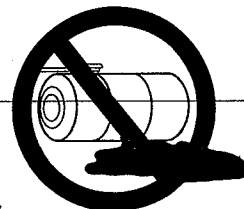


L.U.S.T.LINE



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

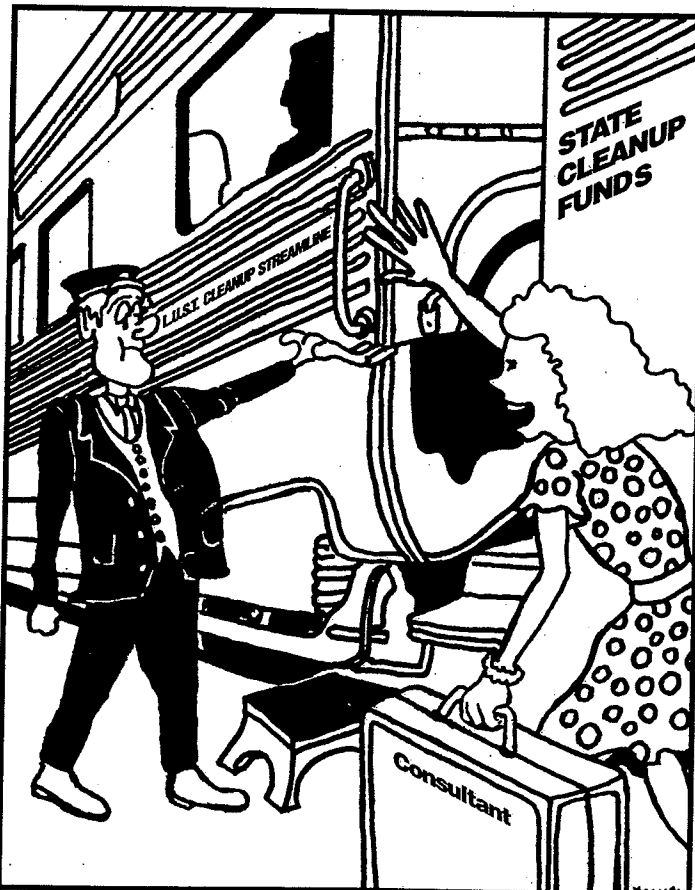
When Necessity is the Mother of Invention

With LUST Sites Growing and Cleanups Long Lingerin',
Business as Usual May Not Be Good Business

There was a time, not too long ago, when it seemed like good times and prosperity would flower and grow like a morning glory vine, twisting and curling and reaching for the sky. You can probably guess where this metaphor is going: the frost sets in, prosperity catches a chill, and here we are in the "winter of our discontent." But, unsettling as these times are economically, there exists an opportunity for reflection and improvement that is often ignored when all the world's abloom.

Many state UST/LUST program managers, feeling the effects of this pervasive chill, are in the throes of dealing with state fiscal crises, and staff and funding cuts. At the same time, they are responsible for responding to and overseeing the cleanup of ever burgeoning numbers of leaking underground storage tank (LUST) sites. According to EPA, as of July 1992, over 160,000

■ continued on page 2



"Pardon me Sir, Is this the LUST Site
Cleanup Choo-Choo?"

Inside

- Kansas Trust Fund
- Tank-nically Speaking
- Health & Safety Notes
- Controlling UST Cleanup Costs
- Lender Liability
- AST Installation
- Conspiracy to Falsify Tightness Tests
- EPA Region 8 Inventory Control



releases have been reported; over 110,000 corrective actions have been initiated; and over 45,000 corrective actions have been completed.

A great many of these LUST cleanups are now paid for through state cleanup funds. (Twenty-nine states have EPA-approved funds; seven have submitted their funds to EPA for approval; and seven have funds, but have not submitted them to EPA.) These state cleanup funds have added a new dimension to the LUST regulatory agenda: states must do a balancing act that involves establishing minimum standards for corrective action to protect human health and the environment while, at the same time, controlling cleanup costs to maximize the benefit to the public from funds under their control. In some states the environmental agencies wear both hats—environmental regulator and fund administrator. In other states, these responsibilities are handled by two separate agencies.

Particularly significant, however, is the fact that the majority of the states now hold the cleanup purse strings, which means that money management has become a driving force in determining the need for new administrative, regulatory, and technological paradigms. State personnel who have had the

As state fund programs across the country have kicked in and as exorbitant remediation bills have rolled in, it's become clear to state fund administrators that cleanup costs must be controlled and abuse of the funds must be minimized.

opportunity to become fully immersed in the machinations of LUST cleanups and cleanup bills have found the experience sobering.

As state fund programs across the country have kicked in and as exorbitant remediation bills have rolled in, it's become clear to state fund administrators that cleanup costs must be controlled and abuse of the funds must be minimized. "The longer state fund programs are in operation, the more proactive governments become in controlling costs and limiting the scope of work," says Keith Lightfield, Director of South Dakota's Petroleum Release Compensation Fund.

"In the past, the insurance companies were just paying the bills," says Chuck Schwer, Supervisor of the Vermont Petroleum Sites Management Section. "We never saw costs. If we had, we might have questioned them. Before we had our fund, consultants would just get in and start excavating, various parties would start arguing, and our agency would spend a lot of time trying to convince people to do the right things.

"Now that we are handling the money, it enables us and everybody else to move much faster while also keeping the costs down. We require written cost estimates that need to be approved. We want to know what the responsible party is planning to do so that we can get a sense that what they're doing will be effective for the site and the contaminant. Some of the larger consulting firms who ruled the roost here have pulled out. Now we're seeing an increase in small scale consultants who don't mind playing by our rules and they're doing a good job.

"The differences between pre-fund days and now are significant," Schwer says. "We have reports that

before the fund, some cleanups were running over \$1 million and some of these jobs are still ongoing. We are now getting cleanups accomplished cheaper and, for the most part, more effectively. Our average costs are running something like \$50 to 60 thousand per site."

Looking for Effectiveness

An important aspect of LUST cleanup improvement, which can also help in keeping costs down, is the concept of effectiveness. There are a variety of meanings for the word "effective," but Webster's first definition, "producing a decided, decisive, or desired effect," best describes what LUST site remediation is supposed to be about.

Over the past few years, Chi-Yuan Fan and Tony Tafuri at EPA's Risk Reduction Engineering Lab have examined the various methodologies available for cleaning up petroleum releases at LUST sites. Recognizing that regulatory agencies charged with overseeing and monitoring cleanups need to be able to approve and evaluate cleanups, they've been scoping out a relatively uncomplicated but practical approach for evaluating the effectiveness of remediation technologies.*

Fan and Tafuri start with the premise that an effective response to UST releases requires:

- Understanding site conditions,
- Defining appropriate remediation goals,
- Selecting an effective cleanup and treatment system, and
- Employing effective monitoring and follow-up measurements.

Each of these requirements is integrally related within the overall process of achieving the desired product—an effective cleanup. (Of course, no cleanup will be as effective as it could be if the cleanup is not initiated expeditiously.) However, "effective" is not always the operative word in the real world of LUST remediation.

"It's important to look at the site as a whole and try to make sure that each of the technologies you are trying to use will meet your objectives for cleaning up the site," says George Mikelson, Remediation

* For more information on Fan and Tafuri's work contact the Release Control Branch of the EPA Risk Reduction Engineering Lab in Edison, N.J., 908/321-6635.

LUSTLine

Editor: Ellen Frye

Kate Becker, EPA Project Officer

Jennie Bridge, NEIWPCC Project Officer

Marcel Moreau, Technical Advisor/Contributor

Rick Pappo, Layout

Prepared by the NEIWPCC with a grant (#C1-901661) from the U.S. Environmental Protection Agency

LUSTLine is issued as a communication service for the Subtitle I RCRA Hazardous & Solid Waste Amendments rule promulgation process.

This publication may be copied.

Please give credit to the NEIWPCC.

The New England Interstate Water Pollution Control Commission was established by an Act of Congress in 1947 and remains the oldest agency in the Northeast United States concerned with coordination of the multimedia environmental activities of the States of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island and Vermont.

NEIWPCC

85 Merrimac Street, Boston, MA 02114

Telephone: (617)367-8522

Engineer with the Wisconsin Department of Natural Resources LUST program. "If you are trying to meet very stringent soil quality standards with a soil venting system at a heavy fuel oil site, you may be there for a very long time.

"It's important to choose technologies that are capable of meeting cleanup objectives," says Mikelson. "We have contractors who will propose doing what they like to do for remediation—whatever they're most comfortable with. Some firms always do soil venting because they always do soil venting, others always dig and dump—they tend to bend the site to fit their technology. Often they try to use equipment that will work anywhere, and on many sites it works, but it also costs much more."

Both regulators and consultants have the responsibility to ask if a proposed cleanup strategy will be effective, given what is known about the site conditions and the nature and behavior of the contaminant in question. The good news is, there are a variety of alternative medicines available that can help cure the ailment effectively and quickly.

Innovation

EPA has prepared a new OSWER Directive that is designed to encourage streamlined administrative processes and the use of new corrective action technologies. (See "New EPA Directive" on page 4.) One of the things the document points out is that a growing understanding of the physical, chemical, and biological aspects of contaminant migration and removal has created new and innovative corrective action technologies which have a role in influencing the implementation of corrective action standards. The document states that using improved administrative and technological processes, it is possible to complete many cleanups in the amount of time traditionally allocated to the corrective action planning process."

Mark Twain said that necessity is the mother of "taking chances." As far as using any innovative cleanup technologies goes, there is always a certain amount of trial and

error involved. Many states and regions are hesitant to approve new corrective action technologies when there is insufficient engineering design information and substantiated performance data to support their use. For this reason, the EPA Office of Underground Storage Tanks has been working to expedite technology transfer where 'ere possible.

Some states are hot on the trail of innovation, if not pushing it

Both regulators and consultants have the responsibility to ask if a proposed cleanup strategy will be effective, given what is known about the site conditions and the nature and behavior of the contaminant in question. The good news is, there are a variety of alternative medicines available that can help cure the ailment effectively and quickly.

along; take New Mexico for example. As James Bearzi explains it, "I'm satisfied that technology exists out there to clean up hydrocarbon plumes quickly. What I'm looking toward is promoting innovative technology. I tell people, 'pump-and-treat doesn't work, we're not going to approve it. I know there must be a better way to do this. You guys figure it out.' And it's beginning to work. More and more consultants are getting on the bandwagon.

"We've seen cleanups done better from a technology standpoint by promoting innovation. But we also need to try to contract for environmental cleanups in innovative ways that expedite cleanups based on performance rather than on time and materials. The long haul may be just fine for the contractors who have come to expect long-term 20-year projects. They bill for time and materials and pump and pump and pump with no guarantees that some amount of benzene is coming out of that ground.

"Those of us who are state fund managers need to think about what we are buying. When you buy a car, you get a car," says Bearzi. "Time and materials went into making that car, but the car is the product. For me the product is a cleaned-up site."

Flexibility

Cleanups can be an enormous frustration to regulators, responsible parties, consultants, and contractors alike. This is precisely why any breakthroughs on the side of government-led expediency should be heeded and heralded. EPA's new policy directive provides an interesting new breakthrough. In the interest of implementing streamlined response and oversight procedures, the agency builds a case for a flexible

application of the regulations. The document describes a range of possibilities that can be implemented to improve the performance of UST programs.

For example, in its discussion of flexibility in corrective action plans, the review of which can take up enormous amounts of staff time and delay cleanups, the directive points out that implementing agencies have flexibility to determine whether in some cases

review of certain plans "will not improve the timeliness or effectiveness of the corrective action—for example where releases pose little threat to human health and the environment or where cleanup will be relatively simple."

In discussing whether or not a corrective action plan is warranted, the directive states that in many situations, "the need for (regulatory) oversight may be minimal when adequate cleanup guidance documents exist and when cleanup contractors understand what the implementing agency expects. If the responsible party (RP) is pursuing corrective action and is making adequate progress, the submission and review of a corrective action plan may not be necessary, and may only slow down the cleanup process."

