

# LU.S.T. LINE



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

## ... And Away We Go!

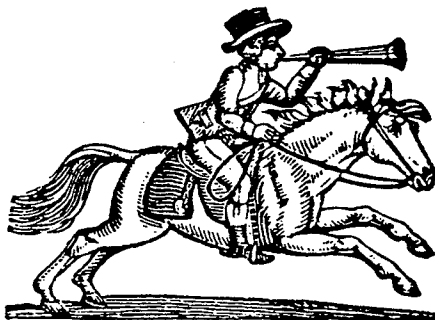
### EPA Lays Down The Basics On Tank Regulation

Now we can get this show on the road! On September 23, EPA relieved some intense nail biting and prolonged rumination amongst UST-mongers and owners by, at last, issuing a basic regulatory directive for the nation's several million underground storage systems. Now more tank owners can move ahead with UST upgrading and replacement decisions, jobs can go to bid, and contracts can be awarded. Of course, there will also be those spontaneous resolves to avoid regulatory hassles by taking some immediate action, like squeezing in a tank yank or two, before the regs take effect in December 1988.

On the state and local level, there are already a number of effective and diverse regulatory programs in full swing, indeed, EPA regulations were built upon many of these programs. However, some state agencies chose to hold off on adopting their own regulations until they got the scoop on EPA's final rule.

Now that the UST what's what is out, many state regulatory agencies will get down to the business of answering some tactical questions—how do we implement? do we need more legislative authority? will the EPA regs do the job that needs to be done in our state? will we want to go that extra mile or two for sensitive groundwater areas that need more protection? how will we finance this program?

It's not that activity in tankland has stagnated. On the contrary, EPA



is enormously heartened by the level of voluntary industry upgrading and replacement programs already underway. "We know that dramatic improvements are being made in equipment, methods, procedures, and general knowledge about the subject," observes Ron Brand, Director of the EPA Office of Underground Storage Tanks.

Now this activity is expected to accelerate as those tank owners, who have awaited EPA's decree, get up to speed on basic requirements. After all, a new tank system can cost somewhere between \$70,000 to \$100,000, so many tank owners want to invest in the right equipment, to begin with . . . to avoid the possibility of costly boo-boos. Of course, some tank owners with a strong leak prevention predilection, have already installed such sterling lines of defense as double-walled tanks and piping, and internal and external monitoring systems.

#### About the Rule

The new rule (see chart on pages 6 and 7) establishes comprehensive requirements for the management of a wide range of UST systems that contain petroleum products or certain hazardous chemicals (hazardous wastes are regulated separately). According to EPA, the standards are "designed to reduce the numbers of releases of petroleum and hazardous substances, increase the ability to quickly detect and minimize the contamination of soil and groundwater by such releases, and ensure adequate cleanup of contamination."

To do this, the Agency has tried to address "every phase of the life cycle of a storage tank system,"—design, construction, and installation of new tank systems, upgrading of existing systems, operation and maintenance, cleanup, and closure. The rule sets forth requirements, standards and phase-in schedules for corrosion protection, leak detection, and spill and overfill prevention. *The financial responsibility rule covering cleanup costs and third party compensation for bodily injury and property damage caused by a leaking UST will be out sometime in early November.*

UST-related industry seemed to respond positively to the new rule. "It seems to be very fair to the tank owner, the oil marketer, and the oil equipment marketers," says Robert Renkes, Executive Vice President of the Petroleum Equipment Institute. "I think it struck a good balance."

*Continued on next page*

## And Away We Go, continued

However, environmental groups are concerned that the rule emphasizes leak detection rather than prevention. "That's the single greatest thing that we're unhappy with," Lois Epstein of the Environmental Defense Fund explains. "EPA is relying on after-the-fact leak detection to protect human health and the environment, rather than emphasizing before-the-fact leak prevention. We would have liked to see a secondary containment requirement for all underground storage systems, because it provides an extra level of protection between the substance being stored and the surrounding environment."

"We believe the standards do what the law says, which is to be protective of human health and the environment," says Ron Brand. "The ideal requirement that presumes 100% protection, may, in fact, be unimplementable. The solution may be so draconian that no one would do it . . . people would throw up their hands. But if we move from, say, 30% compliance to 50%, 70%—if we keep moving those percentage points up within our time frame—then we'll get to some significant accomplishment."

"People will question our phase-in schedules," Brand continues, "up to 5 years for leak detection, up to ten years for upgrading . . . 'why are you taking so long?' But,

I think that's a pretty good time. It's much more realistic than kidding ourselves that we'll get the whole job done in 3 years . . . or 5 years."

"None of our requirements stand alone, they don't depend on one solution, they're tied together—woven into the whole fabric of a leak detection/prevention program that must be carried out at the state and local level. The key to our success will be to bring about improved voluntary compliance through everything we do—the forms we use, what we require, how we explain things, and by the timing. Our expectations have to be realistic enough so that no excuses can be made."

Brand says he wants to see systems put into place that will bring about continuous improvement in both preventing new leaks from occurring and identifying and cleaning up the old releases. He does not want regulations that "lock you into today's technology." He feels there are very few times when you can say a solution will "always be black, and never red or green or yellow." He is wary of creating environmentally protective "unicorns"—standards and goals based on ideals and not reality.

There will always be choices, improvements, and change, he says. "The regs were written to encourage continued innovation and improvement. This has already begun to happen since Interim Prohibition went into effect 3 years ago."

EPA fully recognizes that the future success of LUST bust-USA, hinges on promoting and strengthening state and local programs. With this in mind, EPA's OUST will continue to work toward a kind of state-federal UST franchise, with EPA facilitating state operations, however possible.

## Points of Departure From the Proposed Rule

The new rule includes four leak detection requirements that are significantly different from the proposed rule: 1) more frequent (annual) tank tightness testing of existing unprotected tanks during the 10-year upgrade period; 2) less frequent monitoring of new and upgraded tanks until age 10; 3) a gradual phase-in of release detection based on age; and 4) more stringent requirements for pressurized piping.

Since issuing the proposed rule, staff at EPA's Office of Underground Storage Tanks learned a lot more about why UST leaks occur,

and changes in the rule reflect these findings. For example, it seems that piping failures and product transfer spill and overfill errors are the major sources of releases, more so than the tanks themselves. Furthermore, the real culprits in tank failure are the older bare steel tanks that fail, primarily, due to corrosion. According to EPA, "the new generation USTs (i.e., coated and cathodically protected steel, fiberglass-clad steel, and fiberglass tanks) have nearly eliminated failure induced by external corrosion."

