge stick to determine if water entered your tank. If water did not enter the tank, the UST system is probably intact and further investigation is not needed. Continue to keep good inventory records so that product loss will be easy to identify should a leak occur. (Good records are essential whether you've had a flood or not.)

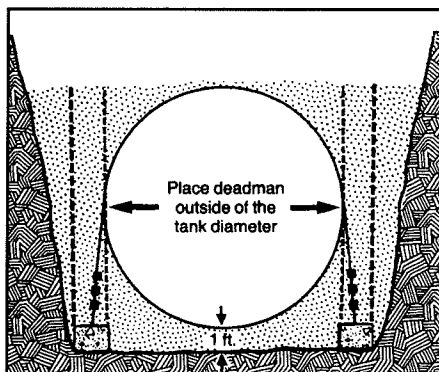
If you have water in the tank, try to determine its source. Water may have entered through a loose fitting on top of the tank, or the UST may have shifted in the ground, damaging the tank, piping, or both. Testing of the piping and tank is required if you are unable to determine how water entered the system. If you find that the tank has been damaged and is leaking, pump out the contents immediately and contact your regulatory agency for advice on what to do next.

- If you have a cathodic protection system, test it to make sure it is still operating properly.

What Should You Do If Your Tank Floats Out of Its Excavation?

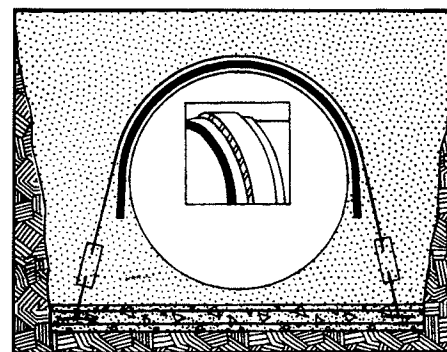
If your tank was not secured during installation, it may float out of its excavation. If so, follow these steps:

- Call your local fire department.
- Turn off any power in the vicinity of the tank(s) and piping. If any power lines are down in the area around the tank, call the power company immediately.
- Rope off the area and keep people away from the hole in the ground.
- If your tank has not floated away, empty it of all product.
- Call a tank installation or removal contractor to remove the piping and tank properly.
- Call your local or state UST program for information on tank removal, reinstallation, replacement, emergency response, leaks, and potential assistance. ■



Deadmen Anchors. Deadmen anchors increase the amount of backfill bearing down on the tank to offset buoyancy. Deadmen anchors are convenient to use and reduce the work required to be done in the excavation.

SOURCE PEI/RP100-94



Bottom hold-down pad. A reinforced bottom hold-down pad provides a firm bed for the tank and adds resistance to flotation. Insulating material separates straps from the tank. **TANKS SHOULD NEVER BE SET DIRECTLY ON A BOTTOM HOLD-DOWN PAD.**

SOURCE PEI/RP100-94

LOOKING
AHEAD

The 1994 International Hazardous Materials Spills Conference

Buffalo, New York will host the 1994 International Hazardous Materials Spills Conference this October 31 to November 3 at the Hyatt Regency Hotel and the Convention Center. Communities, state and local governments, industry, and international guests will have the opportunity to learn more about how to prevent, prepare for, and respond to hazardous materials accidents.

In the 10 years since the Bophal tragedy, significant strides have been made in hazardous materials safety. These positive changes resulted from proactive partnerships formed by all the vested interest groups in the private, public, and international arenas. The theme for this year's conference is "partnerships for hazardous materials safety."

The conference provides an opportunity for groups with common, as well as disparate concerns to exchange and develop ideas. State-of-the-art training on various aspects of hazardous materials safety will be ongoing during the conference. Through participation in both the large presentations and small group discussions, conference attendees can play a part in influencing future directions on hazardous materials spills issues.

Conference sponsors include: the National Response Team, the National Governors Association, the Chemical Manufacturers Association, and the American Institute of Chemical Engineers, in cooperation with the Canadian Chemical Producers Association and the New York State Emergency Response Commission.

For registration information, call Angela Moody at 703/442-9824.

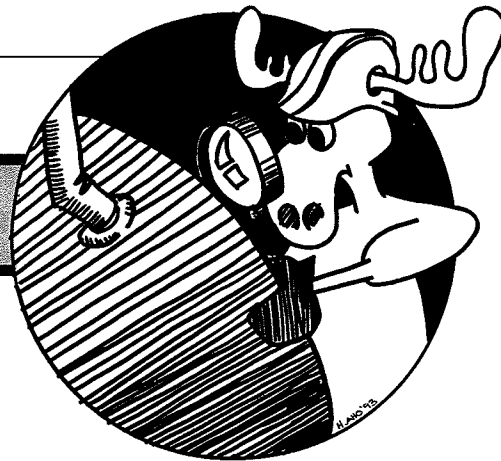
If you have questions about the conference,
call Sarah Bauer at 202/260-8247.

Leak Prevention

Tanks Down East

by W. David McCaskill

David McCaskill is a petroleum storage specialist with the Maine Department of Environmental Protection. **Tanks Down East** is a regular feature of LUSTLine. As always, we welcome your comments.



Those Tanks in America's Backyards and Basements

Aboveground and Underground Home Heating Oil Tanks

It was a stormy March day. Mrs. Delbert Beal, warm and snug in her home along Maine's oft tempestuous coast, was troubled by the unmistakable odor of fuel oil. She put in a call to her home heating oil dealer, who dispatched a burner technician. After a brief inspection of the furnace and the outside aboveground oil tank, he assured her that things looked fine. But, Mrs. Beal continued to smell fuel oil, so she called her oil dealer again. The technician paid another visit and, after another inspection, reassured her that all was right with the world.

But being 76-years old and of stern Yankee blood, Mrs. Beal knew something was wrong and that she would have to take up this investigation herself. She crawled under the house. (Because of shallow bedrock conditions, her house has no basement, only a small crawl space.) Before long, she discovered fuel oil running along the surface of the bedrock. She called her oil dealer again and personally escorted the technician under the house for a visual inspection.

After further investigation, the technician determined that the source of the problem was a copper fuel supply line, which was covered by about 6 inches of soil, that ran along the bedrock. The oil company replaced the line and reported the leak to the Maine Department of Environmental Protection (MDEP).

To make a long story short, Mrs. Beal's well is contaminated, the MDEP has spent \$52,000, to date, on cleanup, and Mrs. Beal is still looking

at a \$700 bill from the oil dealer for service calls. At the urging of her lawyer, the oil company agreed to reimburse MDEP for cleanup.

In this edition of *Tanks Downeast*, I'll leave the realm of gasoline stations and convenience stores and move into backyards and basements to explore the domestic side of tanks and recommend a good healthy dose of leak prevention and cure. Mrs. Beal's story is true (the name has been changed to protect the innocent) and illustrates an aboveground tank (AST), rather than an UST, problem for a reason: ASTs are the source of most of our home heating oil tank cleanups...so much so, that MDEP has initiated a series of Public Service Announcements to educate the homeowner.

Politics and Permeability

Fuel oil is a mid-distillate petroleum product, which is used for home heating primarily in New England, the mid-Atlantic states, Washington, and Oregon. Other sections of the country rely more on electric power, natural gas, and liquefied petroleum gas (LPG). Under Subtitle I of RCRA, Congress exempted tank systems used for storing heating oil for consumptive use on the premises where stored. Maine, along with several other states, however, does regulate fuel oil tanks. Maine uses the same age-based removal schedule and secondary containment replacement requirements that apply to the state's gasoline storage tanks.

Physically, fuel oil is more viscous than the lighter petroleum distillates (such as gasoline) and

generally doesn't move through the soil as fast or as far as gasoline. Based on our experience, UST fuel oil contamination tends to be localized—confined to the tank owner's, and maybe the neighbor's, well. But, there are always exceptions. Fuel oil will move faster and farther if it finds a convenient conduit, such as a bedrock fracture or certain kinds of manmade contrivances.