The directive goes on to say that the RP needs to be able to demonstrate that the corrective action is meeting specified performance goals, such as annual reduction in benzene or control of contaminant movement, on a schedule set forth by the implementing agency. But before this can happen, the implementing agency must provide guidance for such things as progress report formats, reporting schedules, and how the agency will determine

■ continued on page 22

New EPA Directive Pushes for UST Corrective Action Streamlining

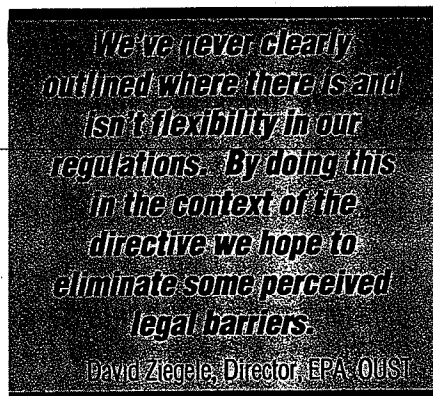
EPA's Office of Underground Storage Tanks (OUST), recognizing the backlogs, frustrations, and roadblocks associated with LUST cleanups, has for some time taken the tack that, where UST corrective action is concerned, opportunities for improvement are without limit. Thus, in an effort to "stimulate continuing innovation in UST programs and to help accelerate efforts to streamline UST corrective action nationwide," EPA's Office of Solid Waste and Emergency Response (OSWER) has mustered up what EPA-ites refer to as an "OSWER Directive," which is due to hit EPA regional offices and the states this month.

"We've been rhetorically pushing corrective action streamlining for a few years and have tried to steer EPA's support resources in that direction," explains EPA OUST Director David Ziegele. "However, the directive does three things we haven't done before. First, it establishes that it's official agency policy to look for and pursue streamlining opportunities. That should put extra weight behind our efforts and it may, in a positive way, put more pressure on us to provide support.

"Second," continues Ziegele, "we've never clearly outlined where there is and isn't flexibility in our regulations. By doing this in the context of the directive we hope to eliminate some perceived legal barriers—constraints that people think exist but don't.

"The third thing the directive does is describe in one place how that regulatory flexibility has been or could be used by state programs. This should help give people new ideas, help state program managers get support for making changes from within their organizations, and promote dialogue between state managers and non-regulators on what might be possible in a given state."

Ultimately, the EPA plan is that the directive will help implementing agencies develop the alternative procedures and requirements that both protect human health and the environment and permit faster, more effective, or less costly responses to



releases. State programs are not expected to undergo revolutionary changes immediately. "In the near term," as stated in the directive, "successes will be more modest." But continuing efforts to streamline program administration, to revise state policies, guidances, or regulations that encourage or require streamlined response procedures are signs of incremental progress—and a number of states have reported successes in these areas.

To demonstrate how states can take advantage of the flexibility in the federal UST rule, the OSWER directive provides examples of release response corrective action requirements that leave ample room for improved response and oversight procedures. Many of these improvements can be used by states, even if their regulations differ from the federal rule. These examples cover such topics as reporting formats, combining reports, groundwater classification, initial site characterization data sources, identifying immediate hazards, free product removal, field measurements, and corrective action plans.

Under the section on "Combining Reports," for example, the directive mentions that some states have combined required reports (e.g., initial site characterizations, corrective action plans) to reduce the number of reports they process and to improve the quality of information they review. It is apparent from the various examples included in this section that there are many ways that combined reports can be accomplished to satisfy individual state quirks and personalities.

The section on "Corrective Action Plans" explores four different sets of circumstances when implementing agencies may or may not require corrective action plans or continued active remediation. These scenarios are as follows:

- The implementing agency wants to review a corrective action plan for additional cleanup;
- The implementing agency decides that further corrective action is needed but that submission of a corrective action plan is not warranted;
- The implementing agency requires monitoring but no additional corrective action;
- The implementing agency does not require additional corrective action.

This section is particularly significant in terms of its explicit recognition that all sites need not be treated equally; that corrective action decisions, in fact, will lead to greater expediency and effectiveness if they are made on a site-specific priority basis determined by the implementing agency.

The document states that those few programs which have worked aggressively at streamlining for several years have made some dramatic improvements, proving that cleanups can be started and completed much more rapidly than has often been the case. These state experiences also demonstrate that it is possible to provide effective oversight at a large number of sites while reducing red tape and paperwork. In addition, many states have reaped significant benefits from communicating and working more effectively with their contractors, consultants, tank owners, and operators. However, as stated in the directive, "even in the most advanced programs, additional improvements are possible and necessary in order to meet the programs' goals with the resources that are likely to be available."

"This directive is only one of many tools we have," says Dave Ziegele, "but I think it will be an extremely powerful one." ■

EPA and Shell Oil Team Up and Create

HyperVentilate!

The New Software Guidance System for Vapor Extraction Applications

EPA AND SHELL OIL COMPANY, UNDER A cooperative research and development agreement of the Federal Technology Transfer Act, have developed *HyperVentilate*, a user-friendly software guidance system designed to be used in vapor extraction (soil venting) applications. This piece of software is a corrective action tool that guides users through a structured thought process to help:

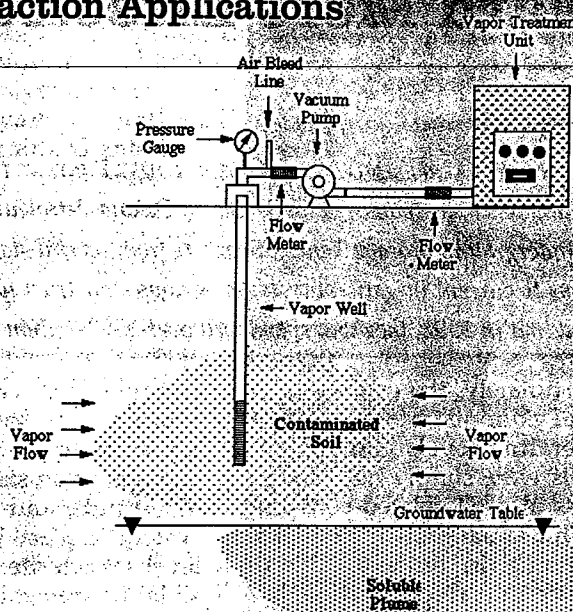
- Identify and characterize required site-specific data,
- Decide if soil venting is appropriate at the site,
- Evaluate air permeability test results,
- Calculate the minimum number of vapor extraction wells needed, and
- Show how the results at the site might differ from the ideal case.

HyperVentilate is not the vapor extraction be all and end all; it will not completely design your vapor extraction system, tell you exactly how many days it should be operated, or predict the future. But, as an educational tool for the novice environmental professional and as a functional tool for more experienced professionals, *HyperVentilate* is not to be sneezed at. It performs necessary calculations and contains "help cards" that define the equations used, make the necessary unit conversions, and give supplementary information on related topics. The program also includes a list of 62 compounds that can be updated by the user to a maximum of 400 compounds.

All You Need to Use It Is...

HyperVentilate version 1.01 for the Apple Macintosh requires an Apple Macintosh computer (Plus, SE, Classic, LC, II, Portable, PowerBook, or Quadra) equipped with at least 1 MB RAM (2 MB preferred) and the Apple HyperCard Software Program (version 2.0 or greater).

An IBM PC-compatible version of *HyperVentilate* for Microsoft Windows/Spinnaker PLUS Version 2.0 is currently being tested. This version will likely require a computer equipped with 80286 processor minimum (80386 recommended), 2 MB RAM minimum (more recommended), EGA (VGA or 8514 recommended), DOS 3.1 or higher, Microsoft Windows 3.x, and Spinnaker PLUS 2.5 or higher. EPA will announce the availability of the PC-compatible version when testing is completed.



How To Order

The *HyperVentilate* package includes a 3.5-inch Macintosh disk and a users manual. EPA's Office of Underground Storage Tanks has distributed one copy of the package to each EPA region and state UST/LUST contact. Copies of the *HyperVentilate* package can be ordered by sending a request to the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 371954, Pittsburgh, PA 15250-7954; or by calling (202) 783-3238. The order number is S/N 055-000-00403-0; the cost for the manual and disk is \$17.00. ■

HyperVentilate is based on the article, "A Revised Approach to the Design, Construction and Monitoring of Soil Vapor Extraction Systems," by P.C. Johnson, C.C. Strain, W.W. Kern, J. V. M. C. and D.L. Davis, Ground Water Monitoring Review, Spring 1991.

EPA and Shell Oil Company make no warranties, either express or implied, regarding the *HyperVentilate* computer software package, its merchantability, or its fitness for any particular purpose. There is no warranty that this software will be error-free or operate without interruption. EPA and Shell Oil do encourage testing of this product.

At this time, EPA does not intend to provide technical support, or to update, or to fix any bugs that might be found in this software.

LUST Investigation & Remediation

KANSAS

Realistically Speaking...

Kansas Trust Fund Program Moves Toward More Effective Cleanup Scenario

by Lisa Larsen

THIS MAY, I REPRESENTED THE KANSAS TRUST FUND AT THE FIRST ANNUAL STATE FUND ADMINISTRATORS Conference, co-sponsored by the South Dakota Petroleum Release Compensatory Fund and EPA's Office of Underground Storage Tanks. Speakers from several states gave presentations on topics ranging from cost control mechanisms to current litigation involving various state trust funds. The large number of states represented at the meeting determined that in 1992, they will spend well over \$550 million on UST-related corrective action activities, collectively.

Unfortunately, the consensus of most fund administrators was that these spending levels and current staff levels were simply not enough to address all UST-related contamination. This situation, coupled with the continuing rise in the number of sites in need of corrective action, has prompted some states, including Kansas, to reevaluate the need to attempt cleanup on all sites.

Initially, program goals for the Kansas Trust Fund were to address all sites which exceed State standards for soil and groundwater contamination. However, we found that although this is the most desirable approach, it is basically unrealistic. Given the amount of resources available to our program, we realized that we would never be able to do more than a little work on a lot of sites—which is exactly what had been happening, and at a very slow rate.

The Kansas Trust Fund had a backlog of about 400 sites that needed to be investigated and remediated, and roughly 20 new sites were being added to the list each month. Our existing staff level and method of operation enabled us to initiate investigation or remediation on about ten to twelve sites per month. As you can see, at this rate we were not going to catch up anytime soon.

Taming the Beast

Confronted with this reality and in an attempt to get a handle on the beast, we reevaluated our program this spring. As a result, we have made significant operational

changes. The two major items of concern were that the program could not initiate work at sites quickly enough given staff levels and available funds, and we did not have a system in place to evaluate the risk level at each site. Indeed, it was possible that remedial work at a contaminated site located close to a drinking water well could be delayed significantly because of our backlog.

We are using this ranking system as a tool to delineate between high and low risk sites. Like most, our system applies numerical values to health and environmental criteria.

Our immediate response to the problem was to create a very simplified, but effective, system to rank each site. I say "simplified," because it is, in comparison to other ranking systems I have worked with. In essence, we are using this ranking system as a tool to delineate between high and low risk sites. Like most, our system applies numerical values to health and environmental criteria.

We rank sites as applications to access the Kansas Trust Fund are submitted. Once a site has been ranked, it is added to our backlog of sites in the order of its ranking. Once a site has been ranked, it may be re-

ranked at any time if additional investigatory information is obtained that would indicate the need to change from low to high risk or vice versa. Thus, we addressed our problem of identifying high risk sites—which proved to be the easy part of our program reevaluation.

A more difficult problem involved developing a system for working sites more quickly with our limited funding resources. Previously, we would treat each site consistently, regardless of risk factor or level of contamination. Our new approach is to initiate individual investigations and/or remediation at high ranking sites immediately (no waiting in line) and group the lower ranking sites into packages of ten or more and initiate site assessments and monitoring on two to three groups of sites per month.

We believe this new system will help us accomplish three things:

1. allow us to concentrate our limited resources and efforts on conducting thorough cleanups on the sites that actually present a risk to public health and the environment,
2. allow us, at a minimum, to chip away at our backlog by investigating and monitoring lower risk sites, and
3. maintain cost controls by implementing work on a volume basis.

In effect, we have attempted to avoid spreading our limited resources too thin over a large num-

ber of sites. However, the game plan is that as high risk sites are cleaned up and closed, we will work our way down the ranking system until eventually all sites are addressed. Obviously, this will be a long drawn out process, but by implementing our monitoring program at lower risk sites, in lieu of immediate cleanup, we will have the opportunity to evaluate the role of natural degradation as a remediation method.