A few other points:

- the new rule puts greater emphasis on proper tank and piping installation, and tank emptying, cleaning, and site assessment at closure;
- new chemical tanks affected by the new rule are required to have secondary containment, and must have leak detection systems installed between the two layers of containment; and
- used oil USTs will be regulated, for the most part, like other petroleum USTs.

## About the Tank Owner

The burden of UST compliance falls squarely on the tank owner/operator, who is both responsible for the performance of the system and liable for any failure in performance. Thus, it behooves the tank owner to be aware of UST requirements and options, to make shrewd management and operational decisions, and to personally ensure the structural integrity of the system to provide leak-free performance.

"We have tried to make these rules simple enough so that real people can carry them out in the real world," Ron Brand explains. "We hope that tank owners understand the rules well enough so that they know what they have to do, and they'll do it."

While EPA has spelled out basic national goals, timetables, and standards, the tank owner should be aware that, if state or local UST requirements are in place, they may be more stringent and/or more specific than federal requirements.

It may well be that the unsettling implications of pollution liability and third party claims will be more influential than anything else in effecting regulatory compliance. Tank owners may have to acknowledge that state and federal rules are, in fact, designed to keep tank systems out of trouble, implement expeditious responses if there is

### LUSTLINE

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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.

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trouble, and ensure that damages can be paid. As one pollution liability insurance underwriter said, "the EPA regs have just done our underwriting for us."

Given the cost of upgrading USTs and the cost of insurance, tank owners will have to make complex business decisions. In many cases it will be wise to question the need for owning a tank at all. A small municipality or a business with a fleet of delivery trucks may do better to remove their USTs and fill up at the local service station.

## About the Moms and Pops

There are numerous small businesses, such as "mom and pop" service stations and convenience stores, with under \$500,000 in total assets. EPA reports that 72% of all retail motor fuel outlets are owned by small entrepreneurs, "who will be significantly affected by environmental regulations for UST systems."

While larger businesses that own tanks tend to be willing and have already begun to comply with UST requirements, state and local agencies have found that owners of small businesses are not as well informed about regulations, and that they generally need constant reminders and technical assistance to bring them into compliance. No doubt some of these owners will be forced out of the gasoline retail business, because they will be unable to afford the costs of upgrading and financial responsibility.

**For More Information on EPA UST Regulations**  
To request a reprint of the September 23 Federal Register Part II, 40 CFR Parts 280 and 281 P. 37081, *Underground Storage Tanks; Technical Requirements and State Program Approval; Final Rule*, write to:

U.S. EPA  
Office of Underground Storage Tanks  
P.O. Box 6044  
Rockville, MD 20850  
or call the UST Hotline: 1-800-424-9346

OUST has prepared two plain English publications, which summarize technical and financial responsibility requirements.

- **Musts For USTs—Regulations for Underground Storage Tank Systems**
- **Financial Responsibility** (available when FR rule is out in October).

Both publications can be ordered from the above address.

But, many of these mom and pop operations offer important services to their communities . . . their loss would be a community's loss. The July issue of the Oregon Department of Environmental Quality's *TANKLINE* spotlights such a small town family-owned business that upgraded to a new 5,000-gallon tank with corrosion protection.

According to the newsletter, "Purchase and installation of the new tank system was not easy due to the limited budget of the country store. But by budgeting in advance and allowing time to save money for the installation, the Deulins were able to upgrade their facility to current standards . . . and continue to offer service to the community."

It will be the job of state and local governments to educate small business owners about their responsibilities, upgrade options, and potential liability. These businesses also need guidance on managing

and financing their upgrade investments. Some states are looking into the possibilities of low interest loans. Vermont has established a UST Incentive Program, which will provide grants up to \$5,000 per site to help small businesses and small towns with the cost of tank replacement.

Financial responsibility requirements will also be hard on small businesses, who have little to no access to pollution liability insurance. Again, over 20 states have passed legislation or have introduced legislation to address this financial assurance concern.

So, the UST regulations are out and the hard work of bringing a universe of over 2 million UST systems into compliance will now shift into even higher gear. Shift! Signs are good that continuous improvement is not an impossible dream. Continuous improvement! Fire rockets, cross fingers, and . . . away we go! ■

## EPA HQ UPDATE

### A Note From OUST

*Is there life after regulation development?* Without a doubt! OUST has been concerned about program implementation from the start, but now we are throwing all our energy into "making it work!" (That, incidentally, is also the title of a major UST workshop for state officials coming up November 15 through 17 in Santa Fe, described below.)

Here are some of the implementation activities we have been, and will be working on:

- **"Franchising":** What can we learn from the successful private sector concept of supporting "field units"—stores, hotels, etc.—the states in our case? How can we translate some of these ideas into our public sector structure? We have been discussing these concepts with such franchise opera-

tions as Century 21, Service Master, McDonalds and Southland Corporation (7-Eleven).

- **Quality control and work process improvements:** How can we promote efficiency and quality control thinking at state and local government levels to help them deal with the onslaught of UST work that will result from the new regulations? For example, thousands of cleanup plans will need to be reviewed and thousands of inspections conducted. If we can help make even a 10% improvement in any of these activities it will add up to thousands of improvements nationwide. We are wholeheartedly embracing the Deming Management Method, which is based on statistical analysis and other effective management techniques. But more on that in the next issue of *LUSTLine*.

- **Work that's almost done:** We're still working hard on pushing the **Financial Responsibility** regulations out the door, and expect to have them published in early November. The report to Congress on **Exempted Tanks** is expected to be presented in January. The Office of Research and Development's **Edison Study** on tank tightness testing is on the verge of being released, as well as OUST's **Compliance and Enforcement Strategy** and the **State Program Approval Handbook**. Finally, a computerized review of the regulations, called **Reg-In-A-Box**, which provides some easy ways to look up any portion of the regulations, and to get added interpretation, will be available for use in November.

*Continued on next page*

## EPA HQ Update, continued

Still more is underway in outreach as we try hard to produce intelligible information that will help states, local governments, and, of course, the 750,000 tank owners out there. For OUST, the job of making this program work has barely begun.