For example, one homeowner's basement tank sprang a leak, and the fuel oil made its way through a fracture in the basement floor directly to the bedrock well outside. Basement sump pumps are notorious for pumping fuel oil from a spill directly into gravel drains around homes. Water and electric line trenches that are backfilled with sand are potential conduits. Storm sewers have also proven to be excellent fuel oil conduits.

Plumbing Particulars

Before going into the modes of fuel oil storage system failure, I'll explain to the non-fuel oil user how these systems are set up. They are designed and installed in most states according to the National Fire Protection Association (NFPA) *Code 31, Installation of Oil-Burning Equipment*. Backyard and basement aboveground tanks, usually between 275 and 330 gallons in capacity, are constructed to Underwriters Laboratories (UL) *80-Standard for Steel Inside Tanks for Oil-Burner Fuel*.

Although the capacity of basement storage tanks is limited by code to a total of 660 gallons, usually economic and space constraints dictate

the use of a single 275-gallon tank. These "275s" are oval in shape (see diagram) so they can fit through a basement door or bulkhead. Outside tanks that are larger than 660 gallons must be constructed to UL 142-*Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids*.

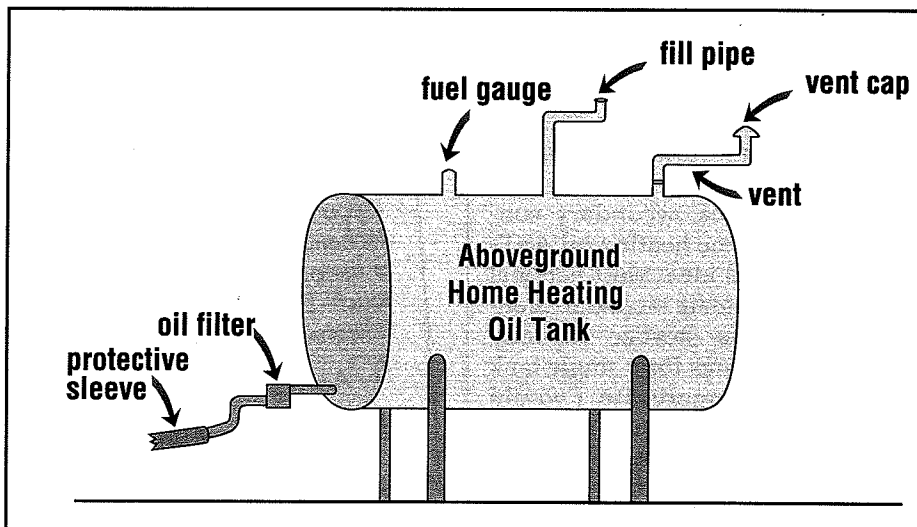
In the underground realm, fuel oil USTs are supposed to meet the UL 58-*Standard for Steel Underground Tanks for Flammable and Combustible Liquids*, but "midnight" variances from this standard range from 2,000-gallon boiler plate pressure vessels to 14-gauge 275s. While the pressure vessels seem like overkill, the thin-walled 275s were clearly not designed to be buried and are easy targets for corrosion.

In the past, homeowners installed fuel oil tanks in the ground for various reasons—the lack of space, no basement, or, perhaps, a failure to recognize the aesthetic value of the aboveground tank as a lawn ornament. Also, the oil "crisis" of the 1970s prompted many homeowners to install large capacity (i.e., 550 to 2,000-gallon) USTs.

The piping for both above and below ground fuel oil systems typically consists of a 3/8-inch copper supply line, which runs between the tank and the furnace. For basement installations, past practice was to run the line under the concrete floor, along with all the other "plumbing" (more of this practice later), or along the floor or walls.

Oil burners need a constant supply of fuel but can only burn it at a certain rate. Aboveground tanks, by virtue of the head pressure from the tank, provide a steady flow of fuel to the burner through a single line. UST fuel oil piping requires a two-line system, a fuel supply suction line, and a return line that "returns" the fuel that's not used by the burner back to the tank. If the suction line leaks, the furnace starts to sputter, however, if the return line leaks you'd never know it. That's why our rules require that both the suction and return lines be installed in secondary containment with leak detection.

In the past, here in Maine, fill lines and vent lines for both UST and AST home heating oil tanks were constructed of 1-1/4" to 1-1/2" black iron pipe (clearly not suitable for UST piping by today's standards),



and run through the basement wall or against the house to where they could be accessed by the fuel oil delivery driver.

The driver makes a tight connection on the fill pipe and pumps product into the tank under pressure. He or she knows when the tank is full by listening to the vent whistle, an over-fill device that's attached to the vent line at the tank. The fitting contains a tube whistle that extends into the tank at a pre-established level. As the tank is being filled the air rushes through the tube and out the vent line, producing a whistling noise that the driver can hear. As fuel rises up to the level of the tube and submerges it, the whistle is silenced. The driver then knows to terminate the delivery.

Failures and Fixes

There are a number of potential integrity problems associated with fuel oil systems, but let's look at the main culprit—piping—and its partner in crime—corrosion. Galvanic corrosion is certainly a predator that lurks ready to pounce on buried metals given the right conditions. This type of corrosion usually involves differences between metals or differences between chemical properties of the backfill material surrounding the pipe.

The latter is likely to be the problem in Mrs. Beal's case—copper lines resting on bedrock and covered with soil. A more ubiquitous situation exists where copper lines rest on soil and are covered by a concrete basement floor. The point where soil, concrete, and copper meet tends to be where most corrosion occurs.

When you add a little water, the corrosion circuit is complete.

The current installation practice in Maine is to sleeve the copper lines in PVC or ABS plastic pipe to prevent contact with this aggressive environment. Another way of keeping copper piping out of harms way is to run it along the basement wall. This gets it aboveground and off the floor. Slips, trips, and falls don't do you or the piping any good, so if you must run the line across the floor, cover it with door threshold strip-ping.

Fuel filters and shut-off valves can also corrode if partially buried. These items, as well as the exposed portion of the piping are susceptible to damage, especially in outside situations. For example, at another coastal, shallow bedrock site, a snow plow clipped the fuel line and filter. The fuel leaked out and the owner thought she was simply out of fuel. The oil company filled the tank up and in a few days the fuel was gone. As a result, seven homes have contaminated wells. If MDEP were to install a community water supply (they are on carbon filter systems for now) the cost would be \$1.1M...all because of a little 275-gallon home heating oil AST.

Steel USTs fail, for the most part, because of corrosion, but aboveground 275s fail in more "comical" ways. The spindly steel legs rust out, frost heave tips tanks over, snow and ice falling from roofs break lines, and ruptures from vent restrictions occur frequently. This latter example seems to happen to a lot of manifold tanks—the first one fills up and

■ continued on page 12

ruptures, probably because of inadequate venting of the tank. ASTs can also fail because of corrosion, especially if they have water in the bottom or if they are sitting right on the ground.

In some cases, secondary containment for home heating oil ASTs would be a good idea. Most national codes don't mandate secondary containment unless storage capacity exceeds 660 gallons for a single tank or 1,320 gallons aggregate. I would recommend secondary containment if the tank is located in a basement with an unfinished (dirt or bedrock) floor or if the tank is outside in an area with sandy soils and within 50 feet of a well. You can buy, for a price, tanks contained in attached steel dikes. I've also seen tanks with secondary containment consisting of the bottom half of a concrete septic tank.

Famous Last Words

One last word on UST home heating oil tanks. Because USTs are concealed, in my opinion, they are not for home use, unless secondarily contained with continuous leak detection. If you are a home heating oil UST owner in a state that does not regulate home heating oil USTs, it doesn't mean there is nothing to worry about. If you have a buried 275, remove it...now!

You may say to yourself, "Why should I be concerned, I live in town and have city water?" Just wait until you try to sell or refinance your home. Lending institutions and prospective buyers are very leery about USTs. We find dozens of unregistered home heating oil USTs each year as a result of property transfers.