The Light at the End of the Backlog

We began implementing these changes to our program this spring and, thus far, have slowly begun to see our backlog of sites decrease. Unfortunately, these changes did not resolve the problem of inadequate staffing. The increase in work load has continued to stretch our ability to provide high quality review and oversight of work. We are addressing this situation by trying to hire more staff and by significantly

streamlining our report formats and review process. Spending less time reviewing reports in the office allows our staff more time on site oversight. We believe this will be a better way to control the quality of work in the field and it will be a boost for staff who have previously not had the opportunity to spend time on site.

We will continue to evaluate these program changes and try to find innovative ways to further streamline the program. Granted, if given the choice, we would prefer to cleanup all sites in a more timely manner, but reality is such that our resources will always be limited and as a regulatory agency we must work with what we've got to meet our legislative mandate to protect public health and the environment.

Lisa Larsen is an Environmental Geologist with the Kansas Department of Health and Environment's Bureau of Environmental Remediation.

Job Opportunity at EPA OUST

HYDROGEOLOGIST

The EPA Office of Underground Storage Tanks (OUST) is seeking an individual to serve as a technical specialist on groundwater and hydrogeological issues, providing guidance and advisory services to OUST staff by reviewing and participating in the development of technical materials, regulations, policies, and guidelines for EPA regional offices and state UST programs. The selected knowledge in the areas of geology, water chemistry, and contaminant hydrology will be applied to adapt and modify innovative remediation techniques which have not been standardized to UST cleanups field applications.

The selected individual will be responsible for developing and maintaining state-of-the-art technical information related to remediation of contamination from USTs and transferring that information to technical and non-technical personnel at EPA and in state programs. This includes representing OUST at public forums and developing a network of technical specialists in the public and private sectors. Experience with a regulatory agency and/or with remediation of petroleum contamination is preferred, but not required.

Starting salary ranges from \$37,000 to \$57,000, based on qualifications and experience. OUST is located in Arlington (Crystal City), Virginia. If you would like to be involved with this challenging and innovative aspect of the federal UST program, please call Betty Arnold at 703/308-8866 or submit a brief letter of interest with a resume to Ms. Arnold care of:

U.S. EPA OUST
(OS400WF)
401 M Street, SW
Washington, DC 20460



The Kansas UST Trust Fund and Third Party Liability Program

IN APRIL 1990, KANSAS ENACTED THE TRUST FUND AND THIRD PARTY Liability program for UST owners and operators who were required to meet the federal financial responsibility criteria under 40 CFR. Both programs received EPA approval in December 1991.

The Kansas Trust Fund is funded by a \$.01 gasoline tax and set up such that the owner/operator must pay a deductible in the amount of \$3,000 plus \$500/UST at the site of the release. To receive financial assistance, the owner/operator must submit an application at the time a release is discovered, obtain three bids prior to conducting any work, and obtain Department of Health and Environment approval for all costs. To assist the owner and operator in obtaining bids, the Department has developed a bid assistance program which includes standard scopes of work for conducting investigations and remediation. Depending on the risk associated with the site, bids are let individually or in groups of nine or more.

The Third Party Liability Insurance program was enacted as part of the Kansas Trust Fund. Kansas hired a servicing carrier to administer the program. The carrier developed a third party insurance policy that owners and operators can purchase for approximately \$300/UST/year. This money is used to operate the program. The insurance coverage includes, as the name suggests, damage to non-responsible parties (third parties). The program is backed by the Kansas Trust Fund. ■

LUST Investigation & Remediation

Controlling UST Cleanup Costs



USING INPUT FROM STATES, CONTRACTORS, and tank owners and operators, the EPA Office of Underground Storage Tanks (OUST) has developed a series of five fact sheets on controlling UST cleanup costs. The audience for these fact sheets is owners and operators who have had little or no experience with remediating sites. In many cases, these individuals are in Group 4 of the federal financial responsibility requirements—those who own between 1 and 12 USTs.

OUST has learned about some of the difficulties that state fund administrators face in working to empower owners and operators to take control over remediation activities on their property. OUST's research also reveals that there are steps that owners and operators can take to ensure that the hired contractor and/or consultant is reputable and able to effectively complete LUST cleanups. Although each state has its own requirements, OUST has assembled a core of information that should help any small owner or operator in managing a cleanup.

The following article is from Fact Sheet #1: *Hiring a Contractor*. The four other fact sheets in the series are: *Negotiating the Contract*, *Interpreting the Bill*, *Managing the Process*, and *Understanding Contractor Code Words*. We will print the other fact sheets in future "LUSTLines," however, to obtain copies of these sheets in a more timely manner or for more information, contact your state fund administrator for USTs and/or your state UST program.

HIRING A CONTRACTOR

Facing the Situation

When facing a petroleum or hazardous substance spill, you need to gather some background information and find the people to do the best job of cleaning up the contamination. But first, you should make it a point to learn your state UST/LUST program regulations to be sure you abide by your state's UST cleanup laws. Most states have a fund to help underground storage tank owners pay for cleaning up tank and piping leaks. The fund is

generally managed by a state fund administrator, whom you should contact to see if you are eligible to receive these funds and to learn about other requirements you need to fulfill before you hire a contractor.

As a tank owner who needs a spill cleaned up, you need to have a business plan that includes finding contractors to assess the extent of the spill and complete the cleanup work. This involves more than just picking a company from the phone book, or finding the guy who will do the job for the lowest price. As with other vendors you deal with, the contractor offering the lowest price for a site assessment and/or cleanup doesn't always provide the best service.

Knowing the Jobs

Contractors often put in bids for the following two types of jobs:

- **Site Assessment** - in which the contractor determines the extent of contamination, and
- **Cleanup Management** - in which the contractor actually undertakes spill remediation.

Once your contractor has completed a site assessment, you will (hopefully) have sufficient data to obtain bids for the cleanup. You can have the same contractor do both jobs or separate contractors for each job. Either way, you want to be sure you are paying appropriate fees for adequate services—so, read on and find out how this can be done.

Knowing the Players

Our use of the term "contractor" refers to contractors and consultants. Consultants often give expert technical advice but may not be involved in day-to-day field work. Contractors, in the broader sense of the word, usually fall into one of two categories—full service contractors and specialty contractors.

Full service contractors have the capability to perform site assessment and cleanup work without obtaining the services of another contractor. Specialty contractors are qualified to perform only certain aspects of a site assessment or cleanup. A specialty

contractor generally works on limited activities, like installing wells or designing a cleanup plan. Subcontractors are either full-service or specialty contractors who perform services at a site under the direction of another contractor—the prime contractor. As an owner or operator, you would probably interact only with the prime contractor.

Hiring the Best People

Keep the following tips in mind when you're shopping around for a contractor to provide the most effective and economical site assessment and cleanup available.

- **Ask around** - It's worth your while to ask other owners and operators, or your local trade association, about contractors they've hired. Check with your state UST/LUST program to see if there is a list of certified contractors you can choose from.
- **Get written bids** - Have at least three contractors write estimates, also called bids. In their bids, contractors should list the tasks they will perform and describe how they will perform them. Request the same information from all contractors so you can compare bids.
- **List charges** - Get an explanation of the rates charged. Know what you are paying for. Get a description of the tasks and a list of the junior-, mid-, and senior-level staff who will be performing each task. This is a good way to match rates to services. If you're not comfortable with some of the match-ups, ask the contractor in question for an explanation.
- **Compare answers** - Weigh the strengths and weaknesses of each contractor against the others; decide on one, or if you don't think any of them can do

your job, widen your search. You want to hire someone who will meet your needs.

- **Define roles** - Ask that the bid include the qualifications and experience of the people who will be doing the work on your site. This information will help you determine the company's qualifications.
- **Look closely** - Evaluate the contractor's credentials and experience. Does the company's experience match your needs? Is the contractor qualified to do the job? Have they done this work before? How often? Are they planning on using subcontractors? How do they justify their rates?
- **Count heads** - Know in advance any planned use of subcontractors. Make sure the contract bid includes all subcontractor fees.
- **Ask questions** - A clear understanding of the scope of work—even the most minor details—is crucial to precise negotiations.

- **Get references** - Have the contractor include a list of references, especially those from state contracts, and ask the state about their performances on these contracts. Is the contractor familiar with state UST regulations and criteria for payment from the state fund?

- **Read fine print** - Understand the payment terms, including interest charges on outstanding bills.



- **Sign when you are sure** - Don't get locked into an overestimated bid, and don't automatically choose the lowest bidder.

Double-Check

Before you commit to any contracts, be sure everyone understands what work will be done, how long the work will take, and how much it will cost. Double-check, in writing, the following items with the contractor:

- Price
- Project timetable
- Terms and conditions of payment
- Cited contractor's experience/capability
- Explanation and purpose of technical work

And Remember: The sooner a spill or leak is cleaned up, the better. The longer you wait, the more the contamination is likely to spread, and the more the cleanup will cost. ■

EPA Studies Support Need for TCLP/UST Deferral

In the August 14 Federal Register, EPA published a notice of data availability on temporary deferral of UST petroleum-contaminated media and debris from the RCRA Subtitle C Toxicity Characteristics (TC) rule. The notice alerted the public to two studies that EPA conducted to assess the impacts of regulating UST-contaminated media and debris as hazardous waste.

The studies corroborate EPA's preliminary assessment that removing the deferral would significantly affect UST cleanup procedures, delay remedial actions, and increase costs to EPA, states, and the regulated community. The studies also suggest that delays in UST site remediation caused by compliance with the TC rule could increase health and environmental risks prior to cleanup.

In addition to discussion of the impacts of removing the deferral, the studies point out that many

states have programs in place to regulate the management of UST petroleum-contaminated media (soil) and debris. The vast majority of these state programs have some means of addressing the entire cycle of petroleum-contaminated soils management, from initial characterization through storage and ultimate treatment or disposal.

The reports consist of a technical study, TC Study of Petroleum UST Contaminated Media and Debris, and an impact study, The Impacts of Removing the TCLP Deferral for Petroleum-Contaminated Media at Underground Storage Tanks Sites. EPA is interested in any comments (due by end of September) that the public may have on the content of the studies, which are to be used to support a final determination on the hazardous waste status of petroleum-contaminated media and debris. ■



To request copies of the reports, write the docket clerk at U.S. EPA, RCRA Docket (OS-305), 401 M St., S.W., Washington, DC 20460. For more information on the studies, call the RCRA/ Superfund Hotline at 1-800-424-9346 or 202-260-3600 (for local calls).

For more background on the TCLP deferral issue see LUSTLine Bulletins #13 and #14.

HEALTH & SAFETY

OSHA Training Requirements and LUST Remediation Activities

by Matthew E. Fitzgerald

IN MY LAST ARTICLE (LUSTLINE MAY 1992) I DISCUSSED THE OCCUPATIONAL SAFETY and Health Act and its general duty clause which requires each employer "...to furnish each of his employees, employment and a place of employment which are free from recognized hazards that are causing or likely to cause, death or serious physical harm to his employees." The Act empowered the Occupational Safety and Health Agency (OSHA) to promulgate standards to address specific work place hazards. As a result, OSHA has promulgated many such standards that specify the health and safety procedures which must be followed for specific industries, processes, and jobs to ensure a safe and healthful workplace.



Because of concern over safety and health for workers involved in Hazardous Waste Operations, Congress, in the Superfund Amendments and Reauthorization Act of 1986, Title I, mandated that OSHA promulgate a standard to protect this group of workers. The result was the Hazardous Waste Operation and Emergency Response rule (29 CFR 1910.120, commonly known as HAZWOPER).

The hazards associated with hazardous waste operations are so diverse and profound that OSHA's approach to mitigating them includes worker training, required site safety and health plans, and medical surveillance for exposed employees. In the tradition of the Hazard Communication Standard (29 CFR 1910.1200, 1984) and the Community Right to Know Act (SARA, Title III, 1986), the HAZWOPER standard requires employers of employees engaged in hazardous waste operations to train their employees in the hazards associated with their work. This empowerment of workers through training enables them to make correct and safe decisions regarding the hazards they encounter throughout their work. This is, of course, premised on the assumption that the training they have received is pertinent and specific to the hazards of a particular site and operation.