### New UST Publications From EPA

- *Oh No!—Leaks and Spills: What Do You Do?* (coming soon)
- *Leak Lookout—Using External Leak Detectors to Prevent Petroleum Contamination from Underground Storage Tanks*
- *Cleanup of Releases from Petroleum USTs: Selected Technologies*

### For State Governments

- *Financial Assurance Programs: A Handbook for States* (coming soon)
- *Funding Options for State and Local Governments*
- *Underground Storage Tanks: Building State UST Compliance Programs*

These publications can be ordered from:

U.S. EPA  
Office of Underground  
Storage Tanks  
P.O. Box 6044  
Rockville, MD 20850  
or call the UST Hotline:  
1-800-424-9346

## OUST's Ron Brand Cited for Presidential Rank Award

EPA Administrator Lee Thomas presented the Presidential Rank Award to OUST Director Ron Brand at a ceremony at Fort McNair on September 8. In his remarks, Thomas cited Brand for "taking a concept and genuinely putting it into practice." This career award covers a stretch of time that goes beyond Brand's years as EPA's UST kingpin, however, the award is clearly a recognition of the efforts of the entire UST team—Regions, Headquarters, and States.

## "Making It Work" Set for Santa Fe

OUST is sponsoring a workshop for state implementing agencies and EPA Regions to assist states in building their programs and

improving tank management practices. The "Making It Work" Workshop will be held in Santa Fe, New Mexico, November 15–17. OUST is sponsoring this meeting to promote sharing of information among states. It will bring the State UST community together to discuss experiences, solve problems, and contact peers. Attendees will participate in workshops, panel discussions, and have an opportunity to try software programs and view videos created by EPA and the states. States will also display their outreach materials.

A sampling of the sessions offered include: Discussion of the final Technical Standards Regulations and the Financial Responsibility Regulation, State Program Approval and State Program Development, Release Detection, Initial Responses for Corrective Action, Edison Results, Corrective Action Technology Overview, Soils Man-

agement, Compliance and Enforcement, Outreach, Financial Responsibility, Overlapping Permitting Issues, Trust Fund Accounting, and Cost Recovery. For more information, contact Susan Mann, OUST, 202/382-7894.

## Leak Detection Seminars

EPA will offer two more seminars on *Leak Detection Methods for USTs* this fall, one in Atlanta, GA on October 27–28, and another in Rosemont, IL on November 29–30. The seminars summarize the results of EPA research on UST leak detection methods. The content of the material will be technical in nature and only those with previous knowledge of leak detection equipment should attend. For information, call Ursula Thomas at 215/643-5466. ■

## Coming Soon "DOING IT RIGHT" A New video on Tank Installation

EPA and the tank industry have pooled resources to create a new video on tank and piping installation. Told from the point of view of actual installers—the guys in the trenches—crew members tell how they "do it right" and relate pitfalls and poor practices that can lead to disaster.

The video was produced under a unique cooperative agreement between EPA's Office of Underground Storage Tanks and the Petroleum Equipment Institute with additional participation and financial support from tank manufacturers and petroleum marketers. Included in the cooperative effort, dubbed "the Round Table," were the: American Petroleum Institute, Association of Composite Tanks, Fiberglass Petroleum Tank and Pipe Institute, National Association of Convenience Stores, Petroleum Marketers Association of America, and the Steel Tank Institute.

The video is based on the recommended practices in the popular PEI RP/100 and API #1615 installation booklets. Copies of the two booklets will be packaged with the videotape.

Installer errors are the major cause of failures in new tank systems. Since an expansion of installation business is expected, with thousands of new systems going into the ground over the next several years, EPA and the industry agreed that a training tape would be useful. The tape is aimed at both new hires and crew members who may not be up on cathodic protection, backfill requirements, or other important aspects of the work that is in the installer's hands.

EPA plans to provide copies of the tape to State UST programs. Members of the Round Table will provide information and distribution channels throughout the industry, and copies will be available for sale through the Petroleum Equipment Institute in Tulsa, Oklahoma. The estimated price for the entire package, the 40-minute two-segment (tanks and piping) tape plus booklets, is \$25.00. EPA expects it to be available in November. ■

## REGIONAL UPDATE

*This Regional Update focuses on EPA Region II and is written by Tom Taccone, Region II UST Coordinator (212/264-1369).*

### The Northeastern Mainland and the Caribbean Islands

New York, New Jersey, Puerto Rico and the Virgin Islands represent an interesting contrast for Region II in terms of their industrial development, population density and environmental setting. New York and New Jersey are the most similar in overall size and level of development. Puerto Rico, with a population of over three million people and a fairly large complement of pharmaceutical companies and distilleries, ranks a not too distant third. The Virgin Islands' limited potable ground water supply is particularly important since it is a vital contributor to the total island wide drinking water supply.

#### New York

New York's Underground Storage Tank Program is a leading program in the country today and serves as a model for the Federal UST program. New York's program covers the same UST population as the federal program, plus heating oil and aboveground tanks. According to the Department of Environmental Conservation's (DEC) *Tank Bulletin*, there may be as many as 150,000 petroleum and 10,000 chemical storage tanks in New York. The State's underground storage tanks are regulated under three pioneering programs which address petroleum and chemical leaks and spills into the environment.

- **The Petroleum Bulk Storage Program**, begun in December of 1985, sets forth requirements for registering, installing, maintaining and testing existing, new and substantially modified aboveground and underground tanks storing petroleum products. According to the DEC, as of spring 1988, over 35,000 facilities had registered more than 89,000 tanks.

In conjunction with the Petroleum Bulk Storage program, which is aimed at preventing future releases into the environment, New York has established an Environmental and Spill Compensation Fund to speed up

emergency cleanups and assist in those cases when either no responsible party can be found or when the responsible party is unwilling or unable to pay.

- **The Major Petroleum Storage Facility Program**, established in 1977, and the only program of its kind in the country, regulates facilities with an aggregate storage capacity greater than or equal to 400,000 gallons of petroleum. Owners of storage facilities must meet stringent requirements including obtaining operating licenses, testing and retrofitting facilities with spill prevention equipment, and preparing plans for preventing and responding to spills.
- **The Chemical Bulk Storage Program**, the third program which regulates tanks containing chemicals in New York State, is currently being developed. The first set of the Chemical Bulk Storage regulations became effective July 15, 1988. These regulations contain the list of hazardous substances which are regulated, establish rules for spill reporting and response, and require the registration of all underground tanks and aboveground tanks of 185 gallons or more.

#### New Jersey

On September 3, 1986, New Jersey passed "The Underground Storage of Hazardous Substance Act" which provided the New Jersey Department of Environmental Protection (NJDEP) with the authority to develop a regulatory program for USTs. The State also has the authorities for carrying out cost recovery, enforcement, and corrective action under the LUST Trust Fund. The Act's definition of UST is the same as the federal definition. However, while the federal universe is exclusive of USTs containing heating oil, *New Jersey regulates any such USTs over 2,000 gallons.*

On December 21, 1987 the NJDEP's UST fee and registration requirements took effect. The rules require owners or operators to pay an initial registration fee of \$100 and require an annual certification fee, upon re-registering with the NJDEP, of \$100 for up to five tanks and \$15 for each additional tank. The annual certification requirement also allows the DEP to verify registration data, submitted for the previous years.