So, now that you know what can happen to that innocuous looking tank in your basement, backyard, or in the ground, you are halfway to winning the battle. Environmental awareness begins at home, so pay attention to your heating oil system. For heaven's sake, if you start using more fuel than normal, don't keep filling up the tank...investigate. ■

Self Inspection Checklist for Basement and Backyard Aboveground Home Heating Oil Tanks

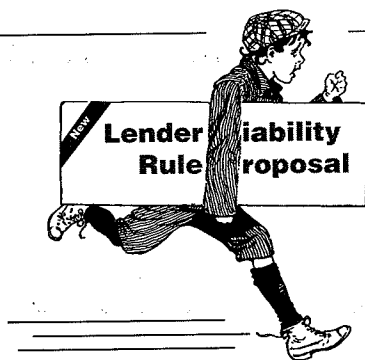
If you answer "YES" to any of the following questions, call your oil burner technician for a more detailed inspection and corrective measures. This is a list of items that you can easily observe. But remember, look, don't touch. Even if you can see rust or an oily area, don't touch. It's best to call a licensed oil heat technician, and let a professional take care of it.

- ☐ Are the tank legs unstable or on a precarious foundation?
- ☐ Are there any signs of rust, weeps, wet spots, or excessive dents on the tank's surface?
- ☐ Are there any drips or signs of leakage around the filter or valves?
- ☐ Do the oil lines between the tank and the furnace run either under concrete or aboveground without being encased in protective tubing?
- ☐ Is there danger of snow or ice falling on the tank?
- ☐ Is the tank vent clogged or restricted because of ice, snow, or insect nests? (Screened vents can be used to prevent insect nest problems.)
- ☐ Is the overfill whistle silent when the tank is being filled? (Ask your delivery person.)
- ☐ Are there signs of spills around the fill pipe or the vent pipe?
- ☐ Is the fuel-level gauge cracked, stuck, or frozen...or are there signs of oil around it?
- ☐ Are you using more oil than normal?

Self Inspection Checklist for Home Heating Oil USTs

If you answer "YES" to any of the following questions, call your oil burner technician for a more detailed inspection and corrective measures. (Of course, the best thing to do is to remove your UST and switch to above-ground storage.)

- ☐ Are you using more fuel than normal?
- ☐ Is your tank taking on water—a rise in water level greater than 1/2" for an 8-to 12-hour period? (Your oil-burner technician can check for water or provide you with water-finding paste so you can check yourself.)
- ☐ Are there signs of oil sheens in nearby streams, wetlands, or drainage ditches?
- ☐ Are there signs of distressed (withered) vegetation over or down slope of the tank?
- ☐ Is the tank vent clogged or restricted because of ice, snow, or insect nests? (Screened vents can be used to prevent insect nest problems.)
- ☐ Is the overfill whistle silent when the tank is being filled? (Ask your delivery person.)
- ☐ Are there signs of spills around the fill pipe or the vent pipe?



EPA Proposes UST Lender Liability Rule

On June 3, the EPA Administrator signed a proposed regulation limiting the regulatory obligations of financial institutions and others who hold security interests in property on which USTs are located. The proposal (due to be published in the *Federal Register* the week of 6/13) should help make capital more available to UST owners and operators who need to make improvements to their facilities to comply with a broad spectrum of environmental regulations.

EPA is particularly concerned about the ability of small UST owners and operators to comply with federal UST upgrading and replacement requirements. Secured creditors (lenders) have been reluctant to extend loans to these small businesses for fear of incurring UST cleanup liability in situations where the business (e.g., a gas station) becomes bankrupt and the lender takes possession of the property through foreclosure.

Subtitle I of the Resource Conservation and Recovery Act (RCRA) contains a "security interest exemption" that provides lenders a limited statutory exemption from UST cleanup liability for releases from petroleum USTs. However, many lenders are unaware of the existence of this exemption and many others are uncertain about its scope of coverage.

Further confusion has resulted from various court cases regarding Superfund lender liability, particularly the recent decision by the D.C. Circuit Court of appeals in *Kelley, et al. v. EPA* to vacate EPA's Superfund lender liability rule, which attempted to clarify the security interest exemption in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). In this case, one of the major court assertions was that Congress did not grant EPA the legal

authority to define liability under CERCLA: only the courts have that authority. The proposed UST lender liability rule is derived from RCRA authority, however, not CERCLA. Therefore, the Kelley decision does not directly affect the UST lender liability rule.

Exemption Eligibility

The UST-specific proposal sets forth regulatory criteria which specify conditions under which certain secured lenders may be exempted from RCRA Subtitle I regulatory requirements. Under the proposal, a lender is eligible for an exemption, both prior to and after foreclosure, from compliance with all Subtitle I regulatory requirements as an UST "owner," and from the Subtitle I corrective action and financial responsibility requirements as an UST "operator" if the lender: 1) holds an ownership interest in an UST, or in a property on which the UST is located, in order to protect its security interest (a lender typically holds property as collateral as part of the loan transaction), 2) does not engage in petroleum production, refining, and marketing, 3) does not participate in the management or operation of the UST, and 4) does not store petroleum in the UST after foreclosure.

The Lender's Obligations

The proposal specifies a range of activities, including foreclosure, that lenders can undertake to manage and protect their collateral without being held responsible for compliance with the federal UST regulations. The proposal also describes circumstances under which a financial institution would be considered to be participating in the management of an UST property and, therefore, responsible for UST cleanup costs.

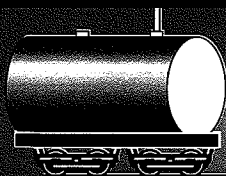
For example, the proposal allows a lender, without losing the protection of the regulatory exemption, to: regularly monitor or investigate the borrower's collateral, business condition, and financial health; require that the property be maintained in an

environmentally sound manner; and provide financial, administrative, or other specific or general advice to a borrower to clean up the property if contaminated.

Prior to foreclosure, a lender typically will not be involved in the day-to-day operations of an UST and will therefore not incur liability as an "operator." By foreclosing, however, a lender takes affirmative action with respect to the UST, and therefore, by necessity, takes control of and responsibility for the UST, thus subjecting it to all Subtitle I requirements as an operator. However, the proposed rule permits a lender who wishes to take advantage of the regulatory exemption to foreclose and sell its UST collateral under the following circumstances: where the foreclosed UST(s) is no longer storing petroleum, or the lender empties the UST(s) within 15 days after foreclosure; and where the lender either temporarily or permanently closes the UST(s).

Under the proposal, a lender who chooses to continue operation of its UST would not be eligible for the proposed regulatory exemption and would face potential UST regulatory responsibility for corrective action in the event of a release. The lender would also be responsible for compliance with the UST technical standards and financial responsibility requirements under Subtitle I.

EPA encourages the public to comment on this proposed rule and will accept comments for 60 days after the proposed rule is published in the *Federal Register*. (Inasmuch as *LUSTLine* went to press before the proposed rule was published, we can only say that it will likely be published on June 13th.) For additional information or for a copy of the *Federal Register* notice, contact EPA's RCRA/Superfund Hotline, Monday through Friday, 8:30 a.m. to 7:30 p.m. EST. The national toll-free number is 1-800/424-9346; for the hearing impaired, the number is TDD 800/553-7672. ■



Coast to Coast

from the ASTSWMO Tanks Subcommittee



In April, 1993, the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) Board of Directors approved a plan to upgrade its UST/LUST Task Force to full Subcommittee status, the same as that of such other ASTSWMO Subcommittees as CERCLA and Solid Waste. Since then, the Tanks Subcommittee has established four working Task Forces—the Underground Storage Tanks (UST) Task Force, the Leaking Underground Storage Tanks (LUST) Task Force, the Training and Information Exchange (TIE) Task Force, and the State Cleanup Funds Task Force (formed to address the needs of State Fund Administrators).

The Tanks Subcommittee Task Forces are comprised of state tanks program managers from across the country. Approximately half of the states are represented on the four Task Forces (see map) under the Tanks Subcommittee, which offers a broad base for identifying state concerns and needs, developing consensus positions on priority UST/LUST/Fund issues, and providing opportunities for information sharing among the states. Some of the priority issues this subcommittee is prepared to address include: the 1998 UST upgrading deadline, risk assessment, state LUST fund solvency, and enhancing state information exchange procedures.