HAZWOPER covers three broad groups of workers including; workers involved in hazardous waste site remediation or Resource Conservation and Recovery Act (RCRA) corrective actions, workers at RCRA Treatment Storage and Disposal facilities (TSDFs), and workers involved in emergency response operations involving a release of a hazardous substance.

Training is required for all these groups of workers although different performance criteria and minimum training hours are specified for each group. In paragraph (q)(6) of HAZWOPER, where the training requirements

for emergency responders are described, the opening paragraph reads "training shall be based on the duties and function to be performed by each responder of an emergency response organization." The language goes on "the skill and knowledge level required...shall be conveyed to them through training before they are permitted to take part in an actual emergency response."

This regulatory language is instructive for understanding what OSHA expects from training programs. The language, in a sense, becomes a general duty clause for training programs required by OSHA. The purposes of a training program must be to train workers for the duties and functions they are to perform and to develop the skill and knowledge level required to perform those duties and functions in a safe and healthful manner. This skill and knowledge must be conveyed to workers through training before they are permitted to take part in their assigned job. Employers must approach the implementation of a training program with this general duty in mind.

The LUST/OSHA Connection

Now let's discuss OSHA training requirements applicable to LUST remediation activity. LUST remediation is a RCRA corrective action and is, therefore, covered by the provisions found in 29 CFR 1910.120 paragraphs (b) through (o). Technically, the removal of tanks that are not suspected of leaking either currently or historically is not a RCRA corrective action and, therefore, does not fall within the scope of OSHA's HAZWOPER standard. However, if environmental contamination caused by leakage from the tank is discovered during the tank removal, the work becomes a RCRA corrective action and the employer must comply with the provisions of HAZWOPER. In a tank removal situation, because it is often

difficult to predict whether a site is clean or not, and because it is rare that there would be different workers for contaminated versus clean sites, employers should provide health and safety training to all workers involved in this activity.

Site characterization activities in situations where a tank leak is suspected also fall within the scope of HAZWOPER and must be performed by trained individuals, unless the employer can demonstrate that the operation does not involve employee exposure to a safety and health hazard. This may be the case for procedures such as soil gas analysis, where the employee remains physically removed from the contaminated material during sampling. These types of operations are not intrusive, and the possibility of exposure is minimal. Activities such as drilling or sampling of wells would most likely involve the possibility of exposure and would fall under the scope of HAZWOPER.

Paragraph (e) of the HAZWOPER standard is dedicated to the training requirements for workers involved in these activities. There are two levels of training established by OSHA for workers at remediation sites. Workers regularly on-site and regularly exposed to hazardous substance (most LUST remediation workers fall into this category) are required to have a minimum of 40 hours of off-site training and 3 days of supervised field experience. Workers who are on-site only occasionally for specific limited tasks and who are unlikely to be exposed over published exposure limits must receive a minimum of 24 hours of training and 1 day of field supervision.

Scope of Training

In addition to minimum training hour requirements, there are specified training elements that must be covered. These are found in 29 CFR 1910.120 paragraph (e)(2) which states;

Elements to be covered

The training shall thoroughly cover the following:

- (i) Names of personnel and alternates responsible for site safety and health.
- (ii) Safety, health, and other hazards present on-site.
- (iii) Use of personal protective equipment.
- (iv) Work practices by which the employee can minimize risks from hazards.
- (v) Safe use of engineering controls and equipment on-site.
- (vi) Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards, and
- (vii) The content of paragraphs (g) through (j) of the site safety and health plan set forth in paragraph (b)(4)(i) of this section.

These are the specific training requirements which must be addressed in addition to the general duty of training. There are two important points to be considered from the above outlined requirements. First, the hour requirements are minimums not maximums; the elements listed above, as well as the hour requirement must be addressed. That is to say, if all the elements of training cannot be covered in 24 or 40 hours, then more training time would be required.

The second important point is the site-specific or task-specific nature of the required training program.

This is a particularly pertinent point to consider in light of the current trend toward generic packaged training programs. A closer examination of the required elements of a training program reveals that elements (i), (ii), (v), (vii) explicitly require site-specific training, while the remaining elements (iii), (iv), and (vi) are most appropriately covered in a site-specific manner. For example, workers must be familiar with the type of personal protective equipment (PPE) they will be expected to use on-site and not necessarily PPE in general.

Task and Site-Specific Training Elements

The site- or task-specific analysis of the elements of a training program can be taken one step further with a look at how it should be applied to underground storage tanks.

Element (i) - Names of personnel and alternates responsible for site safety and health.

Each worker engaged in hazardous waste operations should know who is responsible on-site for ensuring the safety and health of the workers. This gives individual workers who recognize a potentially hazardous situation a person whom they can turn to report the situation. On LUST remediation sites, due to the limited number of personnel, the foreman is likely to be the designated health and safety officer. During the training program it is necessary to establish that this role is important and that workers have access to this designated person.

Element (ii) - Safety, health, and other hazards present on-site.

Leaking underground storage tank remediation has specific hazards associated with it that are common from site to site and need to be addressed in a general way. The following hazards should be reviewed during the training of LUST remediation workers:

- Toxicology of gasoline vapor,
- Overhead electrical lines,
- Toxicology of benzene,
- Buried electrical cables,
- Leak detection,
- Confined space entry,
- Explosion prevention,
- Cranes,
- Cave-ins,
- Sling and harnesses,
- Tank purging and inerting, and
- Tank pressure testing.

Element (iii) - Use of personal protective equipment.

Ideally, workers are trained on the same type of equipment they will use on-site. Remember that when personal protective equipment is used, the employer has additional responsibilities under 1910.132 (the personal protective equipment standard) and 1910.134 (the respirator standard).

Element (iv) - Work practices by which the employee can minimize risks from hazards.

As with any dangerous work, employers should establish standard operating procedures for employees to follow. These procedures are designed to ensure not only that work gets done in a safe and healthful manner, but also that it is done correctly and efficiently. Each employer develops his own procedures; it is in this train-

ing element that the employer instructs the worker on how to deal with the hazards presented in (ii).

Element (v) - Safe use of engineering controls and equipment on-site.

Employees involved in a hazardous waste operation (e.g., UST remediation) should not be expected to use equipment or perform tasks for which they have not been trained. All equipment, engineering controls, and procedures that an employee will be expected to perform must be introduced to them in training.

Element (vi) - Medical surveillance requirements.

Employees should be aware of the medical surveillance program and the reasons for its various components. Making the employees "aware" means introducing them to the toxicology of the hazardous substance to which they may be exposed with an explanation of the signs and symptoms of exposure.

Element (vii) - The contents of paragraph (G) through (J) of the site safety and health plan.

The review of the site safety and health plan is perhaps the most important training element. The site safety and health plan is the document from which much of the training program content should be derived. The requirements of paragraphs (g) through (j) of the site safety and health plan required in 1910.120(b)(4)(ii) include:

- (g) Decontamination procedures;
- (h) An emergency response plan meeting the requirements of paragraph (I) of this section for safe and effective responses to emergencies, including the necessary PPE and other equipment;

- (i) Confined space entry procedure; and
- (j) A spill containment program.

On-Site Training

In addition to the 24 or 40 hours of off-site training required, there is a requirement for 1 or 3 days of supervised field experience. As a part of this on-site training, each new employee at a site should be given a pre-task site-specific briefing, which should include:

- Specific hazards of the area and operations;
- Site-specific safety and health hazards;
- Site-specific engineering, personal protective equipment, and work practice inspection; and
- Review of sanitation and hygiene facilities as available.

The first 1 or 3 days of on-site activity should be performed under the direct supervision of a trained and experienced supervisor. The primary objective of this requirement is to ensure that all new employees on-site have incorporated all of the off-site training program content into their on-site work behavior.

Supervisory Training

Training for management and supervisors of employees involved in remediation activities requires at least an additional 8 hours of specialized off-site training. The training program should address:

- Roles and responsibilities of the supervisor in the employer's safety and health program;
- Medical surveillance program;
- Personal protective equipment program;

When Will We Ever Learn?

This story appeared in the July 28, 1992 issue of the Petroleum Equipment Institute's TulsaLetter.

Cedric Jackson had a full-time job as a concrete finisher. He decided to make a little extra money to support his wife and four children by helping Jerry Martin, owner of Jerry's JDJ Complete Automotive Shop, remove two 10,000-gallon tanks from Martin's property.

The long-buried tanks had popped to the surface after a week of heavy rain dropped more than 24" on Charlotte County, Florida. A Florida Department of Environmental Regulation official earlier had advised Martin to contact a pollution specialty contractor to remove the fuel from the tanks, dismantle the underground system, and remove the tanks. Instead, Martin hired Jackson at \$5 per hour to undertake the project. This was the first time Jackson had ever worked on underground storage tanks.

Jackson was last seen alive standing on top of one of the tanks. One published report said that Jackson was reaching for his cooler when he slipped and was

crushed between the tanks. Another said that the tank rolled 180 degrees and threw Jackson between the tanks after he cut one of the hold-down straps. It took fire and rescue teams more than five hours to secure the tanks and remove Jackson's body from beneath the concrete anchor in the muddy, fuel-contaminated tank hole.

The Petroleum Equipment Institute (PEI) receives at least one report a month about a serious accident involving men working in, around, or on top of USTs. Most of the accidents involve workers who have not been trained in the specific tasks to which they have been assigned. Tank operators and owners need to make an issue of safety when contracting with a company or an individual to install, service, or remove tanks. Qualification and experience in safe tank installation and removal should be as important as price. ■

- Spill containment program;
- The employees' training program;
- Health hazard monitoring procedure and technique;
- Management of hazardous waste from leaking underground storage tanks and their proper disposal;
- Federal, state and local agencies to be contacted in the event of an emergency; and
- Management of emergency procedures in the event of a release of a hazardous substance.

Refresher Training

All employers falling under the scope of 1910.120(e) must provide at least 8 hours of refresher training annually to all employees engaged in hazardous waste operations. The goal of this training is to maintain the competencies and skills developed in the initial training and to develop new competencies or skills required by changing site conditions or introducing new equipment or procedures.

Refresher training can address any of the training elements presented in 1910.120(e). It is also helpful to use refresher training time to review and critique previous work practices and incidents. The refresher training need not be given in one continuous segment; rather, it may be given throughout the year.

The Bottom Line

Compliance with OSHA HAZWOPER training regulations requires more than simply meeting minimum hour requirements; it requires assessing the safety and health needs of workers and addressing those needs in the training program. In addition, employers are required to develop specific competencies in the workers which allow them to perform their duties in a safe and healthful manner. Inappropriate training can be an unfortunate and useless application of resources. However, training programs designed with the specific safety and health hazards in mind can contribute to ensuring a safe and healthful work environment for all site employees. ■

Matthew E. Fitzgerald is a Senior Environmental Scientist with the Washington Consulting Group, and is currently assigned full time to the Office of Health Compliance Assistance, OSHA, where he works exclusively with HAZWOPER issues.

■ Back Issues of LUSTLine ■

now cost \$2.50 per issue or \$10.00 for a complete set.

To obtain back issues, readers should send a check or money order to

NEIWPC, Inc.,
85 Merrimac St.,
Boston, MA 02114.

Purchase orders will be accepted from government agencies only. The most recent issue is free of charge.

■ To Our Readers ■

We welcome your comments and suggestions on any of our articles. Contact Ellen Frye at (617) 861-8088

New EPA Publication

Leaking Underground Storage Tanks and Health

To help UST field staff understand the potential hazards associated with gasoline and benzene exposure and to communicate these risks more effectively to health officials and the public during site investigations and cleanups, the EPA Office of Underground Storage Tanks has prepared a new 19-page booklet called *Leaking Underground Storage Tanks and Health*. The purpose of this document is to describe the effects of benzene exposure on human health and discuss adequate levels of protection.