In addition, the NJDEP is in the final stages of developing its technical regulations, which are expected to be promulgated in December. To implement these regulations, the State plans to use the assistance of local agencies. Local officials involved will include local construction officials, fire officials and health officials. Specifically, these officials will be asked to help the NJDEP to issue UST permits for UST closures, leak detection activities, and installations.

#### Puerto Rico

The Puerto Rico Environmental Quality Board has recently established an UST section within its Division of Water Quality. The section has now computerized all of the 7,000 UST notifications received to date. The main focus now will be on developing a full UST regulatory program.

The EQB plans to use Puerto Rico's Environmental Public Policy Act to issue UST technical and financial assistance regulations by the spring of 1989. EQB intends to base its requirements on federal UST regulations. The EQB also plans to regulate all USTs on the Island—with no exemptions.

#### Virgin Islands

After two UST releases on St. Thomas and one on St. Croix during 1987, the Virgin Islands government and the public have been sensitized to the need to protect the Islands' groundwater and public safety from leaking underground storage tanks. The St. Thomas releases contaminated several drinking water wells; the St. Croix release resulted in a temporary shut down of a nearby junior high school due to the presence of gasoline fumes.

Recently, the legislature of the Virgin Islands conducted public hearings on amendments to the Virgin Islands Water Pollution Control Law, which will provide UST regulatory authority. Enactment is expected by this fall. The Island's Department of Planning and Natural Resources expects to promulgate UST technical and financial assurance regulations by the summer of 1989. ■



# Musts For USTs...At A Glance

## WHAT DO YOU HAVE TO DO? Minimum Requirements

You must have Leak Detection, Corrosion Protection, and Spill/Overfill Prevention.

For WHEN you have to add these to your tank system, see the chart on the right. →

LEAK DETECTION								
<b>NEW TANKS</b> <i>2 Choices</i>	<ul style="list-style-type: none"><li>● Monthly Monitoring*</li><li>● Monthly Inventory Control and Tank Tightness Testing Every 5 Years (You can only use this choice for 10 years after installation.)</li></ul>							
<b>EXISTING TANKS</b> <i>3 Choices</i> <i>The chart at the bottom of the next page displays these choices.</i>	<ul style="list-style-type: none"><li>● Monthly Monitoring*</li><li>● Monthly Inventory Control and Annual Tank Tightness Testing (This choice can only be used until December 1998.)</li><li>● Monthly Inventory Control and Tank Tightness Testing Every 5 Years (This choice can only be used for 10 years after adding corrosion protection and spill/overfill prevention or until December 1998, whichever date is later.)</li></ul>							
<b>NEW &amp; EXISTING PRESSURIZED PIPING</b> <i>Choice of one from each set</i>	<ul style="list-style-type: none"><li>● Automatic Flow Restrictor</li><li>● Automatic Shutoff Device</li><li>● Continuous Alarm System</li></ul>	<ul style="list-style-type: none"><li>● Annual Line Testing</li><li>● Monthly Monitoring* (except automatic tank gauging)</li></ul>						
<b>NEW &amp; EXISTING SUCTION PIPING</b> <i>3 Choices</i>	<ul style="list-style-type: none"><li>● Monthly Monitoring* (except automatic tank gauging)</li><li>● Line Testing Every 3 Years</li><li>● No Requirements (if the system has the characteristics described in the final regulations)</li></ul>							
CORROSION PROTECTION								
<b>NEW TANKS</b> <i>3 Choices</i>	<ul style="list-style-type: none"><li>● Coated and Cathodically Protected Steel</li><li>● Fiberglass</li><li>● Steel Tank clad with Fiberglass</li></ul>							
<b>EXISTING TANKS</b> <i>4 Choices</i>	<ul style="list-style-type: none"><li>● Same Options as for New Tanks</li><li>● Add Cathodic Protection System</li><li>● Interior Lining</li><li>● Interior Lining and Cathodic Protection</li></ul>							
<b>NEW PIPING</b> <i>2 Choices</i>	<ul style="list-style-type: none"><li>● Coated and Cathodically Protected Steel</li><li>● Fiberglass</li></ul>							
<b>EXISTING PIPING</b> <i>2 Choices</i>	<ul style="list-style-type: none"><li>● Same Options as for New Piping</li><li>● Cathodically Protected Steel</li></ul>							
SPILL / OVERFILL PREVENTION								
<b>ALL TANKS</b>	<ul style="list-style-type: none"><li>● Catchment Basins</li></ul>	<ul style="list-style-type: none"><li>● Automatic Shutoff Devices</li><li>● Overfill Alarms</li><li>● Ball Float Valves</li></ul>						
<p>* Monthly Monitoring includes:</p> <table><tr><td>Automatic Tank Gauging</td><td>Ground-Water Monitoring</td></tr><tr><td>Vapor Monitoring</td><td>Other Approved Methods</td></tr><tr><td>Interstitial Monitoring</td><td></td></tr></table>			Automatic Tank Gauging	Ground-Water Monitoring	Vapor Monitoring	Other Approved Methods	Interstitial Monitoring	
Automatic Tank Gauging	Ground-Water Monitoring							
Vapor Monitoring	Other Approved Methods							
Interstitial Monitoring								