To help further information exchange concerning the Tanks Subcommittee, *Coast to Coast* will be a regular feature of *LUSTLine*. If you want to learn more about the Tanks Subcommittee, contact the Subcommittee Chair, Michael Kanner (MN) at 612/297-8564, or Ed Beagan (ASTSWMO) at 202/624-5828.

Information Exchange

The Training and Information Exchange (TIE) Task Force has orchestrated a number of projects to enhance the state tanks programs. Some of these projects include:

- An ASTSWMO LUST Program Manager's Conference held in November 1993 in Kansas City, Missouri. This conference presented streamlining ideas and concepts for state project managers and first-line supervisors. This kind of information should help state UST/LUST personnel provide better field service for tank owners and operators.
- A State Newsletter Exchange Questionnaire that was sent to state tank program officials across the country (see the following article for further details).
- A Peer Match Program, that will enable state personnel to travel to another state to spend time with program personnel who have expertise in a certain tank program area. These Peer Matches and other information exchange activities will be facilitated by a Peer Match Directory that is currently being developed. It will outline the program expertise and needs for each member state and provide issue-specific contact names and numbers.

The Task Force will meet with EPA OUST representatives this summer to discuss ways of enhancing communication between EPA and the states. In a recent ASTSWMO survey, newsletters, issue-specific memos, the CLU-In Electronic Bulletin Board, and other types of outreach strategies were identified as potential communication mechanisms.

For more information on TIE Task Force activities, call Gary Kulibert (WI) at 715/369-8960 or Pat Jordan (WY) at 307/777-7684.

State Newsletter Exchange Questionnaire

This February, in an effort to increase information exchange among state tank programs, the Tanks Subcommittee sent out a State Newsletter Questionnaire. Of the 42 responding states, the 24 states that currently publish newsletters indicated a willingness to share their newsletters with other states. All 42 respondents were interested in obtaining copies of other state newsletters. This April, as a follow-up to the questionnaire, a list of state newsletters was sent out to the states so that they could

check off which newsletters they wanted to receive.

The last phase of this effort was completed on May 17, when letters were sent to the state newsletter contacts, asking them to include state officials on their subscription lists. The TIE Task Force thanks all participating states for their help in completing this project. Over the coming months, we will check in with states to see if this newsletter exchange is useful. If you have questions about this project, call Kevin Kratina (NJ) at 609/633-7141.

UST Program Survey Indicates Need for Better EPA Communication

The UST Task Force, on behalf of state UST officials, has requested that EPA's Office of Underground Storage Tanks (OUST) study how it can better provide states with timely information on UST program news. In a recent ASTSWMO questionnaire completed by 34 states, 1 out of 3 states believe that communication between OUST and the states could be enhanced. As for methods for improving communication, most states suggested that monthly news sheets and memos should be used to keep states

abreast of UST activities, policies, and technical interpretations.

In the same questionnaire, the states agreed that if the UST program is to continue to move forward, more attention should be given to:

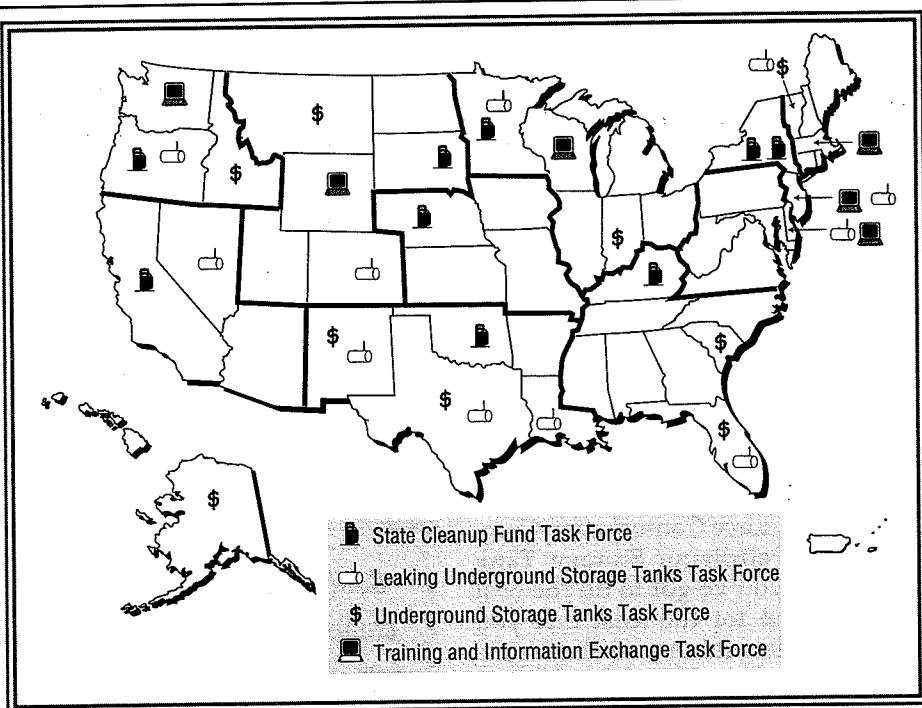
- Outreach to tank owners on the 1998 upgrade deadline (see related article)
- Outreach to tank owners on leak detection compliance
- Training of field inspectors

In a meeting between the ASTSWMO Tanks Subcommittee and EPA OUST Director David Ziegele, several options were identified for meeting the states' needs for field inspector training. These include a reorientation of the annual EPA National Conference, regional workshops, an inspector training video, exchange of state expertise, and a training series for new UST inspectors. In the coming months, the UST Task Force will continue working with OUST to facilitate the resolution of these important issues. If you have any questions or comments, call Vicki Church (CA) at 619/338-2243.

UST-DMS System Update

On May 12-13, representatives of 20 of the 24 UST Data Management System (DMS) user states met with EPA OUST staff in Washington to discuss plans for a new UST data management system. After a demonstration by OUST's Bill Fagart on a new system being designed for Puerto Rico, the consortium approved EPA's plans to implement a system written in ACCESS using the Windows format. The new system will offer a simple program/screen development process and allow state staff (non-programmers) to perform state-specific changes easily.

The consortium has divided its membership into work groups to compare existing DMS screens in each module and determine what, if any, improvements should be made. The groups will meet again in August/September to finalize the proposed changes. OUST will engage a contractor for full program development. Conversion from the existing DMS to the new system is



expected to take place by December 1995. For more information, contact Will Anderson (OUST) at 703/308-8872.

Winding-Up For the 1998 Tank Upgrade Deadline

Although the deadline is 4 years away, EPA-OUST and the ASTSWMO UST Task Force are discussing ways to ensure that tank owners and state program staff will be able to meet the December 23, 1998 compliance deadline for corrosion control and spill and overfill prevention. Preliminary discussions on a plan to work together on this matter took place at a January UST Task Force Meeting in Washington, D.C., and at the ASTSWMO Mid-Year meeting in April in Milwaukee, Wisconsin.

Both EPA and the Task Force want to develop a plan of action that state program managers and EPA regional program managers will be able to use as a tool to help promote compliance with the 1998 requirements. Some potential projects discussed include: development of a 1998 compliance strategy handbook for program managers; compilation of state experiences with grant and loan programs for tank upgrading; and a packet of upgrade-related information outlining inspector training opportunities. EPA and the

Task Force also hope that national, regional, and local petroleum associations and distributors can be enlisted to further the information/education effort.

To achieve compliance, tank owners must upgrade existing tanks, and where appropriate, replace tanks, or permanently decommission tanks prior to the compliance deadline. As tank owners begin to comply over the next 4 years, LUST program managers and fund administrators are likely to face reports of more and more petroleum release sites. These officials will also need to anticipate and plan for an increased workload.

The UST Task Force welcomes any and all ideas from UST program managers on successful methods that have been employed to manage compliance with other deadlines. These ideas can be sent to: Ed Beagan, ASTSWMO, 444 North Capitol St, N.W., Suite 388, Washington, D.C. 20001. Phone: 202/624-5828, Fax: 202/624-7875.