Whether or not adverse health effects occur following exposure to a substance depends upon the concentration and toxicity of the substance, the type, extent, and duration of the exposure, and the susceptibility of the individual being exposed. Understanding the potential for adverse health effects from exposure to gasoline requires the following four steps:

- Identifying which contaminants are involved;
- Determining how much of the chemical is present;
- Identifying who may be exposed to the chemical and how to consider the type, route, and duration of exposure; and
- Assessing the potential health effects associated with exposure.

The booklet is essentially a discussion of each of these steps. However, as stated in its introduction, the booklet is not intended to be a formal risk-assessment instrument nor a "predictor" of adverse health effects. "Risk" is based on the statistical concept of probability (i.e., that risk is a statement of likelihood, not absolute certainty). The statistical evaluation of risk depends on the existence of many data samples. Because the data base for the health effects of gasoline contamination is small, this document generalizes from a limited number of samples. Because neither this nor any other single document will enable field staff to function as industrial hygienists or toxicologists, field staff are encouraged to consult health experts for site-specific situations.

Copies of Leaking Underground Storage Tanks and Health have been distributed to EPA regional offices and to state UST/LUST program offices. For more information, call the RCRA/Superfund Hotline at 1-800-424-9346 from 8:30 a.m. to 7:30 p.m. EST. ■

Tank-nically Speaking

by Marcel Moreau

Marcel Moreau is a nationally recognized petroleum storage specialist whose column, Tank-nically Speaking, is regularly featured in UST Today. As always, we welcome your questions, opinions, and technical input.

The A to ZZZs of Pressurized Piping Leak Detection

I recently heard a story from a regulatory official about a municipal bus fueling facility in Texas that had lost an estimated 880,000 gallons of diesel fuel from a pressurized piping line that had leaked. This story has tempted me to get on my soap box again and launch into a diatribe on the most vile of all UST vices, the pressurized product dispensing system. Like alcoholic drink, however, pressurized piping systems cannot be prohibited away. Pressurized piping can be controlled by proper leak detection, but most owner/operators still seem mesmerized by the "tank" problem, oblivious to the leak-detection needs of their piping. So with banner in hand, allow me to plunge into the intricacies of pressurized piping leak detection, as defined in the federal UST regulations. State or local regulations may differ.

What the Rules Require

The federal UST regulations require that pressurized piping leak detection meet two separate standards: one, which is basically crude, but nearly continuous, and one, which is more accurate, but intermittent.

Crude, But Nearly Continuous

This method must be capable of detecting a 3-gallon per hour (gph) leak (when the pressure in the piping system is at 10 psi) within a time period of 1 hour from any part of the piping that routinely contains product. The method must alert the operator by shutting off or restricting the flow of product or triggering an audible or visual alarm. An annual test of the operation of the leak detection device must be conducted in accordance with the manufacturer's instructions.

Since September 22, 1991 all new or replacement devices installed to meet this requirement must be certified to meet the performance stan-

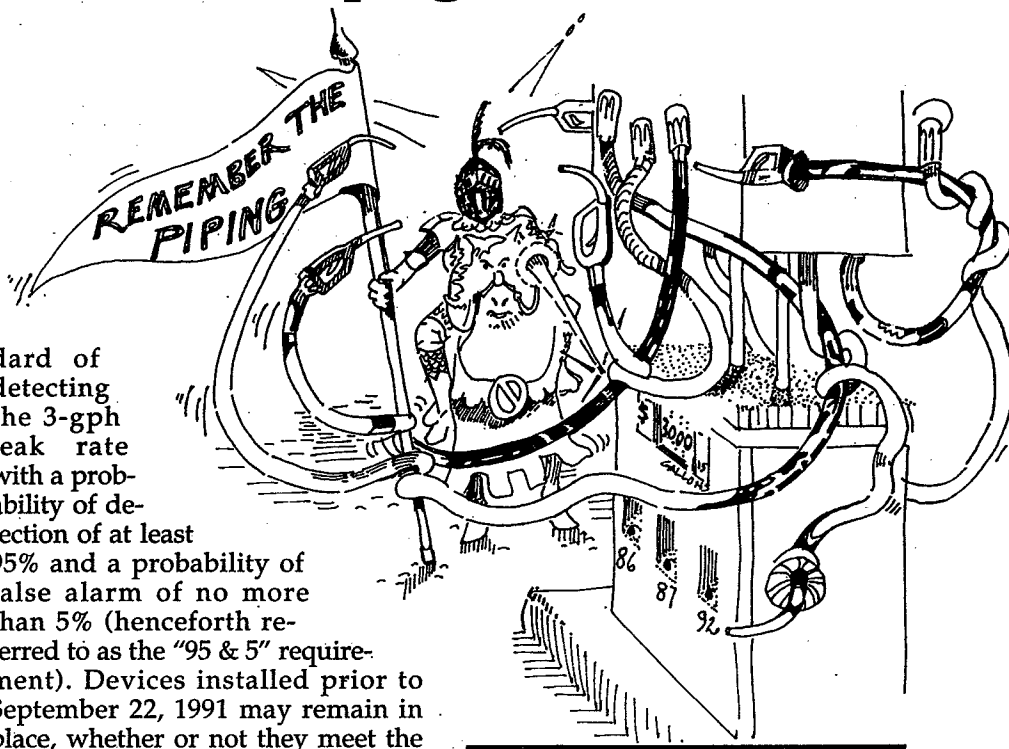
dard of detecting the 3-gph leak rate with a probability of detection of at least 95% and a probability of false alarm of no more than 5% (henceforth referred to as the "95 & 5" requirement). Devices installed prior to September 22, 1991 may remain in place, whether or not they meet the 95 & 5 requirement. Note, the rules specify a performance standard, not a specific piece of hardware. Although the most common piece of hardware used to meet this requirement is a mechanical line-leak detector (LLD), the rules do not require that a mechanical LLD be installed.

More Accurate, But Intermittent

The second requirement can be satisfied by using a method from either paragraph A or B below:

A. Monthly groundwater or vapor monitoring or interstitial monitoring conducted according to the requirements specified in the regulations, or any other method capable of detecting a 0.2-gph leak rate or a release of 150 gallons in a period of 1 month that can meet the 95 & 5 requirement.

B. Annual line tightness testing that can detect a leak rate of 0.1 gph at 95 & 5 when the test is conducted at one and one-half times the operating pressure of the piping system.



What the Real World Looks Like

That's what the rules say. But how do the rules apply to the real fiberglass and steel piping jungle out there? Well, I've assembled a listing of all the technologies that I have discovered, so far, that can be used to meet these regulatory requirements. Each is followed with some notes on things to watch out for if you're doing a leak-detection-compliance inspection, or if you are an owner or operator who either anticipates such an inspection or just wants to get things right:

Methods that meet the 3-gph standard

- **Mechanical LLDs** (popularly known by the brand name "Red Jacket" after the most commonly used model) - This is the device that was used when the regulatory requirements were being developed. The mechanical LLD is installed in a special opening in the top of the

submersible pump manifold in a special "T" fitting. The device performs a test whenever the submersible pump is turned on.

Things to watch out for...

- All of these devices have been certified by the manufacturers as meeting the 95 & 5 performance standard, except for the Red Jacket piston leak detector (PLD). A newer version of the PLD, known as the XLP, has, however, been certified. The XLP model can be identified by a silver XL logo on the top center of the LLD.

- It is important to remember that mechanical LLD's perform a test only when the pump is turned on and only if the pressure in the line has dropped below a threshold, typically 1 or 2 psi. If the submersible pump is always on or is turned on once in the morning and left on all day, the mechanical line leak detector will not meet the requirement of being able to detect a leak within a time period of 1 hour.

- Mechanical line-leak detectors must be tested annually according to the manufacturer's requirements. According to EPA, this test is only to determine whether the mechanical LLD is functional; the test need not determine whether the device can actually detect a leak of 3 gph. Owner/operators are required to keep a record of this test for at least one year.

- **Electronic LLDs** - At the low-cost end of electronic LLDs, there are simple pressure monitors that check for the rate of pressure drop in the piping after the pump has been turned off and sound an alarm when a 3 gph leak is detected. The simplest such model has a pressure sensor that is installed in the emergency shut-off valve mounted underneath the dispenser and a small control/alarm box that is mounted on top of the dispenser.

At the high-cost end, there are devices that incorporate sophisticated software that tests for 3 gph leaks, as well as 0.2- and 0.1-gph leaks. The more sophisticated models have pressure- or volume-monitoring sensors located on the manifold of the submersible pump and a remote control box that can control the operation of multiple sensors.

Things to watch out for...

- Electronic LLDs only perform a test when the pump is cycled from

on to off. If the pump is run continuously, the electronic LLD will not meet the performance standard of being able to detect a leak in 1 hour.

- Any device used to meet the 3-gph standard must be tested annually to be sure that it is functional. Most electronic LLDs have self-test functions that can be performed on demand, or automatically or manually on a periodic basis. The manufacturer should provide the owner/operator with documentation on how the device is to be tested, so that when a compliance inspection is performed, the inspector can see what test is required. Documentation of testing should be on file for 1 year.

- **Interstitial monitoring with continuous alarm systems** - These systems can be used to meet the 3-gph leak detection requirement provided they respond to a 3-gph leak from any part of the UST system that routinely contains product in a period of 1 hour by alerting the operator and/or shutting down the pumps. Secondarily contained piping that has been properly designed and installed so that it slopes back to a sump where a sensing device is located should be able to meet these requirements quite easily. The pump, in this type of system, does not need to be cycled on or off to activate the leak detection system, so this method can be used at facilities where the pumps operate continuously.

Things to watch out for...

- If an alarm mechanism is used, it should be both annoying and close enough to the operator so that it cannot be ignored. If the alarm sounds and no one responds, the leak could fill the secondary containment and spill out onto the ground. Because of this danger, it is prudent to have the leak-detection device control power to the pump so that the pump shuts down when the alarm sounds. A system set up this way is apt to be more effective in calling attention to the problem than just a feeble alarm.

- The sensing device must be tested annually for proper operation, and documentation of the test must be on file for one year.

- As of September 22, 1991, the method must be certified to 95 & 5. As there is no official EPA protocol for certifying the performance of

interstitial monitoring systems, it could be argued that this interstitial method of detecting 3-gph leaks is not valid unless someone certifies that it will work to 95 & 5. The safest thing to do is to install a mechanical LLD as well as continuous monitoring on storage systems installed after September 22, 1991.

Methods that meet the monthly test standard

- Either of these methods can be used to meet monthly monitoring requirements if the system is designed to detect leaks from any portion of the piping that routinely contains product and is checked at least monthly for indications of a leak. The system must meet all the conditions specified in the regulations for groundwater or vapor monitoring, including a site assessment (hopefully by a competent person) that determines whether all regulatory requirements have been met and that the method will, in fact, detect leaks.

Things to watch out for...

- The site assessment aspect of the requirements appears to be universally lacking at sites with groundwater or vapor monitoring.

- If a manual monitoring method is used, a log must be kept on file for a period of 1 year that documents when the monitoring was done, who did it, and what the results were.

- If a continuous groundwater or vapor monitoring device is used, then documentation of maintenance, repair, and calibration of the device must be kept for 1 year after any work is completed. If the device is located in an out-of-the-way place (I've seen them in compressor rooms and janitor's closets.), then a log should be kept to document that the status of the device has been checked at least on a monthly basis.

- **Interstitial monitoring** - This method can be used to meet the monthly monitoring requirement if the interstitial space is inspected for evidence of a leak on a monthly basis. A continuously operating interstitial monitor meets this requirement as well.

Things to watch out for...

Same as for groundwater and vapor monitoring.

- **Statistical inventory reconciliation** - Although inventory control by itself is not recognized in the federal regulations as a means of leak detection for piping, inventory control coupled with statistical inventory reconciliation is accepted as a leak-detection method for piping. A valid statistical inventory reconciliation method, applied on a monthly basis, can be used to meet the monthly monitoring requirement for piping.

Things to watch out for...

- Statistical inventory reconciliation is a wonderful tool, but it does not work miracles. The data submitted for analysis must be of sufficient quality to make the statistical analysis meaningful. The statistical analysis method should report not only whether a leak is present, but also the smallest leak rate that could have been detected given the quality of the data. If the smallest detectable leak is in excess of 0.2 gph (4.8 gallons per day), then the monthly monitoring requirement for that month has not been met.