# WHEN DO YOU HAVE TO ACT?

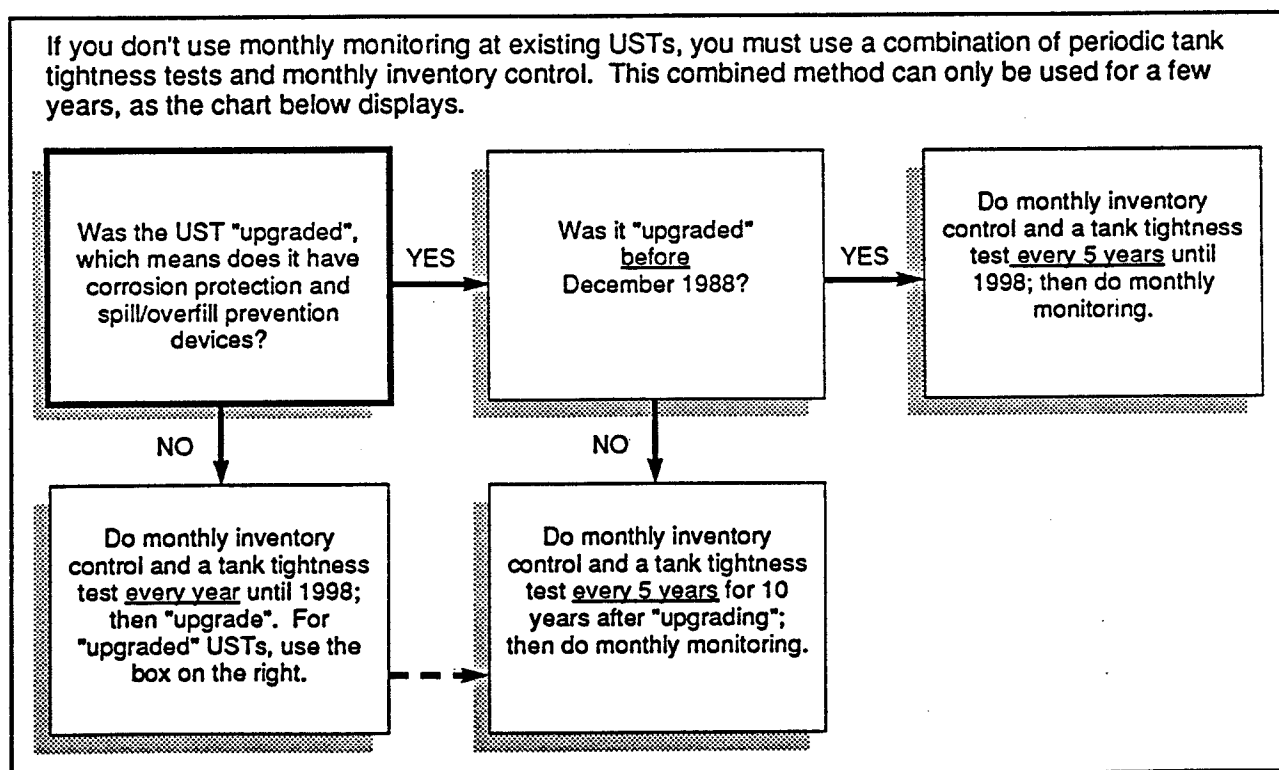
## Important Deadlines

← For WHAT you have to do, see the chart on the left.

TYPE OF TANK & PIPING	LEAK DETECTION	CORROSION PROTECTION	SPILL / OVERFILL PREVENTION
New Tanks and Piping*	At installation	At installation	At installation
Existing Tanks** 25+ or unknown age 20 - 24 years 15 - 19 years 10 - 14 years Under 10 years	December 1989 December 1990 December 1991 December 1992 December 1993	} December 1998	} December 1998
Existing Piping** Pressurized Suction	December 1990 Same as existing tanks	December 1998 December 1998	Does not apply Does not apply

\* New tanks and piping are those installed after December 1988  
 \*\* Existing tanks and piping are those installed before December 1988

## IF YOU CHOOSE TANK TIGHTNESS TESTING AT EXISTING USTs . . .



# Tank Lining . . . A Viable Upgrade or Repair Option

EPA's new UST regulations allow tank lining as a repair procedure and an upgrade option either by itself or with cathodic protection. Lining alone is not considered a permanent upgrade—the tank must be internally inspected after 10 years and every 5 years thereafter to determine if it continues to be “structurally sound with the lining still performing in accordance with original design specifications.”

Lining is a practice that has met with a certain amount of skepticism among state and local regulators and fire officials. This doubtfulness may reflect a lack of information or misinformation, plus a well grounded concern about the safety of the whole operation.

Since its proposed rule of 1987, EPA has carefully examined lining statistics and industry practices and is satisfied that “lined tanks rarely cause releases to the environment, even in the absence of external corrosion protection measures.” The final rule was revised to indicate more clearly that internal tank lining, with or without external cathodic protection, is an acceptable upgrade option given specific guidelines and requirements. The guidelines refer to industry current practices (i.e., API 1631) which have a performance record at least equal to new tanks.

Tank lining has been a common practice in the petroleum industry for about 30 years. Over 300,000 tanks of all types including over 70,000 larger motor fuel tanks have been lined. According to Albert Knopf, General Manager of Tank Liners, Inc. in Oregon, about 70% of above ground tanks are lined to prevent internal corrosion. He says fiberglass tanks are often lined if there is a compatibility problem with the product being stored. Lining has also been widely used throughout Europe and Canada for the past decade as a UST leak prevention practice.

William Gent, Vice President of Bridgeport Chemical Corporation—manufacturers of UST lining materials—says, in the past, liners were generally called in to fix a leaking tank. But, according to Gent, that is changing—lining to upgrade and extend the life of the tank is on the increase, and smaller percentages of tanks that liners enter are actually leaking.

But, since internal lining is still new to environmental regulators and not entirely understood by many fire inspectors, tank liners have had to state their business more clearly. Also—along with

tank installers, removers, precision testers, and corrosion specialists—liners have had to buck the fly-by-nights and charlatans. One horror story about the guy who comes onto the job with a low bid, paint can and roller brush, can effectively, spoil it for the bunch.

Furthermore, by the time EPA's proposed regulations came out, it was clear that the industry needed more than just recommended practices and individual company protocol—they needed an industry standard. This need has been addressed on two fronts; the industry has made efforts to develop a trade association, the National Leak Prevention Association (NLPA), which produced NLPA 631, an industry current practice that EPA was able to cite in the new regulations; and the industry has also worked with the Western Fire Chiefs Association (WFCA), which publishes the Uniform Fire Code (UFC), to produce a consensus code which the UFC Committee will consider at its December meeting in Indianapolis.

## What is Tank Lining?

Tank lining is the installation of a  $\frac{1}{8}$ " plastic coating to the entire interior of an underground or above ground fuel or chemical storage tank. This coating is often made of epoxies or polyesters, and is sometimes reinforced with fiberglass.

To determine that a tank is structurally sound and qualified to be lined, the lining contractor must conduct a thorough internal inspection, which is essentially a complete tank physical—an assessment of the tank's current health status and a clue to its future durability.

To do this, it is essential to enter and clean the tank. Entry holes can be cut into the tank if no manhole exists. But, tank cutting and entry is dangerous business, which requires continuous attention to the safe removal of flammable vapors so that a person can safely enter the tank to clean out the sludge. A

good tank lining company should be fanatic on the subject of safety, because life and livelihood depend on it.

Once the tank is cleaned (we will talk about steel tanks since they are more frequently lined), the contractor will identify those areas where corrosion has taken place and where metal thickness has been reduced to  $\frac{1}{8}$ " or less. This can be done by using a brass ball peen hammer to tap the tank shell and sound for thin areas, and/or by an ultrasonic or radiographic inspection to determine metal thickness.