Ideas will be discussed and evaluated by the UST Task Force as a part of developing the 1998 compliance strategy, which will be sent to all state, territorial, and EPA regional UST program managers. This compliance strategy exchange will be an on-going effort which will continue until the deadline is past and all tank owners are in compliance. ■

LUST Investigation & Remediation**Controlling UST Cleanup Costs**

Cost Control is of great consequence for state cleanup fund programs, inasmuch as cleanup costs could far outstrip available funding unless strong, enforceable cost control measures are developed and implemented. Cost control is also critical for tank owners and operators—costs should be such that owners and operators will be able to comply with corrective action requirements.

"Controlling cleanup costs comes down to one simple principle," explains Dan Neal, Manager of the Reimbursement Section of the Texas Natural Resource Conservation Commission's Petroleum Storage Tank Division, "you've got to do the best that you can for the least that you can." To follow this maxim, both state fund managers and tank owners need to employ a combination of cost control strategies that address site characterization and corrective action processes; administrative procedures; communication with RPs and contractors; rate structures; cleanup goals; and performance goals.

"Numerous parties (i.e., federal facilities, state environmental programs, and petroleum companies) facing escalating cleanup costs have adopted and/or implemented cost control techniques to conserve their limited remediation resources," says Steve McNeely of EPA's Office of Underground Storage Tanks (OUST). "Most of these strategies have provided significant cost savings but, in some cases, this knowledge is not transferred to small tank owners and operators.

"Here at EPA, we try to identify and collect information on a variety of cost control strategies, both public and private, and develop methods to transfer

successful practices and components to the rest of the regulated community," says McNeely. "We are

working cooperatively with state programs to implement some of the cost control measures that we've identified, so that we can in turn get information out to where it needs to be."

Many state agencies and larger tank owners are indeed discovering ways to both keep costs down and protect the environment—the two are not mutually exclusive. States need to take the lead in creative cost control, and, once their own house is in order, work on getting owners and consultants to agree to do a better job. This means that states must

make their requirements crystal clear—offer consultants days, tank owner days, and prepare user-friendly guidance material.

We'll do our part here at *LUSTLine* to help get the word out on cost control. In the past three issues we've run *Controlling UST Cleanup Costs* fact sheets that EPA OUST prepared for UST owners and operators who have little or no experience with remediating sites. The following article presents the subject of cost control from a state fund administrator's point of view. We look forward to getting other real life cost control examples—we'd like to hear from you.



Controlling cleanup costs comes down to one simple principle,—you've got to do the best that you can for the least that you can.

Dan Neal, Texas NRCC

Cost Control By Any Other Name May Not Be Cost Control

by James Bearzi

Many states are concerned about the solvency of their state funds; and several have funds that are now insolvent or have serious cash flow problems. Circumstances that lead to fund insolvency are manifold, but they tend to fall into a few general categories. First, it's obvious that the cost of cleaning up contaminated sites is far greater than the funding

provided. Fund administrators must, therefore, be sensitive to the costs of cleanup and the relative benefit of each dollar spent.

Second, many states don't have priority systems for paying claims. Third, in many states anyone can access the fund. Compliance with regulations is not a criterion for eligibility, so most if not all claims get paid. Finally, we may be spending too much time and money cleaning up sites that either don't need to be cleaned up at all, that don't need to

be cleaned up to numerical standards, or that don't need to be cleaned up right away.

For reasons such as these, cost control has become a driving force behind fund reorganization in many states. But as a state fund administrator who has spent many an hour deliberating over New Mexico's cost control strategies and talking to other fund administrators about their programs, it strikes me that we need to take a moment to consider what cost control is and what it isn't.

Cost Control vs. Cost Accountability

Potential cost controls for state funds are many and varied. New Mexico has attempted to implement several cost controls at many levels of its program. But it's important that we differentiate between cost control and cost accountability. Cost accountability is identifying costs, putting those costs into a format using generally accepted accounting principles, and maintaining cost documentation for audit accountability. It is a tracking function. Cost tracking doesn't keep costs down, except to the extent that ineligible costs are identified in the accounting system.

Cost control is very different, in that it is a limiting function. Cost controls put light at the end of the expenditure tunnel. This is accomplished not by cost or claims tracking, but by defining both cost limits and the product realized by the purchase.

Usual & Customary Rate Tables

Many state programs have developed some kind of usual and customary rate tables for professional services, typical investigation and reclamation expenses, permissible support services, and typical subcontract work. Such "fee schedules" identify units of cost, such as dollars per ton of contaminated soil disposal, dollars per hour of staff geologist, or dollars per sample of a given laboratory test.

Some of these fee schedules are extraordinarily detailed and allow the fund administrators to quickly and easily identify unit costs that are "out of line." The purpose of a fee schedule is to establish cost ranges that are viewed as being usual and customary.

For example, the price of disposable sampling gloves may be specified in a state's fee schedule. A consultant working on a particular LUST site knows that the state will reimburse for the cost of a pair of gloves up to a certain point. However, nothing exists to limit, or control, the number of gloves that may be used for a given sampling event, much less during the lifetime of a cleanup. Hence, thousands of disposable sampling gloves may be used at a particular site; their pur-

Cost controls put light at the end of the expenditure tunnel. This is accomplished not by cost or claims tracking, but by defining both cost limits and the product realized by the purchase.

chase is uncontrolled by the fee schedule. Their unit cost, however, is tightly controlled and accounted for by the fee schedule.

But state fund administrators should not be interested in purchasing boxes of disposable sampling gloves, hours of professional services, or elaborate hardware. The product they are purchasing is a cleaned-up site, and every activity associated with that site should be directed toward that end. Sampling gloves, professional services, and hardware are but a means to an end. Fee schedules are more accountability mechanisms for eligible costs, rather than cost controls.

Fee schedules may also be extremely useful for identifying costs that are not considered usual and customary—generally referred to as ineligible costs. For example, two ineligible costs according to New Mexico's fee schedule are subcontractor markup and tank removal. Tank owners know that the Fund will not reimburse for tank removal and, as a result, tend to require a more competitive approach from contractors bidding on the work. The removal contractor has incentive to keep costs down; if he doesn't, he doesn't get the job. The cost of tank removal statewide is adjusted according to market conditions, which are driven by the state through its fee schedule. Consequently, the cost of tank removal is controlled, even though it is outside the universe of reimbursement.

A fee schedule is a limiting device for unit costs, an accounting tool for identifying specific costs, and a strong influence on controlling ineligible costs in the marketplace. State fund administrators

need to be aware of which aspects of their fee schedules serve as accounting functions, and which actually control costs, so they don't relax and consider cost control a done deal.

Project Management

Project management is one of the easiest means of implementing cost controls in a state fund program. In New Mexico, reimbursable costs must be approved in advance by state project managers, whose job is to ensure that the most appropriate work is conducted at release sites. When a release is reported, the state mails a "reimbursement packet" to the responsible party (RP). This packet provides clear guidance on the reimbursement process, the corrective action process, and the fact that both must dovetail to ensure that the job gets done effectively.

The RPs are put on notice that if they want to be reimbursed for the costs of corrective action, they must correspond frequently with their state project managers to ensure that they adhere to the State's corrective action timeline, the fee schedule, and all other rules associated with reimbursement.

Project managers review all proposed corrective action before it occurs. They review the work plan for technical adequacy, and ask such questions as: "Is the work appropriate?"; "Will this work adequately characterize or clean up the site?"; "Are X hours of drilling appropriate for installation of X monitoring wells in this terrain?"; "Is this proposed reclamation system based on fallacious data or otherwise inappropriate for this site?"

Of course, up-front work approval requires time and has the potential of delaying corrective action. In New Mexico, as in most other states, immediate threats to human health and the environment are mitigated immediately. This work doesn't require written pre-approval or a work plan, but it must have verbal approval from the project manager. The State has developed usual and customary costs for these emergency activities.

Project managers and fund financial experts review the proposed costs of work. Financial staff compare the proposed budget with

■ *continued on page 18*

the fee schedule. If necessary, they adjust the budget to conform to the fee schedule and eliminate any ineligible costs.