- **Electronic LLDs** - Some electronic LLDs perform a test certified

to meet the 0.2-gph detection criteria on a routine basis.

Things to watch out for...

- Generally, no documentation is provided to prove this test has been successfully passed on a monthly basis. This is not a major problem, because these devices can perform a 0.1-gph test as well, and as long as there is documentation that the 0.1-gph test is performed annually, the regulatory requirements have been met.

Methods that meet the annual test standard

- **Line-tightness test** - The most common form of 0.1-gph piping test is the traditional line-tightness test, which involves bringing equipment and trained personnel to the site. The piping is pressurized to a minimum of 150% of the operating pressure (typically 50 psi), and the pressure or volume of the system is monitored for a period of time. The test, which must be conducted annually, presents a convenient opportunity to test the operation of the mechanical LLD as well.

Things to watch out for...

- **Certification of performance of the tightness test method** should be provided to the owner/operator each time the test is performed. This is both the owner's documentation that a valid test (i.e., with a performance level of 95 & 5) has been performed and the tester's certification that certified equipment and procedures were used in conducting the test.

- **Electronic LLDs** - These devices have been certified to qualify as line-tightness tests. Because they use the submersible pump to pressurize the piping, they are not capable of pressurizing the piping to 150% of the operating pressure. Because the test is run at lower pressure, the device must be able to reliably detect leaks smaller than 0.1-gph to meet the piping tightness test standard.

Things to watch out for...

Documentation of the last successful line tightness test must be provided so that regulatory compliance can be verified.

- **Tracer Tightness Test** - The non-volumetric tracer type of tightness test, where a volatile, easily detectable substance is injected into the storage system and soil vapor is later sampled for the presence of the tracer, has also been certified as meeting line-tightness test requirements (although it has not yet appeared in EPA Region 10's list of certified methods).

Things to watch out for...

Same as line-tightness test.

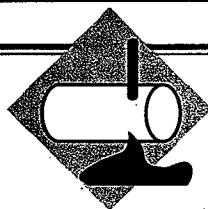
Postscript

If it were my pressurized piping system, I'd go for secondary containment with a continuously operating liquid sensor. If I had a lot of corrosion-protected single-walled piping already installed, I'd be tempted to go with an electronic line-leak detector. I wouldn't even consider using groundwater monitoring!

These are all the ways I can think of to perform leak detection on pressurized piping. If you've run across or are selling any additional methods, please let me know.

Whether you are conducting leak detection compliance inspections or hoping to survive one, let your watchwords be:

REMEMBER THE PIPING!!!



List of 3rd Party Certified Leak Detection Methods Available From EPA Region 10

EPA REGION 10 CONTINUES TO update its national list of leak detection methods that appear to have met or exceeded the accuracy requirements stated in the federal UST regulations (40 CFR 280). Manufacturers listed have provided Region 10 with certifications that their product(s) meet performance standards described in EPA's Standard Test Procedures for Evaluating Leak Detection Methods (EPA/530/ UST-90/xxx).

The list is divided into seven sections based on method: volumetric tank-tightness testing, non-volumetric tank-tightness testing, automatic tank gauging systems, statistical inventory reconciliation, vapor-phase out-of-tank product detectors, and pipeline leak detection systems.

Each section includes: the

manufacturer's name, address, and phone; the product name and model; accuracy and applicable comments on the product as stated by the evaluating party, including probability of false alarm (Pfa), probability of detection (Pd), and operational limitations and requirements, such as tank size and product level; and the name of the evaluator and evaluation date.

EPA has not evaluated these certifications and inclusion on this list in no way states or implies that EPA approves or certifies any of these products. The list is updated as needed.

For more information, or to add your name to the mailing list, write Eric Wilmanns, UST/LUST Program, EPA Region 10, WD-139, 1200 6th Ave., Seattle, Washington 98101, or call 206-553-1587.

Leak Prevention



A Haunting Reminder that Even ASTs Require Proper Installation

by W. David McCaskill

As you drive through the beautiful State of Maine past the clapboard houses and white steepled churches, you're bound to come upon the ubiquitous village variety store; the place where you can stock up on picnic and fishing supplies and, while you're at it, fuel up the family station wagon. In recent years, many of these variety stores have added a new scenic feature out back, aboveground storage tanks (ASTs), and here's where my saga begins.

The flowering of the AST as a retail motor fuel storage vessel began in Maine around 1985 when the Department of Environmental Protection (MDEP) promulgated rules to deal with the problem of leaking underground storage systems. The "mom and pop" variety stores, typically located in small villages where everyone relies on the groundwater for their water supply, had customarily stored their retail fuel in USTs.

At the time, regulatory pundits had figured that with the new UST rules the population of regulated USTs would eventually settle out such that folks who could afford to replace their old UST systems with new tanks and piping would, while the others would yank their tanks and just sell groceries. But nooo, the variety stores needed to sell gasoline, it was an effective customer lure—buy some gas and some other whatnots too. But, these stores needed an inexpensive petroleum storage option, and ASTs fit the bill.

In 1987, the Maine legislature asked the MDEP to conduct a study of ASTs. One of the major findings of the study was that there were no allowances for ASTs at retail motor fuel facilities in the national fire codes. However, despite this dearth of technical standards, ASTs sprouted like mushrooms all over rural Maine.

The study showed that the number of ASTs at retail facilities was

growing at an accelerated rate. The study also included a statewide inspection tour which revealed deficiencies, such as the lack of emergency venting and proper anti-siphon protection, in many newly built AST facilities. Information gleaned from the study gave the MDEP direction to draft rules to address the growing AST problem. Ultimately, however, the oil industry successfully lobbied for the AST program to stay (status quo) with the State Fire Marshal's Office (SFMO).

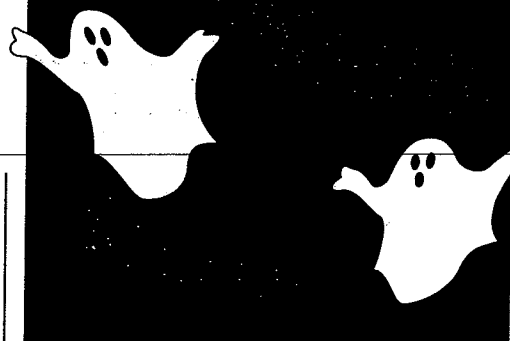
The majority of the discharges from ASTs in this State have resulted from the lack of or improper use of anti-siphon valves in the AST system, coupled with poorly installed underground piping.

In 1991, the SFMO adopted 1990 edition National Fire Protection Association codes, NFPA-30 and 30A, which included new provisions for ASTs at retail motor fuel facilities. (See LUSTLine Bulletin #16, March 1992, "ASTs...The Hot Alternative to USTs.") Around the same time MDEP received authority to regulate the underground piping associated with ASTs under State UST rules. (Federal UST regulations do not regulate underground AST piping unless the piping is greater than 10 percent of the storage capacity.)

That Old Villain Called Piping

There are several hundred AST facilities in the State of Maine that do not meet the new fire code. The MDEP is now dealing with a growing number of releases from AST piping. The

Even ASTs



problem stems from the faulty assumption held by AST owners, that if you can see the tank you can see the leak. But the piping is missing from this equation, and, as all avid LUSTLine readers know, most leaks are from the piping...and, even with ASTs, the results can be catastrophic.

The majority of the discharges from ASTs in this State have resulted from the lack of or improper use of anti-siphon valves in the AST system, coupled with poorly installed underground piping. Several hundred to thousands of gallons of petroleum have been discharged directly into the ground from AST piping—literally overnight.

An incident that comes to mind is one where a variety store owner transformed his USTs into ASTs to protect his water well that was adjacent to the storage system. He thought he'd done everything correctly...even installed fiberglass underground piping. The new system had included an anti-siphon mechanism, but the installer had removed it because it wasn't functioning properly.

Not long afterward, a stake was inadvertently driven through the buried fiberglass pipe. Without the anti-siphon valve, the tank drained directly into the ground overnight. Within a very short period of time the owner's well was contaminated. Had the anti-siphon valve been in place, product would have drained only when the pump was operating, and because the system was a suction system the breach in the piping would have been noticeable at the pump immediately.

■ continued on next page

■ ASTs continued from page 17

In another situation a 100-foot off-set fill line to an AST leaked each time the line was filled because of damaged threads at a connection. Because the AST was filled under pressure (300 gpm) the "leak" was quite extensive. The discharged gasoline was discovered in an adjacent stream at a point 1,000 feet upstream from a lake and the intake for a large municipal water supply.

...many of the older AST systems lack emergency vents. This presents another kind of threat, one most obviously associated with ASTs, the possibility of an explosion.

We are also finding that many of the older AST systems lack emergency vents. This presents another kind of threat, one most obviously associated with ASTs, the possibility of an explosion. Hopefully, we will get the AST problems under control before one blows up and someone is injured or killed.

Maine's AST problem is a classic example of what can happen if a potentially dangerous or harmful activity is not thoroughly addressed by regulations, codes, and industry practices. In an attempt to allow mom and pops to sell gas, wrong actions were taken for the right reasons. We now have the benefit of technical codes and the Petroleum Equipment Institute's new RP200 (*Field Notes* page 18) that provides industry-recommended practices for AST installation. Currently, the MDEP, SFMO, and the Maine Oil Dealers Association are looking at ways to restructure the State's AST program. ■

W. David McCaskill is a petroleum storage specialist with the Maine Department of Environmental Protection.

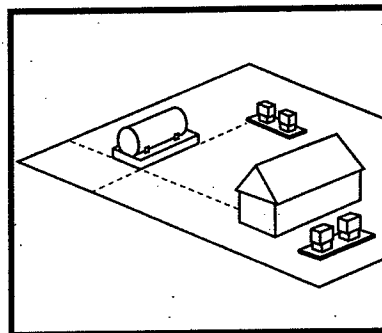
Field Notes

from Robert N. Renkes, Executive Vice President, Petroleum Equipment Institute

Necessity—The Mother of PEI's RP200

"Recommended Practices for Installation of Aboveground Storage Systems for Vehicle Fueling"

Historically, petroleum products at service stations and other motor vehicle fueling sites have been stored in underground tanks. In response to the stringent regulation of USTs, the liberalized fire codes, and new emerging technologies, however, some tank owners have sought alternatives for the storage of petroleum products. One alternative is to store product in aboveground tanks (ASTs).



Aboveground tanks are being installed in record numbers. But while ASTs at fueling sites have been gaining in popularity, no one has published a concise, easy-to-understand document or manual on preferred practices and procedures for installing these systems. This dearth of information is the reason why the Petroleum Equipment Institute's (PEI) Board of Directors authorized the development of RP200 "Recommended Practices for Installation of Aboveground Storage Systems."

PEI's intent in developing the document is to recommend practices that will minimize the possibility of aboveground storage system failures and reduce fire-safety and environmental hazards, while avoiding procedures that will needlessly increase installation costs. The recommended practices will apply to stationary, shop-fabricated tanks built for aboveground storage of flammable and combustible motor fuels. They will cover both horizontal and vertical ASTs.

RP200 addresses aboveground tank installations at commercial and retail service stations and marinas. Practices for installations at bulk plants, terminals, industrial sites, aviation fueling sites, isolated construction sites, and farms are not covered. Neither are requirements covered for installation of skid tanks, oil field production tanks, and field-fabricated storage tanks.

This summer, PEI issued nearly 3,000 draft copies of RP200 for comment. Manufacturers, installers, equipment distributors, oil companies, state AST regulators, and engineers submitted a collective 170 comments on RP200 which were reviewed by PEI's aboveground storage tank committee in September. A final version of the document will be issued in October. Write the Institute (P.O. Box 2380, Tulsa, Oklahoma 74101) for an order form.

The installation of liquid motor fuel storage systems (ASTs or USTs) is a highly complex business, requiring a wide range of construction knowledge and experience. When you consider that ASTs at refueling sites are a relatively new phenomena, it's understandable that installers don't have the same training and experience installing ASTs as they do USTs. While written instructions and recommended procedures alone will not convert an incompetent or under-supervised workman into a competent craftsman, PEI hopes that the publication of RP200 this fall will contribute greatly to reducing potential environmental and fire-safety hazards. ■

EPA Takes Steps to Ease Anxiety Over Lender Liability

THIS APRIL, EPA PROMULGATED A final lender liability rule, under CERCLA (Superfund), that clarifies the liability of secured creditors (lenders) who have security interests in contaminated properties, an issue that has given rise to an aura of uncertainty within the money lending community for several years. Although this new rule is limited to actions taken under CERCLA and does not apply to other environmental statutes, the good news is another such rule, pertaining specifically to underground storage tanks regulated under Subtitle I of RCRA, is in the offing.