API Recommended Practice 1631 sets guidelines for determining whether a tank can be lined. For example, “a tank with less than 20 perforations (none larger than  $\frac{1}{2}$ " in diameter) in a 500 square foot area,” qualifies.

A tank with a hole need not, ipso facto, be a candidate for removal and disposal, though some state and local rules deem it so. An incontrovertible knee-jerk disposition toward this circumstance may be narrow in purpose. Greater wisdom may lie in the case-by-case disposition, whereby one considers the possibility that the tank may still qualify as a sound piece of steel, which may, anon, be capable of continued service as a storage vessel, if properly repaired.

“People confuse a tank with a hole as being structurally damaged,” says Bruce Sharp, President of Armour Shield, Inc. “It has very little to do with the hole at all. You could lose the amount of metal in a fifty cent piece to localized or point corrosion in the tank, but the overall structural strength of the tank is not affected at all. The lining provides a continued structural barrier to any corrosion developing on the exterior.”

If the contractor determines that the tank should not be lined for structural reasons, it will have, at least, been properly prepared for removal or closure in-place.

If, on the other hand, the tank appears to fall within the guidelines for lining, it is then sandblasted to remove any scale, rust and foreign matter. “Sandblasting really tells the story,” says Sharp. “Tanks will often have tiny little holes that you may not see until the tank is sandblasted.”

Prior to applying the lining material, the lining contractor must ream out any holes in the tank, plug the holes, and install a striker plate. The hole is reamed until the



metal around the edges is a minimum 1/8" thickness. A boiler plug is then screwed into the hole to prevent the infiltration of water. A coat of plugged area is troweled over the plugged area, covered with a 6" x 6" fiberglass cloth, and coated again with the resin to about a 1/4" thickness. Finally, the striker plate, covered with fiberglass cloth embedded in resin, is installed under the drop tube. At this point, the interior of the tank can be coated with a 1/8"-thick plastic liner.

The coating must be allowed to cure to the manufacturer's specifications. The coating is then tested for hardness to ensure proper curing. In addition, the thickness of the coating is measured to ensure the strength of the liner. A "holiday test" is used to check for air pockets, thin areas and pinholes. This test, probably the most important test, is performed with an extremely sensitive electrically charged squeegee wand. Industry standards specify these tests to ensure that the job has been performed correctly.

*A tank owner should be able to check the tank personally for proper surface preparation, coating, cure, thickness, etc.* "Once you get inside and look at a lining and see, for yourself, you're a believer," says Steve Marczewski, Environmental Manager for U.S. West (formerly Pacific Northwest Bell). He has seen tank liners bang at the lining again and again with a hammer just to drive home the point of strength and durability.

While the tank is open, it is a good time to take care of a few other matters, such as running a hydrostatic or pressure test on the lines, adding a spill and overflow control system, and installing a manway instead of a cover plate to allow easy access to the tank. Once the manway or cover plate is closed and sealed, the contractor must run a 5 lb. air test on the tank to check for any leaks in the lid.

Reputable tank lining companies give 10 and 20 year warranties for their work. Some companies offer lining/cathodic protection packages, or will inspect the tank and recommend upgrading options, such as line the tank now and add cathodic protection in 5 or 10 years.

EPA says, within 10 years you must add cathodic protection or assess the tank by entering it. Lining companies generally have schedules for 5 or 10 year internal inspections, and often have other requirements for the continued maintenance of the tank system.

Using ultrasound, the thickness of a newly lined tank can be recorded and used as a reference for future inspections.

### **But a Hole Could Mean a Leak!**

You are probably saying to yourself, "listen, if the tank has a hole, then it has probably leaked . . . so what do you do about that?" First of all, a hole does not necessarily mean there has been a leak. Often, corroded material forms its own "rust plug," which acts as a barrier over the hole. Nevertheless, *any suspected release of product must be investigated*, and if the tank liner has already cleaned out the tank, you have at least eliminated the possibility of further leakage.

According to EPA, if a tank has leaked product, "the requirements for corrective action must be met and will sometimes require removal of the tank in order to complete the appropriate cleanup measures even if it is determined to be structurally sound and repairable." However, as in-place soil treatment techniques continue to improve, they will probably prevail over the unavailing practice of soil "muck and truck," which generally involves tank removal.

### **Tank Lining Has Its Place**

The important thing to keep in mind about UST upgrading is that EPA is not relying on just one environmental protection strategy. Existing UST systems will also need to meet requirements for record-keeping, leak detection, and overfill and spill prevention. Tank ownership has become a big responsibility and involves some astute and, no doubt, expensive management decisions. While EPA has provided tank owners with a certain amount of flexibility, all must ultimately make management decisions which are protective of human health and the environment.

A big plus for tank lining is that it comes with a complete physical and follow up health care, which is more attention than most tanks have had in the past. Tank lining is about 1/3 the cost of replacing a tank, and, in the name of preventative maintenance, seems in the spirit of good tank management.

Ron Schmidt, Marketing Supervisor for Federated Insurance, a current insurer of USTs, says his company upgrades newly lined tanks to age zero, because it considers lining, plus the physical

action of observing, inspecting, and ultrasounding a good risk. Other insurers are giving lined tanks 5 and 10 year age credits.

Most major oil companies have had on-going tank replacement programs. The Amoco Oil Company has been one of the few majors to choose retrofitting, using lining and cathodic protection, and replacing piping. But, Dr. Rudy White of the American Petroleum Institute acknowledges that lining is particularly useful for many of the smaller jobbers who haven't the resources to install a whole new tank system. He says there are also large numbers of tank owners who plan to hold their businesses for just a few more years, and want to be able to upgrade for a short period of time.

In the case of U.S. West, "we consider how long a tank is expected to be in service," says Steve Marczewski. "If a tank will be in service for a long time, we will opt to remove and replace it with some kind of secondary containment. If a tank has 20 years or less we will look at a lining/cathodic protection package. We use lining as a real good way to extend the life of the tank. Sometimes lining is our only option, because the tank is located inside a building."

### **Industry Urges Inspection/Training Programs and Savvy Consumers**

Tank lining is dangerous and must be done properly in every way to be safe and effective. The major lining companies make no bones about the need for training and certification programs. "We want to educate the states that this is what they need to control the fly-by-nights," explains Al Knopf.

"Our industry would be happy to work with states to set up inspection and training programs," says Bruce Sharp.