Project managers review the budget, not for unit costs, but for number of units. This is clearly a cost control function. Project managers ask such questions as: Are X hours of staff geologist necessary to log a borehole in this terrain?; "Should the Senior Hydrogeologist be logging a borehole, when a staff geologist would do?"; "Are professional staff performing support staff functions?"; and "Is the subcontracting appropriate?" To avoid protracted negotiations over work plans and proposed budgets, project managers will often approve work with their own modifications so that work can proceed expeditiously.

Site Characterization, Cleanup, and Technology

Significant cost savings can be realized through sound decision-making during the corrective action process. Within the first few days of a reported release, several important questions should be answered: What is the contaminant (e.g., gasoline, fuel oil, used oil)? What is the hydrogeologic situation? Is groundwater affected? Are there potential receptors? Are there immediate threats to human health and the environment that require emergency response?

The answers to these questions should lead the way to subsequent site characterization studies which attempt to define not only the vertical and horizontal extent and magnitude of the release, but also to gain data for remedial design. Accelerated site characterization, where plume delineation and cleanup design criteria happen simultaneously, can help minimize cleanup costs and achieve a better product. Finally, a well-conceived site characterization can lead to a well-conceived and cost effective corrective action strategy.

Accelerated site characterization, risk-based corrective action decision making that leads to site-specific cleanup goals and strategies, and selection of appropriate corrective technologies are processes that if applied correctly can lead to cost savings. You can find discussions on each of these concepts in *LUSTLine*

Bulletins 18 and 19, and in this issue, "The Essence of ReBeCcA," on page 19.

Contractual Controls

Contractual controls are perhaps the most effective cost-control mechanism; they are also the most difficult to implement. As environmental cleanups become big business, the importance of sound environmental contracting increases. Typically, a tank owner will contract with a consulting firm to perform corrective action at a contaminated site. The consultant will bid on one or a series

***The single most important,
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Cleanup costs will be
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action.***

of jobs involving site characterization and reclamation. The tank owner, however, is somewhat at the mercy of the consulting firms because of the mysterious nature of the subsurface.

As a first step, the tank owner should require competitive bids from a variety of consulting firms. If nothing else, the process will help educate the RP about the world of environmental consulting that he or she is about to finance. As a practical matter, the bids will likely be typical "time and materials" proposals, with little incentive for the bidder to control costs, and little guarantee that cleanup will be effectuated.

Contracts, however, may be structured to assure at least a modicum of cost control. For example, the State of New Mexico has entered into contracts with consulting firms to clean up sites for what is essen-

tially a fixed fee. Units of contaminant reduction are determined, and costs are assigned to these units. The state and the contractor negotiate performance criteria and a price. If the site is not cleaned up within a period of time specified in the contract, the contractor provides free cleanup services for the time it takes to meet the performance goals. The faster the cleanup, the more profit the consulting firm realizes. This concept of buying a cleaned-up site, rather than years of time and materials, truly controls costs.

The next crucial step, however, is to figure out how to transfer this performance-based concept and sell it to the regulated community. How can we get tank owners to require the same guarantees from their consultants?

First, it is indeed possible to obtain performance guarantees from consultants. Second, with the state fund "hammer" (or "carrot," depending on your point of view) hovering over the heads of RPs, project managers can point RPs in the performance direction. In fact, several site cleanups and investigations are being conducted on a fixed-fee, pay-for-performance basis through reimbursement.

Prevention...the Ultimate Cost Control

The single most important, but most overlooked, cost control measure is prevention of releases. Cleanup costs will be minimized if tank owners detect releases immediately, take steps to stop releases quickly, remove the source, and take expeditious corrective action. Here in New Mexico, reimbursement is contingent on compliance with all aspects of the regulations. For example, a tank owner who has a release, but did not have release detection installed on pressurized piping by the specified date, will not be eligible for reimbursement from the fund.

Possibly the most important cost-control measure implemented in this state is our expedited enforcement program. Through this program, inspectors perform compliance inspections on both abandoned and operating facilities. Inspectors have the authority to issue field citations for non-compliance. These citations

■ *continued on page 21*

LUST Investigation & Remediation

The Essence of ReBeCcA

Risk-Based Corrective Action Decision Making

by Gerald Phillips

Currently, over a quarter of a million confirmed underground storage tank releases have been reported nationwide. EPA estimates that this number could go as high as four hundred thousand and cost more than \$32 billion to remediate. These overwhelming numbers are severely taxing the ability of state and federal programs to handle the work load. A risk-based corrective action (RBCA) decision making approach can help regulators identify and address the highest risk sites, and at the same time establish controls at all other sites.

The use of risk-based decision making as a part of the corrective action process is not a new concept. The U.S. EPA has been developing the concept for a number of years, primarily as a part of the Superfund program. The UST/LUST program has been developing such an approach for the last year and a half.

As a result of the Superfund effort, a comprehensive body of reference and guidance documents on exposure risk has been developed for a broad range of substances. These documents establish the primary reference standards for health exposures. They have been used to establish the primary criteria for the American Society for Testing and Materials (ASTM) petroleum RBCA process. (See LUSTLine #19 for more information on ASTM UST-related standards.)

ASTM's Exposure/Risk Assessment Task Group was formed over a year ago to develop a RBCA practice for petroleum releases. The group is made up of representatives from two EPA Regions, two states, a state petro-fund manager who chairs the groups, major oil companies, and environmental cleanup consultants.

Two draft standards were prepared by the task group. The first was distributed for unofficial ballot during the middle of last year. The second was distributed as an official

ballot this January. To ensure that regulators would have the opportunity to review them, both ballots were sent to all 50 states and all 10 EPA Regional offices and headquarters. The document, *A Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites*, which was approved by the ASTM E50.01 Subcommittee as an emergency practice on March 10, 1994 and has since been adopted by ASTM as emergency standard ES38-94, will be available in mid-June. The emergency standard is good for 2 years.

ASTM's RBCA standard is the culmination of an effort to establish a process which, when properly applied, will define the environmental risk posed by a petroleum release at a given site to human health and the environment. The process begins by laying down the framework for a site assessment that characterizes the contamination and identifies the exposure pathways. The practice then provides several methods to define the potential health impact from the site. This information can in turn be used to define the level of oversight necessary for that site and the corrective action steps necessary to protect human health and the environment and to achieve cleanup completion.

The ASTM RBCA process is laid out in three tiers; the simplest tier, or lower risk, uses look-up tables, which consist of a matrix that lists the most conservative reference levels of exposure risk to humans from different compounds through the different media. The most complex tier, or highest risk, uses computer-based mathematical models comprised of a series of formulas that mathematically represent the contaminant in the air, soil, and groundwater, and project its movement and potential impacts.

While the practice defines the process in three tiers, a site can move from any tier into another, based on additional data gathered. RBCA is not a substitute for corrective action. It is a decision making tool to help

RBCA was developed to be used on a site-by-site basis to evaluate site conditions and establish environmental risk.

determine how the site should be managed, what cleanup goals should be, and how those goals should be achieved.

RBCA was developed to be used on a site-by-site basis to evaluate site conditions and establish environmental risk. Though not the original intent, cost savings can be an outcome of a properly applied RBCA process, because it fosters decisions based on action needed as opposed to treating all sites the same. Also, RBCA can be used by regulators to group sites within general ranges of high, medium, and low risk so that all sites can progress towards cleanup completion while limited resources can be directed at the highest risk sites. The ultimate result is a greater protection of human health and the environment.

EPA Region 5 is working with the other Regions and Headquarters to implement the RBCA concept. In Region 5, we are establishing pilot tests of ASTM's RBCA and other similar processes to determine their strengths, weaknesses, and effectiveness. Our goal is to establish a baseline RBCA process that can be used effectively. The ASTM practice, with perhaps some revisions, will be a good model for those who wish to evaluate RBCA as a decision making tool. If used as a means for establishing site specific exposure pathways and determining the resulting environmental risk, RBCA can be a beneficial tool for regulators, consultants, and industry. ■

Gerald Phillips is EPA Region 5's UST/LUST Coordinator. He is also a member of the ASTM Exposure/Risk Assessment Task Group.