The lender liability issue has had a chilling effect on lender willingness to make loans to UST owners. This climate of lender skittishness is a notable reason why many UST owners, small businesses in particular, have failed to obtain financing for the capital improvements needed to bring their facilities into compliance with the broad spectrum of environmental regulations—USTs, Stage II Vapor Recovery, Underground Injection Control—that affect their businesses.

During the comment period for the CERCLA lender liability rule, EPA received numerous comments suggesting that the Agency extend lender liability clarification to lenders in a variety of other circumstances, particularly the potential liability associated with loans to owners of underground storage tanks. In response to these comments, EPA announced in June that work on a proposed lender liability rule for USTs was underway.

"The UST rule will clarify the liability of secured creditors that hold or maintain indicia of ownership, primarily as protection for a security interest in an UST-contaminated property," says John Heffelfinger, workgroup chairperson for EPA's UST Lender Liability Regulation. "The rule will clarify the range of activities that a secured creditor may undertake in the course of protecting the security interest, without incurring liability as a tank owner."

Under CERCLA, there are four broad classes of responsible parties

who are liable for the costs of cleaning up contamination when the federal government, state government, or a private party brings suit: the first two classes include "owners and operators" of facilities contaminated by or containing hazardous substances; the third class consists of those who arranged for disposal or treatment of hazardous substances; and the fourth includes those who accepted hazardous substances for transportation and selected the disposal facility. It has been well settled in the courts that each of these four groups of responsible parties is strictly liable.

"The rule will clarify the range of activities that a secured creditor may undertake in the course of protecting the security interest, without incurring liability as a tank owner."

The responsible parties at issue where the lender liability rule is concerned, are the persons who are "owners or operators" of facilities subject to CERCLA. The rule exempts those who, "without participating in the management of a facility, hold indicia of ownership in the facility primarily to protect a security interest." Under RCRA, the definition of a UST "owner" includes an exemption for holders of a security interest in the tank which is nearly identical to the "owner" exemption in CERCLA.

The judicial interpretation of this "security interest" exemption has been the primary source of all the financial and lending heebie-jeebies. At issue has been the extent to which a secured creditor, or holder, can undertake activities to oversee the affairs of a borrower whose facility is encumbered by a security interest for the purposes of protecting the security interest, without incurring liability.

The operative phrase in court

interpretations has been "participation in management"—if the holder is considered to be participating in the management of the facility, the liability exemption can be voided. Certain actions typically taken by a holder—monitoring facility operations, requiring compliance with legal requirements and compliance-related activities, refinancing of loans, providing financial advice, and other similar actions that can affect the financial, management, and operational aspects of a business—can be considered evidence of participating in management of a facility.

It was the case of *United States v. Fleet Factors Corp.* in 1990 that really catapulted lenders into their big chill. The Court of Appeals for the Eleventh Circuit gave the opinion that a secured creditor may be liable if it actually participates in the management of a facility "to a degree indicating a capacity to influence the corporation's treatment of hazardous wastes." The court left wide open the question of the level or extent of actual participation that would be sufficient to nullify the liability exemption. The 40 CFR Part 300 *National Oil and Hazardous Substances Pollution Contingency Plan; Lender Liability Under CERCLA Rule* of April 29, 1992 effectively settles this issue, as far as CERCLA is concerned.

As far as the UST question is concerned, EPA's John Heffelfinger says that the forthcoming UST clarification should result in removal of current barriers to financing UST facility upgrades and the availability of more capital for UST owners. He notes that in addition to the environmental benefits associated with UST facility improvements, the increased funding available to these businesses should have a "ripple" effect for equipment manufacturers, distribution companies, and contractors.

Heffelfinger says EPA plans to have a proposed UST rule out by November 30, 1992, and a final rule by May 1993. ■



Enforcement

L.A. County Gas Station Owners Charged with Conspiracy to Falsify Tightness Tests at More Than 150 Facilities

The Los Angeles County Environmental Crimes Unit spent over two years obtaining evidence that would show, beyond reasonable doubt, that service station owners, Gary and Divine Grace Lazar; a testing company employee, James Lemley; and a former general manager for the Lazar companies, George Gallo had conspired to falsify tank tightness test reports and illegally dispose of gasoline. The four alleged co-conspirators were arrested this spring and charged with one count of conspiracy to commit misdemeanors (in California, conspiracy to commit a misdemeanor is a felony) by intentionally falsifying required tank tightness tests, six counts of illegal disposal of hazardous waste (under California State law, gasoline is considered a hazardous waste), and one count of attempt to commit disposal of hazardous waste.

The investigation began when an informant tipped off the County D.A.'s office that illegal tank testing activities were afoot. County investigators began checking tightness test records submitted by a tester named Earl Ortloff. "We put our computerized information on a spread sheet," says Carl Sjoberg of the L.A. County Department of Public Works Waste Management Division, the agency that regulates USTs in all but nine of the eighty-eight cities and towns in the County's jurisdiction. "We began to see that the testing patterns were too perfect, there were no failures—you can generally expect a failure rate of 20% or more—there was little or no information on how the tests were done, whether the tanks were topped off...and all the tests were done at the same time of day and in a certain sequence."

"In California, this type of tightness test must be done by a licensed individual," says L.A. County Environmental Crimes Unit investigating officer, Pete Martinez. "The licensed tester is the only one who can conduct the test, sign it, and then submit it to the Public Works Department. Our records showed that Ortloff was conducting these tests—sometimes two and three in one day—all over the County and beyond, which is virtually impossible for one man."

Part of the test method that Ortloff was supposed to have used involves filling the tanks. The station

owner has to shut down the station for the day and fill the tanks, which usually involves buying or renting gasoline. Then the tester is supposed to test the system according to test protocol which, if done properly, requires time and expert skills. The test also involves exposing the pipes at the top of the tank so that they can be tested separately from the tank. But as L.A. County investigators learned, none of this ever happened. The tester never left home. Fuel deliveries were never made at the time of the tests.

Martinez cautions that when a regulatory agency is on to a possible criminal case, it is important that it work with the experts in criminal law to be sure that the evidence is handled correctly.

County investigators staked out Ortloff at his lakeside home in the desert. "We'd watch him fishing off his deck," says Martinez. "Months after that, when he'd submit his tests,

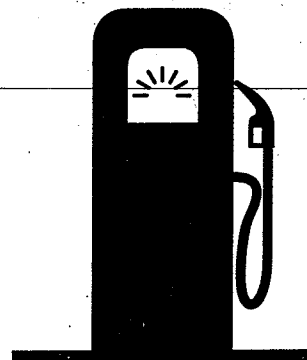
we would note that on the same day we had watched him sit on his deck he had reported doing tests."

The County stepped up their investigation with search warrants and such. They tracked Ortloff's activities into other counties. Eventually investigators realized there was a much bigger fish in this picture. Although Ortloff was performing his unique service for several tank owners, the Lazars, with over 150 owned or leased businesses, got the prize for conspiracy on the grand scale. (Is this beginning to sound like a made-for-prime time story?)

The Plot Thickens

"We weren't quite sure where to go with this information at first," says Martinez. "We needed to know if there had been disposal of leaking product into the ground—if any of the tanks were, in fact, leaking. We needed search warrants, but we couldn't get search warrants unless we knew there had been a leak." But, one fine day, key information came in from owners of a station that the Lazars were leasing, giving investigators the break they needed.

Grace Lazar had allegedly tried to negotiate the purchase of one of the gas stations that her company had been leasing. Lazar personally visited the owners and allegedly tried to coerce them into selling by showing them information about the Lazar-operated tanks—that they were leaking and that as property owners they would be out some \$300,000 if they had to clean up the contamination. All the while, Lazar insisted that the owners not tell the



authorities, because if they found out the tanks were contaminated, they would all be in trouble. The station owners decided they'd better check in with the County regulators.

With this information, the County got a search warrant and tested the tanks. "We had to replace parts of the upper tank and piping connections just so we could do the tests," says Martinez. After completing its site investigation, the County had all the evidence it needed to show the site was contaminated. That's when they arrested Grace Lazar.

Bail for the four co-conspirators was set high because, as prosecutors argued, the defendants had sufficient wealth and overseas connections to flee the country. The defendants also had to prove before they posted bail that the money they used for this purpose hadn't come from illegal means. All four are now out on bail awaiting trial later this fall. The defendants face jail sentences and potential multi-million dollar fines that continue to add up with each additional day of violations. The illegal disposal of petroleum continues as tanks at Lazar stations continue to leak.

Tips For Regulators

In the case of a criminal investigation, the investigator knows that the only way to nab the bad guy is to show "beyond reasonable doubt" that a crime has been committed. As the L.A. County investigators got deeper into the case, information mounted up. "But, if we hadn't had the facilities on a computerized system and a method for keeping records, we would have been in bad shape," Martinez explains.

"We got hurt by the fact that a few cities (that ran their own tank program) didn't have any records. In some of these programs, the tester would send in the test report, and if it said the tanks passed, they'd just check it off and throw the form away," says Martinez. "In the Lazar situation, I needed to be able to see the actual test form that indicates how much gasoline was in the tank, the date, the time, the pressure... everything."

Martinez cautions that when a regulatory agency is on to a possible criminal case, it is important that it work with the experts in criminal law to be sure that the evidence is handled correctly. ■

Enforcement

Hear Tell From EPA Region 8: Inventory Control Cogitations and Lamentations

Nationwide, monthly inventory control in combination with periodic tightness testing is the UST leak-detection option of choice...or necessity...or convenience...or affordability. But 8- or 9-times out of 10, as federal, state, and local UST-compliance inspectors are observing, inventory control is used incorrectly. In fact, variations on the theme of inventory control seem to be without limit, and the problem persists like a hair in a shirt, that itches and itches and won't go away.

That itch holds true in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Wyoming, Utah) where inspectors have conducted 80 to 90 leak-detection compliance inspections over the past year. "We have very specific criteria to distinguish between the 'minor' field citation violations where we issue tickets versus 'major' violations that involve administrative orders," explains Region 8's Suzanne Stevenson. "About 80 percent of our inspections result in citations, and the majority of field citations written so far have been because of inventory control problems."

"The difficult part of it is that much of the time people genuinely believe that they're doing it right," says Stevenson. "Over and over, owners and operators tell me 'this is the way I've always done inventory control and I've never had a leak.'"

EPA Region 8's Teri Bahrych, who inspects facilities on Indian Lands, says the farther into rural areas she goes the more bizarre underground storage of petroleum seems to get. "At one facility I visited," she recalls, "I was told they use inventory control for their two tanks. I asked to see the records of daily stick readings. They had no records. I asked to see the stick. They didn't have one. I asked how they checked for water. They didn't. I asked to see the dispenser and tank area. They led me to a junk yard in the back. There amongst the weeds and pieces of rusted equipment

were two dispenser pumps and a six-foot tall pipe sticking out of the ground.

"The six-foot pipe was the fill pipe. I was unable to reach the top of the pipe, let alone look for a drop tube or insert a gauge stick. I asked why the fill pipe was six feet above ground and was told it was to keep vandals from dropping items into the tank.

"I explained that if the gauge stick couldn't be inserted into the tank, inventory control wouldn't really work as a leak-detection method. I asked how anyone got product into the tank. No one was able to answer that question because no one had ever been around to watch a delivery."

At another facility purporting to use inventory control, Teri asked to see the records, which they didn't keep, then she asked to see the gauge stick, which they didn't have. "So, I asked what they used to measure the product in the tank. They told me that because they had no stick, they dropped stones down the fill pipe to see how much product was in the tank. They said they could tell how full the tank was by how long it took the stone to hit the liquid. Looking down the fill pipe with my flashlight I was able to see a small pile of stones just visible above the product."