Many states recognize the need for this kind of quality control. For example, the Oregon Department of Environmental Quality is preparing a licensing program for contractors who provide installation and retrofitting, decommissioning, pressure or volumetric testing, cathodic protection, and inspection services for USTs.

The tank owner should know how a lining company plans to undertake the job and should pay

*Continued on page 12*

# The Spill That Broke the Camel's Back on Olde Cape Cod

## Local Regulation of Home Heating Oil Tanks

Many Cape Cod, Massachusetts residents were vividly awakened to the threat of leaking USTs back in 1977 when the public water supply of one Cape town was thus contaminated. It has cost over three million dollars and taken nine years for pumping to resume in that well-field.

Cape Cod, like such other geographic areas as Dade County, Florida or Austin, Texas, is a sole source aquifer—a vast “zone of contribution” for municipal water supply wells or surface watersheds. In these sensitive areas, a little bit of gasoline in the groundwater can ruin a lot of lemonades.

Local governments on the Cape recognize this threat and most have adopted local UST bylaws or Board of Health regulations for all tanks (heating oil tanks used for consumptive purposes are exempted in EPA regulations). While the Commonwealth of Massachusetts has permitting, installation, removal, repair and modification, and release reporting and response requirements for all tanks including home heating oil tanks, towns on the Cape require such additional measures as tank registration and tagging, periodic testing, and age-based removal.

Many communities or regions across the country are now coping with contaminated or threatened water supplies. Others have begun to recognize the need for long term water supply management and protection. Thus, many local governments are considering muscling in on USTs and adopting stricter overall requirements to keep their potable water supplies off the endangered liquids list.

### A Classification Approach Has Its Place

EPA considered adopting a classification approach for regulating USTs, whereby classes of UST systems located in high-risk areas would be subject to more protective requirements than systems located in less sensitive areas—tailoring the level of protection to the risk posed in a particular area.

In the final rule, the Agency determined that on a national level this approach would be “neither feasible nor practical,” but clearly recognizes that “a classification approach to regulating UST systems at the state or local levels, where local

environmental conditions are better known, may be both feasible and appropriate.”

Barnstable County, which includes the 15 Cape Cod towns, has encouraged towns to identify their potential groundwater contaminants and advocates assessing the UST problem through registration of all tanks. Such an inventory of potential contamination sources, when overlaid on maps of critical environmental zones, can be an impressive regulatory tool. This approach puts a community in a better position to protect its sensitive groundwater areas—to monitor or remove older tanks and to discourage the location of new tanks (or other despoiling land uses) in sensitive areas.

### The UST-Wise Homeowner

The Barnstable County Health and Environmental Department (BCHED) received a grant from the EPA Office of Underground Storage Tanks to help Cape Cod towns develop comprehensive regulations which would address residential heating oil tanks. The BCHED has provided the towns with a model regulation which has been adopted to a greater or lesser extent by 9 towns. But, the job has had its political and financial obstacles, which stem from *disbelief that the homeowner UST is a problem . . .* a fettle apparently curable through public education.

An initial survey of tanks in the County showed that a considerable number of tanks were installed over 14 years ago which means that many tanks are approaching that mean age (17 years—EPA [1986]) at which releases are likely to occur. The survey also showed 40% of all the tanks were in the 500–600 gallon range and, furthermore, 29% of the tank population were 275–330 gallon USTs—not even designed to be installed underground.

Charlotte Stiefel of the BCHED says that through workshops and meetings, this kind of information has helped make homeowners, fire, and other local officials aware of the problem. She says many homeowners on the Cape now realize that USTs are potential problems . . . there have also been enough contamination incidents to cause people to think about the risks.

### Registration with a Nudge

The model Board of Health regulation requires UST registration and tagging, which goes beyond reliance on voluntary compliance—oil dealers are required to report any untagged tanks. In one town over 90% of the tanks have been registered using this tool, versus a mere 10% response in two other towns opting for voluntary compliance.

Some oil dealers were concerned that they might be branded “informants” and that customers would switch to an alternative fuel. However, in practice, many tank owners have simply chosen to remove their USTs and install tanks *above ground* in basements or yards or else to comply with regulations.

### Home Tank Testing Using Soil-vapor Analysis

Tank testing and removal requirements are the costly and politically unpopular part of the model Board of Health regulation. A standard home UST precision test can cost \$300–\$500 and a removal \$1,000, on up.

The BCHED set up a pilot program to test home heating oil tanks using soil-vapor analysis, a technique which detects vapors emitted from contaminated soil. Under the EPA grant, free tests have been offered for home heating oil tanks, although the estimated cost for the test would be about \$50.

Besides addressing the financial concerns of homeowners, soil-vapor analysis has also helped inform the homeowner of the environmental problems associated with the UST and has prompted many individuals to think ahead to the time when the tank should be removed.

Since the testing program began in July of 1987, 170 tanks have been tested and 20 confirmed leaks have been discovered (other sorts of problems have been identified, such as surface spills or soil contaminated with other products). The age of leaking tanks has been as low as 12 years, while 37 year old tanks tested sound. Thus, no age/leak correlation has been drawn, so far. (See next issue of *LustLine* for “Soil Vapor Analysis Procedures Used on Cape Cod.”)

*Continued on next page*

## Snarled Cleanup Permits A Frustration We Can All Do Without

One of our readers wrote to us, "I feel compelled to comment on the article (Bulletin 8) which suggests, '[the regulator's] frustration of trying to get the responsible party to cleanup and abate as quickly as possible."

"We, at least some of us, in the oil industry feel equally frustrated when we take an aggressive position of quickly responding to a situation only to have the governing bodies unable/unwilling to cooperate with one another in granting an approval for a work plan, a discharge permit, etc., etc. We have concern that each month, in some cases even weeks, of delay in receiving an approval can extenuate a problem with a tremendous cost and duration increase to remediate. The disappointment is often felt more keenly by us since we have the burden of the additional cost and time.

"One would like to think we are all working toward a common goal and yet I wonder from time to time."

Indeed, these things happen—a situation where you have, say, 3 cups of environmental concern, a dash of political hot sauce, and 3 to 10 layers of well intentioned regulatory officianados . . . just the right ingredients for a concoction we'll call "the cleanup permit snarl."

The permit snarl is not an everyday bill of fare, but when it flares, it is tough to swallow because,

The permit snarl is not an everyday bill of fare, but when it flares, it is tough to swallow because, while permit decisions steep, leaked petroleum continues to enhance the flavor of soil and groundwater as well as enrich the final cleanup tab. Ironically, snarls are more apt to occur in areas where environmental protection is a serious concern, and a number of regulatory agencies must agree on how a LUST cleanup is to get done, and until they do, it doesn't get done.