Are Patents Potential Barriers to Using Alternative Cleanup Technologies?



by Gilberto Alvarez

During the 1980s, when the environmental remediation industry was in its infancy, there were many hit-or-miss approaches to site cleanup—indeed, there were more misses than hits, which is to be expected in an emerging industry. But now that the industry has matured and accumulated knowledge and experience, environmental professionals have the benefit of an expanded database of successful applications of specific field-applied site remediation techniques.

Certainly the large numbers of corrective actions associated with the 250,000 confirmed releases identified nationwide have helped contribute to this agglomerate of knowledge. In fact, over the past several years many “alternatives” to traditional pump-and-treat technologies have taken form and are gaining wider acceptance as viable LUST remediation techniques. Examples of such alternative technologies include soil vapor extraction systems, air sparging/soil vapor extraction systems, bioventing, and various types of *in situ* and *ex situ* bioremediation.

Many of these technologies have pointed us in the direction of more effective and/or less expensive site cleanups. (Of course, the usefulness and efficacy of any given technology must be viewed within the context of a given LUST site.) This technology evolution is why both EPA's Office of Underground Storage Tanks (OUST) in Washington D.C. and our Region 5 office have encouraged state regulatory programs to allow the use of alternative technologies through a variety of directives, policy statements, and activities such as field demonstration projects, corrective action training courses, and inter-state sharing of technical guidance documents and permit process streamlining methods.

In general, the regulated community has welcomed alternative

technologies, particularly if they get the job done (i.e., reach a “no further action” condition) faster and/or at less cost, and provided regulators are comfortable about allowing their use. Here in Region 5, we try to educate regulators about the types of questions they need to ask environmental professionals who propose an alternative technology. Regulators don't necessarily need to know how to design a system, but they do need to be able to figure out if it is going to work at a given site.

My concern, from a regulatory perspective, is whether there is the perception that once a technology is patented, other environmental professionals will be reluctant to use it to clean up a site, even if site conditions are right for it.

Innovation's Reward

In many ways, the environmental field is still an emerging industry. Over the past decade, a tremendous amount of innovation and development has occurred, and continues to occur, especially in the *in situ* technologies. As in any emerging industry, individuals or corporations may decide to submit what they consider to be unique technological developments to the U.S. Patent Office for official recognition.

The electronics, automotive, and chemical process industries are well known for the patents that have been filed and awarded. Along with these patent awards, of course, go the rewards...the attendant royalties. In

recent years, the environmental industry has also begun to file and have awarded its share of patents. Some of these patent actions have been around for a while, like the patent for a soil vapor extraction process, others, like an air sparging process patent, are fairly new. But what do these environmental cleanup technology patents mean in terms of using or exploring alternative cleanup technologies at LUST sites?

Reluctance to Use Patented Technologies?

I want to preface my remarks by saying that I am in no way questioning the legality of patents. If a patent has been issued, and if the patent holder knows of an infringement and is willing to take action, then it's enforceable. My concern, from a regulatory perspective, is whether there is the perception that once a technology is patented, other environmental professionals will be reluctant to use it to clean up a site, even if site conditions are right for it.

Some firms or responsible parties may simply wish to avoid entering into agreements with a patent holder to avoid paying royalty costs. Others may enter into agreements to use the patent but only on a limited basis. Still others may be unaware of the existence of a particular patent and design/install a similar system, only to find out later that they face a lawsuit for patent infringement.

Although the potential reluctance to use a patented technology is not unique to the environmental cleanup industry, it could inhibit the innovative and creative spirit that has prevailed throughout the industry over the past decade. Also, the fear of infringement, either perceived or real, may cause environmental professionals to avoid patented technologies altogether.

For example, let's assume that a

pilot test has demonstrated that a patented technology is, in fact, applicable to a site. Several other technologies are also applicable, but the patented technology shows promise for cleaning up the site faster. When the time for technology selection (and approval by a regulator) comes, should the fact that the selected technology is or is not patented be a factor? Should the fact that the site may be cleaned up in a longer period of time or at a higher cost if a non-patented technology is used be a factor? If a patented technology is avoided, will the site owner rely on a "conventional," and possibly less prudent, method such as pump-and-treat or excavation?

Pursuing this scenario, it is not difficult to imagine that gains made in catching up on state LUST site cleanup backlogs—in part, because of the increased use of alternative technologies—could be set back. Again, no one is going to deny the right of an individual to apply for a patent for a technology he or she can prove is unique...and "unique" is the operative word. Are some cleanup technologies too broad to be patentable?

In the January 17, 1994 issue of *Chemical & Engineering News*, Bruce Lehman, the new Commissioner of the U.S. Patent and Trademark Office, addressed this point briefly. He stated that, "...patents are easier to get now and are more often upheld than they used to be. That means, I think, that there has been a lowering of the threshold of patentability, of the standard of obviousness, in some cases."

Patent Royalty Fees and State Cleanup Funds

Another potential issue associated with patents has to do with whether or not the royalty costs associated with the use of a patent can be passed on to the state fund, if a site is eligible for reimbursement under the state's petroleum fund. Some state funds have disallowed patent royalty fees as an eligible cost for cleanup reimbursement.

One thing is certain, if a responsible party or environmental consultant enters into a patent agreement, then someone will have to pay. It can be argued that the royalty cost of any patent, regardless of the indus-

try, is always passed on to the consumer, and that environmental patents should not be treated any differently.

Let's go a step further. What if multiple patented technologies are used to remediate a particular site?

***One thing is certain, if a
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environmental consultant
enters into a patent
agreement, then someone
will have to pay.***

Depending on royalty payment arrangements, the overall cost of using these combined technologies could be higher than using a non-patented technology. Also, the royalty payment scheme could get complicated—is it calculated based on pounds of contaminant removed, volume of soil remediated, or as a straight percentage of the total environmental remediation cost? The possible twists and turns are not without precedent in today's world.

Your Thoughts?

As regulators, our first concern is to ensure that a contaminated site is remediated to ensure the protection of human health and the environment. The bottom line is, it's important that we look for ways to ensure that patent issues don't stymie cleanup progress. At this point, it's not clear how the industry will respond, but I believe most UST regulators hope that the use of alternative technologies will not diminish as a result of fears of higher costs or patent infringement lawsuits. Let me know what you think. ■

NOTE: Federal law gives the U.S. Government a royalty-free non-exclusive license for patents made under federal contracts, grants, or assistance agreements.

Gilberto Alvarez is an Environmental Engineer with the EPA Office of Underground Storage Tanks Region 5 based in Chicago, Illinois. If you want to discuss the patent issue with Gilberto, you can contact him at 312/886-6143.

■ Cost Control from page 18

are essentially pre-litigation settlement agreements, whereby the tank owner must not only remedy the problem but also pay a penalty. As a result, we've seen compliance rates rise from less than 50 percent before field citations to over 90 percent for inspected facilities.

Clearly, the more sites that operate with release detection, the more releases are prevented. In the long run, the reimbursement universe should dwindle as less corrective action is needed. If a release occurs at a site in compliance, detection will occur quickly, and cleanup costs will be lower.

New Mexico's outreach program encourages prevention by conducting workshops in all corners of the state. These workshops educate tank owners on why release detection is important, how the fund works, and how the two are connected. Educated tank owners are more likely to be in compliance with release detection requirements.

Cost Controlssss

Cost control really means applying a variety of control strategies—fee schedules, sound project management, adequate site characterization, risk-based cleanup goals, appropriate cleanup technologies, contractual controls, and a strong emphasis on prevention. Each control is essential to truly control costs, and less effective when used in the absence of other controls. But cost controls cannot be borne by the government itself, an alliance must be forged among regulators, tank owners, and the consulting community to look at the way we do business and work together in order to ensure that we are cleaning up effectively and spending our money effectively.