Bahrych says she's seen a wide assortment of gauge sticks too—"some true works of art." Some look like patchwork quilts of many small pieces connected with glue, tape, wire, cloth... She describes a one-yard-long stick that had a thick two-yard piece of wire attached to the end. "The operator said if he held the stick and extended his arm into the fill pipe to just the right length, he could get an accurate reading. I asked him if anyone else's arm was calibrated to the tank."

Confusion about inventory-control requirements is not limited to

■ continued on page 22

rural or economically depressed areas. Many owners and operators who use inventory control as a leak-detection method still don't understand how to do it correctly. Monthly reconciliation between gauge-stick data and delivery data is mostly done incorrectly or not at all. (This procedure is like a mathematical alarm system; if an overage or a shortage is greater than or equal to 1 percent of the tank's flow-through volume plus 130 gallons of product, it is a clue that the tank may be leaking. If this continues for two consecutive months, the owner/operator must report a release.)

"We don't see many folks doing monthly water checks," says Bahrych. "Non-retail facilities often don't have dispenser pumps calibrated. Tank calibration charts are missing, or are in whole-inch increments, or are so old and greased up you can't read them. And the daily records..."

"It comes as a shock to people when we tell them there are problems with their inventory method," says Suzanne Stevenson. "One facility owner had very meticulous records, but didn't reconcile using the 1% + 130-gallon standard to determine whether he had a leak. When I asked him what criteria he used to determine whether there was a leak, he couldn't answer. I asked him how much product would have to be missing before he would call and report a potential release. He didn't know.

"I get so many situations where the owner or operator has gone to the expense of trying to do the correct thing with his storage system, but has been basically steered down the wrong path," says Stevenson. "In one situation I had to issue a citation to a man who had spent \$60,000 to install double-walled steel tanks with interstitial monitoring. During my inspection the man explained that the interstitial monitoring system had some problems during installation, so the contractor told him to just forget the interstitial monitor because he had to do inventory reconciliation anyway. The owner returned to using inventory control for leak detection, just as he

had before.

"I had to issue the citation because he was not reconciling monthly using 1% + 130 gallons as a standard, he wasn't checking for water, and he didn't stick his tank daily. I told him if he would just check the interstice once a month and write his results down he'd be much better off."

"I told him if he would just check the interstice once a month and write his results down he'd be much better off."

uncommon for operators to believe they must use inventory reconciliation along with other methods of leak detection." (It is, in fact, the case that in some parts of the country inventory control is required, even if other leak detection methods are used.)

Bahrych says when she explains to owners and operators how to use inventory control correctly, she is usually asked to explain how to figure the 1% + 130 gallon throughput business. "Invariably, I find myself teaching percentages. After my impromptu math lesson, I leave notes with step by step instructions. One item I am asked for without exception is an inventory form that the owner can copy and use."

"Our inspectors do a lot of one-on-one education at the UST facilities," says Debbie Ehlert, EPA Region 8 UST Program Manager. "But we need to draw the line somewhere in terms of how much hand-holding we can do. This is why we've organized a packet of materials that includes explanations of inventory reconciliation and manual tank gauging (another leak-detection sticky wicket), and some sample worksheets. Most people are very receptive to this, and it helps the inspector feel that an inspection has been helpful even when a citation has been issued."

Ehlert says that, so far, the compliance rate for facilities inspected by Region 8 staff has been in the range of 20 to 25 percent. She is careful to point out, however, that "compliance rate" refers to what you find when you make an initial inspection. "In terms of field citations, we tell the owner or operator specifically what needs to be done to bring the facility into compliance, then we look for a 'resolution rate.' So far, we've had a 100 percent resolution rate." ■

■ Necessity continued from page 3

if cleanups are progressing adequately.

The directive cites the example of Wisconsin, where corrective action plans are reviewed only for those sites where drinking water is threatened. For other sites, the State sends the RPs detailed cleanup guidance and asks them to submit reports when their corrective actions are complete.

While most states believe that state oversight is the most desirable means of controlling corrective actions and costs, many programs lack the staff to do the job as well as they would like. Therefore, as EPA maintains, guidance documents can allow many cleanups to proceed at sites where they would otherwise be stalled, awaiting approvals of site-specific documents.

In many states, there have been significant improvements in LUST cleanup administrative procedure. There have also been significant developments in site assessment and cleanup technologies from both the public and private sectors. (See LUSTLine Bulletin #15.) Flexibility is an important ingredient for getting to improvement, keeping in mind that it's the unhealthy, rigid tree that snaps in the wind.

Flexibility in Field Measurements

On the subject of flexibility in field measurements, the directive says that federal regulations do not specify measurement techniques for investigating a release and impacts from a release. It states that while most state programs currently require laboratory analyses for these investigations, there are now a number of field-measurement techniques available that can improve the quality of the investigation and eliminate delays caused by laboratory processing time.

One scenario that typically gives rise to cleanup delay is where there is a known release that could be from any one, or all, of a number of gas stations located at a particular intersection. The owners are all pointing at one another. No one wants to pay the cost of an initial investigation. "If we don't know who the RP is, because of suspected multiple sources, half the battle is proving to the responsible party that

■ continued on next page

SOUTH CAROLINA

Streamlining

Need to Solve A Problem?...

Sometimes It Takes Two (Agencies) To Tango

by Joel Padgett

WHEN SOUTH CAROLINA'S State Underground Petroleum Emergency Response Bank (SUPERB) was created to help pay for LUST site assessment and remediation, the South Carolina Department of Health and Environmental Control (SCDHEC) faced an explosion of assessment and cleanup activity throughout the State. As part of this flurry, the South Carolina Department of Transportation (SCDOT) was inundated with requests from UST owners for permission to drill monitoring wells and/or to discharge treated effluent on highway rights-of-way.

Inasmuch as SCDOT was not prepared to process the flood of requests efficiently, the turnaround time from request to receipt of an encroachment permit was often lengthy, causing delays in site cleanup. In addition to the permit problem, SCDOT had recently embarked on an ambitious UST upgrade and replacement program for its own UST systems and had identified a number of releases that would require assessment and cleanup. Meanwhile, over at the SCDHEC,

turnaround time on technical reviews and financial reimbursement (SUPERB) for SCDOT sites was slow because of the swelling numbers of reported releases.

The Hook-Up

SCDHEC and SCDOT staff decided it would be a good idea if they worked cooperatively to sort out their mutual problems. Two memoranda of agreement resulted from these deliberations; one provides for an efficient procedure for application, review, and approval of encroachment permits for monitoring well installation and/or treated effluent discharge on SCDOT rights-of-way, the other provides for a SCDHEC/SCDOT liaison.

In short, the first memorandum states that:

- All applications for encroachment for UST investigations (and other investigations) will be forwarded to the SCDOT from the UST owner/operator through SCDHEC.
- The requests are to be verified by the SCDHEC as technically necessary.
- The applications are to be technically complete (i.e., contain supporting documentation including, but not limited to, a site map, NPDES

permit, and monitoring well and/or discharge information).

The second memorandum creates a SCDHEC/SCDOT liaison position that is housed in the SCDHEC and funded by the SCDOT. The liaison is a senior hydrogeologist whose primary function is to coordinate and expedite assessment and remediation activities at, and administer SUPERB funds for, SCDOT maintenance facilities and right-of-way construction sites. The liaison's duties include site visits, meetings and consultation with SCDOT personnel and consulting contractors, and technical and fiscal oversight assessment and remediation plans.

A secondary function of the liaison is to coordinate and review all encroachment permit applications submitted to SCDOT through SCDHEC. Finally, the liaison serves as the communication link between SCDOT and other SCDHEC programs. The position is tenured for 2 years, with renewal subject to yearly performance and effectiveness appraisals conducted by both agencies. ■

Joel Padgett is a hydrogeologist for the Groundwater Division of SCDHEC. He currently serves as the SCDHEC/SCDOT liaison.



L.U.S.T.LINE

To our Readers:

WE WANT TO HEAR FROM YOU...

If you have any mailing list business, please fill out this form and return it to us.

- ☐ Please add my name to your mailing list (Fill out name and address below).
- ☐ Please take my name off your mailing list. (Fill out name and address below).
- ☐ Change of address
- ☐ Please send me back issues of LUSTLine. Back issues now cost \$2.50 per issue or \$10.00 for a complete set. Please enclose a check payable to NEIWPC.

Name _____

Address _____

Street

City/Town

State

ZIP

We welcome your comments and suggestions on any of our articles.

New England Interstate Water
Pollution Control Commission
255 Ballardvale Street
Wilmington, MA 01887
Phone: 508/658-0500
Fax: 508/658-5509

An Association of State UST Cleanup Funds is Born

by James Bearzi

AN ASSOCIATION OF STATE CLEANUP FUNDS IS AN IDEA whose time has come. By virtue of our common goals of financing cleanup of leaks from USTs and, in many cases, serving as a financial responsibility mechanism, we are in a sense already an association. But the concept of forming a more or less formal group began at the national "State Fund Administrator's Conference" held last June in Vermont. During that time, state fund personnel interested in pursuing the establishment of a national association met and decided to implement a steering committee to explore the feasibility of organizing an association.

Eleven state fund administrators volunteered to serve on the steering committee: Bonnie Friedman (Alaska), Dennis Rounds (South Dakota), Ron Pedde (Texas), Earl Henry (Oklahoma), Rich Murray (Ohio), Gary Blackburn (Kansas), Dick Ostrom (Idaho), Jean Riley (Montana), Scott Brewer (Indiana), Chuck Schwer (Vermont), and James Bearzi (New Mexico), who was elected chairman of the committee. In October, with support from EPA's Office of Underground Storage Tanks, 8 of us met in Denver with OUST's Sammy Ng and Andrea Osborne to begin hashing out the details of setting up the association.

First of all, we decided on a name for the association, "The Association of State Underground Storage Tank Cleanup Funds." Then we drafted a simple mission statement: "to enhance the performance and perception of state UST cleanup funds." It was much harder to identify association goals. How would we go about fulfilling our mission? What do we hope to accomplish? How can this association be of benefit to all fund administrators? After much discussion, the committee drafted 5 general goals:

- To identify issues and challenges pertinent to state UST cleanup funds;

- To create a forum for the development of ideas and solutions to overcome fund challenges;

- To exchange these ideas, information, and possible solutions;

- To facilitate implementation of possible ways to overcome challenges faced by state funds; and

- To develop a consensus to provide a recognized voice on critical fund issues.

Some projects we would like to take on within the next 6 months include: meeting again before the next national conference to further gel the association; playing a more active role in planning the next fund administrators conference; and setting up "work groups" to address specific issues common to most funds (e.g., cost control or claims processing). In fact, our first newsletter will go out to state fund administrators this January.

We are also exploring the issue of the structure of the association. We have 3 basic choices: 1) remain a loose-knit association; 2) become a formal, independent, and autonomous organization; or 3) become affiliated with or join an existing organization, such as the Association of State and Territorial Solid Waste Management Officials (ASTSWMO).

The steering committee will meet again in Washington, D.C. on January 11-12 to discuss many of the issues mentioned above. If you want to know more about what we're up to, or if you'd like to get involved, please call me, James Bearzi, at 505/827-2932, or write me at NMED/UST Bureau; P.O. Box 26110; Santa Fe, NM 87502. ■

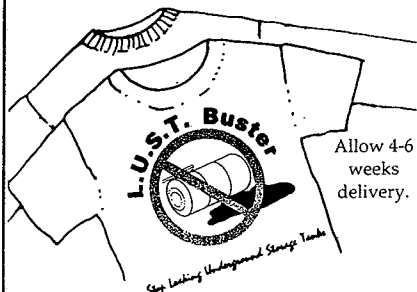
L.U.S.T.LINE

New England Interstate Water
Pollution Control Commission
255 Ballardvale Street
Wilmington, MA 01887

First Class Mail
U.S. Postage Paid
Wilmington, MA
Permit # 200

L.U.S.T. Buster T-Shirts & Sweatshirts!

Tee's: S,M, L, XL \$ 9.00 pp
Sweats: S,M, L, XL \$16.50 pp



Allow 4-6
weeks
delivery.

Send check or money order to: NEIWPCC
255 Ballardvale Street, Wilmington, MA 01887