One insurance claims adjuster recalls a situation in California that involved 18 regulatory agencies—EPA, fire, water, roads, air, fish and game, health department, etc. They went for more than a year before they could begin getting the gas out of the ground, and spent a million bucks just trying to get started—with meetings and demands for additional tests, and so on.

Another regulated party sighed that after 18 months, his company had just obtained a National Pollutant Discharge Elimination System (NPDES) permit to begin to pump and treat an UST release.

Release cleanups are the ultimate frustration for both regulator and regulated. The regulator ponders quintessential questions such as, "how clean is clean?". The regulated spends 5 years clearing to 10 ppb benzene, only to find the rules have changed, that actually 1 ppb benzene is the quintessential number. Meanwhile, there lingers this gut feeling that truth in environmental cleanup is probably a quintessential Gordian knot.

As the claims adjuster mentioned above observed, "no one is trying to make it complex, the complexity multiplies with the number of people involved, the political issues, and so on. The solution will come," he says, "but it is something they will have to keep working on. The important thing, is industry shouldn't take unfair advantage of regulators or vice versa."

In truth, a swift and environmentally sound cleanup and abatement permitting procedure is achievable. In theory, everybody sits down to work out a permitting system. Indeed, this has happened, and is happening, particularly at the state and federal levels. EPA recognized the potential permit snarl problem and offered guidance for avoiding it in RCRA and Superfund in-

## TANK TALK

The Environmental Defense Fund has recently published the first in a series of booklets on UST issues. This booklet, *A Citizen's Series on Leaking Underground Storage Tanks, Part I—Secondary Containment: A Second Line of Defense*, advocates the use of secondary containment for all UST systems, "to assure that any leaks from these tanks are contained by a secondary barrier and do not contaminate soil or groundwater." They expect to publish booklets on leak detection and citizen participation later this fall. Copies of Part I are available for \$2.50 from: Environmental Defense Fund, 1616 P St., NW Suite 150, Washington, D.C. 20036. Phone: 202/387-3500.

The Ohio Environmental Council, in cooperation with the Great Lakes Rural Network and the Environmental Action Foundation, has published *20,000 Leaks Under Ohio—Environmental and Health Threats from Leaking Underground Storage Tanks in Ohio*. The report is an effort to help increase public awareness of UST issues in Ohio. It describes the distribution of USTs and reported leaks in the State, and explains why they leak. Case studies of leak incidents are presented to "show the impacts they have on the environment and people's everyday lives." Copies can be obtained from: OEC, 22 East Gay St., Suite 300, Columbus, OH 43215. Phone: 614/224-4900.

The New York Department of Environmental Conservation (DEC) has initiated a *Bulk Storage Helpline* service, 1-800-242-4351, to help facility owners solve problems with storing and handling petroleum and hazardous substances. The service provides New Yorkers with technical assistance on how to prevent leaks and spills, and obtain information on the State's various bulk storage regulations.

stances. OUST is now working with EPA water and air offices to prepare a "model consolidated permit system."

Clearly, total environmental systems must be considered in any cleanup, and agencies may need to modify their individual permitting routines to the good of total environmental cleanup progress.

If you know of instances where permitting snarls have been cleverly resolved, please let us know. ■

## Data Management

Any regulatory program that has notification, testing and removal requirements needs data handling routines. For this purpose, the BCHED is developing data handling guidance for the towns. The major components or characteristics of their data management package are:

- User friendly software (a menu driven system with easy-to-understand instructions)
- Minimal hardware requirements (PC desktop computer with a minimum of 256K RAM, and printer)
- Provision for data entry and editing
- Provision for sorting by desired criteria for selective listings.

For more information on the Cape Cod program contact Charlotte Stiefel, 508/362-2511 Ext. 334. ■

## Software for Corrective Action Triage

*For those who may not be familiar with the term "triage": Health care people and fans of TV's M.A.S.H. are probably most familiar with triage. It is associated with sorting and allocating treatment to patients, especially battle and disaster victims, according to a system of priorities to maximize the number of survivors. This process of reaching decisions through sorting and prioritizing has also hit the charts at EPA's Office of Underground Storage Tanks. In fact, you too may have triaged your way through life... but never knew the word for it.*

Corrective action triage software for PCs has been developed by OUST and corrective action representatives from Missouri, Nebraska and Massachusetts. The software incorporates basic logic which experienced corrective action staff have used to decide whether to drop or pursue further corrective action or, to monitor a release site. The software also includes some extra "tools" to help the user reach decisions—a plume estimator, advice on using alternative water supply, and a case-update tool.

The software is designed to aid state and local regulators in producing quick, reliable corrective action decisions in ordinary cases. OUST expects the software will allow novice staff to handle more of the work, and that it will free-up experienced personnel to work on the tougher, more complex decisions.

The software is to be used after a release has been stopped, hazards alleviated, and an initial investigation of the site has been reported. At this point, the software can be consulted for advice on whether to drop or pursue further remedial action or, to monitor the site for an appropriate time. The system does not advise particular technological approaches. Nor, does it advise an appropriate cleanup-target for a site, although OUST may address such decisions in future software.

The software asks multiple-choice questions about the seriousness of the release and the threats it may pose to groundwater, surface water or wells. (a "don't know" response is an available choice on most questions.) State or local programs can insert their own specific standards for answering questions.

After the questions have been answered, the software advises one of three alternatives: 1) take no further action, 2) monitor the site for an appropriate time, or 3) initiate full-scale corrective action now. You can save your answers to the questions for a particular site and come back later to review or change them if you want to.

OUST is field-testing the corrective action triage software package prototype in about 10 other states, and aims to have it ready in final form in November, 1988. ■

close attention to safety. Reputable companies have elaborate protocol, much of which is devoted to safety. The consumer needs to check references on work done for other customers, and keep in mind, the lowest bid may not be a good bet. For example, a realistic price range for lining a 10,000 gallon tank is between \$4,000 and \$7,000. "When a liner says he will do the job for \$2,600," cautions Sharp, "you know that you are not getting a proper job." ■

### Lining Industry Standards Cited in the EPA Regulations

- API Recommended Practice 1631, 1987, Interior Lining of Underground Storage Tanks. API, 1220 L St., NW, Washington, D.C. 20005
- NLPA 631, Interior Lining and Repair of Existing Underground Storage Tanks Without the Addition of Cathodic Protection for a Minimum 10 Year Life Extension. National Leak Prevention Association, 4090 Rose Hill Ave., Cincinnati, OH 45229

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