Mind you, this article only touches on cost control possibilities. The potential for innovative thinking in this arena is without limit. Most importantly, we need to keep the lines of communication open to what's working well and what's working not so well. ■

James Bearzi is Chief of the New Mexico UST Bureau and Chairman of the Association of State UST Cleanup Funds.

WEST VIRGINIA

Enforcement**Tales of Bribery and LUST****A West Virginia Contractor Gets Caught With His Wallet Open**

In fairy tales, you might find that singularly charmed tank owner whose petroleum contaminated site is rendered squeaky clean by some good fairy who waves her magic wand, or by an uncorked genie who's big on granting wishes. In the real world, however, we have the occasional unscrupulous tank yanker who attempts to make magic through powers of bribery—offering the state environmental inspector remuneration if he'll turn a blind eye to contamination. That's what happened in West Virginia when Edward J. Corder (62, and old enough to know better) tried repeatedly to bribe Division of Environmental Protection (DEP) Inspector John Sneberger.

The story began in 1992, when Corder, who removes USTs and remediates LUST-related contamination, allegedly slipped \$100 into Sneberger's notebook without his knowledge at a tank removal site. Sneberger reported the incident, and DEP immediately began investigating the situation, and brought in law officers from the FBI, the State Bureau of Criminal Investigation, the State Police, and the Department of Natural Resources to help.

Working closely with Sneberger, authorities probed the case from June 17 to December 22, 1992. During the course of the investigation, allegedly Corder

offered and paid Sneberger bribes that totaled in excess of \$3,000 to overlook violations at a number of sites. With audio and visual surveillance devices on hand, authorities captured the exchanges. Last November, in a plea-bargain agreement, Corder pleaded guilty to charges of offering to bribe an environmental inspector. He faced a maximum penalty of 10 years prison and a \$250,000 fine.

This February, Corder received an 8-month sentence: the first 4

In fairy tales, you might find that singularly charmed tank owner whose petroleum contaminated site is rendered squeaky clean by some good fairy who waves her magic wand, or by an uncorked genie who's big on granting wishes. In the real world, however, we have the occasional unscrupulous tank yanker ...

months of this sentence at a halfway house, where he is permitted to leave only for work or medical reasons; the second 4 months in home confinement, where he is permitted to leave only for work or medical reasons. He also received a 2-year probation. He was not required to pay a fine.

UST Certification Program on Horizon

Corder's sentence may seem a tad temperate, but, as they say, "So what's new? The show must go on." As Donald Martin, Sneberger's supervisor, says, "I'm not in the position to judge the judge. Our employee went beyond the call of duty and did what was right. If we ever have a similar situation, we'll deal with it in the same fashion."

The good news, as far as Martin and his co-workers are concerned, is that the West Virginia legislature recently approved regulations for a State certification program for tank installers and removers. "This will help maintain a competent work force," explains Martin, "and give the DEP a better handle on contractors, in that their certification can be revoked if they are not doing their work properly." ■

NOTE: Certification programs play an important role in ensuring that tank installation and removal contractors are qualified to do this work. These programs are also the only means most states have for removing the bad actors. In the next issue of **LUSTLine** we'll revisit contractor certification and give you an update on what's happening throughout the country.

WHAT'S GOING ON IN YOUR NECK-O-THE WOODS?

If you've got an UST-related story that might interest UST-keteers from sea to shining sea, call or write

Ellen Frye, LUSTLine Editor
255 Ballardvale St.
Wilmington, MA 01887
508/658-0500 ext. 245

A 1998 UST Upgrade Compliance Checklist

Federal underground storage tank rules require you to make sure your *existing* USTs have spill protection, overfill protection, and corrosion protection by December 22, 1998. You should be in compliance with the "upgrade" requirements if you can check off the major items below for each of your *existing* USTs by December 1998. But don't wait until the last minute, start planning your tank upgrade, closure, or replacement NOW!

- ☐ **Spill protection** provided by a catchment basin
- ☐ **Overfill protection** provided by an automatic shutoff device, overfill alarm, or ball float valve
- ☐ **Corrosion protection for the tank** provided by one of the following:
 - ☐ Steel tank has corrosion-resistant coating and cathodic protection
 - ☐ Tank made of noncorrodible material (such as fiberglass)
 - ☐ Steel tank clad with (or enclosed in) noncorrodible material
 - ☐ Uncoated steel tank has cathodic protection system
 - ☐ Uncoated steel tank has interior lined with noncorrodible material
 - ☐ Uncoated steel tank has cathodic protection and interior lined with noncorrodible material
- ☐ **Corrosion protection for piping** provided by one of the following:
 - ☐ Uncoated steel piping has cathodic protection
 - ☐ Steel piping has a corrosion-resistant coating and cathodic protection
 - ☐ Piping made of (or enclosed in) noncorrodible material
- ☐ If you have decided not to upgrade your *existing* UST system with the items above, you have properly closed the UST system. If you subsequently install a new UST system, the new installation meets all the regulatory requirements for installations after December 22, 1988.



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From OUST to You

EPA's Office of Underground Storage Tanks (OUST) continues to work toward getting appropriate information out to a variety of UST-related audiences on the vast assortment of leak prevention and corrective action activities underway throughout the country. The publications listed in the following paragraphs are available at no charge and can be obtained by calling EPA's RCRA/Superfund Hotline at 800/424-9346 or by writing:

EPA's National Center for
Environmental Publications
and Information
11029 Kenwood Road
Cincinnati, Ohio 45242
Fax orders: 513/892-6685

❖ **Don't Wait Until 1998: Spill, Overfill, and Corrosion Protection for Underground Storage Tanks** is a new booklet, which is mainly for owners and operators of existing USTs (installed before December 22, 1988). The booklet explains that these owners and operators must add spill, overfill, and corrosion protection before the federal December 1998 UST upgrade deadline. It also discusses the options of either closing the existing UST or closing and replacing the existing tank with a new one. The booklet can be used to promote early

EPA HQ UPDATE

compliance and proper upgrading or closure. To order copies, ask for publication # EPA 510-B-94-002.

❖ In response to requests for information about educational resources currently available on USTs, OUST developed a "Guide to EPA Materials on Underground Storage Tanks" containing abstracts, cost and ordering information, and other useful details on nearly 90 different titles EPA funded wholly or in part through June 30, 1992. A **Guide to EPA Materials on Underground Storage Tanks: Supplement July 1992 Through August 1993** is now available. It also includes items that were omitted from the original guide. OUST will continue to update the guide to reflect new publications. To order copies of the *Supplement* or the *Guide*, ask for publication # EPA 510-B-94-001 (for the *Supplement*) or # EPA 510-B-92-004 (for the *Guide*).

❖ EPA has prepared two new leak detection booklets designed mainly for UST owners and operators: one is titled **Doing Inventory Control Right: For Underground Storage Tanks** (publication # EPA 510-B-93-004), the other is titled **Manual Tank Gauging: For Small**

Underground Storage Tanks

(publication # 510-B-93-005).

Each booklet explains how to perform the leak detection method correctly. UST regulators can use the booklets to promote proper use of leak detection methods and compliance with regulatory requirements.



❖ **Coming Soon** - EPA is developing a manual that will enable state regulators to efficiently and confidently evaluate corrective action plans (CAPs) that incorporate alternative technologies. Scheduled for release this fall, **How To Evaluate Alternative Cleanup Technologies For Underground Storage Tank Sites: A Guide For Corrective Action Plan Reviewers** will focus solely on the technical aspects of CAP review. The manual will help enable state regulators to answer two basic questions: Has an appropriate cleanup technology been proposed?; and Does the CAP provide a technically sound approach to the cleanup? The manual does not advocate the use of one technology over another, it focuses on the corrective action decision-making process. So...stay tuned. ■

L.U.S.T.LINE

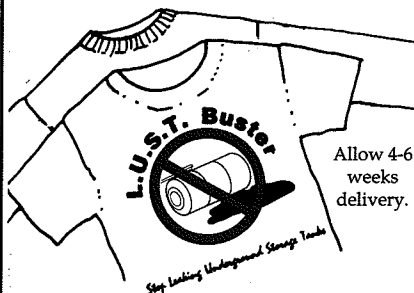
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