

# L.U.S.T. LINE

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



## Can The LUST Trust Help Bust LUST's?

The Superfund Amendments and Reauthorization Act of 1986 (SARA) includes a special little package dedicated to leaking underground storage tanks (LUST's). The new Act establishes a \$500 million Fund over 5 years for petroleum LUST cleanups. The Fund, or "LUST Trust", should help temper LUST proliferation, because it calls for an attack on discovered UST leaks sooner rather than later. Although the Fund was established by the Superfund Amendments, it is actually an amendment to Subtitle I of the Resource Conservation & Recovery Act (RCRA) which deals with the regulation of UST's.

The new program should enable the Federal UST regulatory program to put some money where its regulatory mouth is. After all, there are an estimated 1.4 million petroleum UST's in the U.S. that are subject to EPA regulation, and 50,000 to 20,000 of these tanks may be leaking. By way of the LUST Trust Fund, congress has cleverly fashioned a mechanism for ensuring that these releases are cleaned up, that enforcement efforts are strengthened, and, above all, that human health and the environment are protected.

To implement the program, EPA's Office of Underground Storage Tank's (OUST) has formed a new LUST Trust branch headed by Joe Retzer. As early as this spring, the Office expects to make funds available to States that have, in place, basic regulatory authorities and reasonable plans for using the Fund.

### The LUST Trust Game Plan

The LUST Trust Fund is to be financed by a tax of 1/10 of one cent per gallon on motor fuels, including gasoline, diesel, and aviation fuels, to raise \$500 million over 5 years. Collection of this tax began in January 1987.

EPA envisions the Fund will be a state-run program with Federal back-up. The Agency is encouraging states to enter into cooperative agreements which will specify how they plan to use the Fund.

The states are expected to take the lead in cleanup and cost recovery since they are in the best position to respond quickly and effectively to leaks and, generally, know more about the communities and local site conditions than the Feds. States will be expected to have, or eventually have, enforcement authority and to make cleanup decisions, including establishing site by site priorities and cleanup methodologies.

### No Bail Out's Intended

Caution to those who see absolutism at the end of the tunnel. Congress did not intend for the Trust Fund to serve as a gratuitous cleanup money dispenser. Before the Fund is tapped, a serious EPA/state effort will be made to identify the private parties responsible for the leak. In most instances, those responsible, generally the owner/operator, will be ordered to undertake the cleanup.

Congress requires tank owners and operators to be financially responsible for cleanups . . . to have the ability to pay for the cleanups and related activities (see article on financial responsibility.) Minimum coverage has been set at \$1 million per occurrence for tanks at facilities that produce, refine, or market petroleum.

### How, Then, May the Fund be Used?

Because final Federal UST regulations are not scheduled to become effective until 1988, use of the Fund will alter, somewhat, between now and then. (EPA will not issue Trust Fund regulations, but it is in the process of issuing UST regulations which address financial responsibility, corrective action, standards for new and existing tanks, leak prevention, and leak detection)

Prior to regulations, states with cooperative agreements can use the Fund to conduct cleanups whenever they consider them necessary to protect human health and the environment. Priority must be given to cases in which a solvent owner or operator who will take prompt and effective action cannot be identified.

After the regulations, when finan-

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## Lust Trust continued

cial responsibility requirements are in effect, the Trust Fund may be used primarily for emergencies and cleanups in which:

- 1) no solvent owner or operator can be found;
- 2) prompt action is required to protect human health and the environment;
- 3) the owner or operator refuses to comply with a cleanup order;
- 4) cleanup costs exceed the required amount of financial assurance, and additional funds are needed to assure an effective cleanup.

In each state, "something different" must happen because of the Fund. There are numerous activities associated with the cleanup and enforcement goals of the Fund. For example, states may be pinched for staff to respond to leaks or spills, develop and enforce orders, administer the Fund, or conduct cleanups. There is the important job of cost recovery . . . tank owner/operators are liable to EPA or the state for cleanup costs.

Also, funds may be used to assess the degree of human exposure to petroleum contaminants and the resulting health risks. In some instances, potable water must be provided to residents whose water supplies have been contaminated by a tank leak. If necessary, residents may have to be temporarily or permanently relocated. The money cannot pay for activities unrelated to responding to leaks, such as augment-

ing a state's UST preventative program.

A few states have their own UST trust fund or they tap state oil spill cleanup funds in emergencies. These states will not lose out on the LUST Trust. If a state has a cleanup fund, it may tap the Federal fund to cover areas not covered by its own fund. For example, if the state fund is used for all oil and chemical spills, the state could use the Fund to dedicate a staff person to petroleum tanks only.

Before and after UST regulations, EPA and states with cooperative agreements can issue and enforce site cleanup orders. After the regulations, all cleanups must meet EPA or state-authorized cleanup and technical tank standards. Also, after the regulations go into effect, states will be required to pay 10% of the costs of corrective actions paid for with Trust Fund money.

### How Do The Feds Fit In?

The EPA role in the LUST Trust program will be one of oversight of "programs", not "sites". The Feds will not typically monitor individual sites, rather, they will review and evaluate state programs. The states with agreements will have their own programs for identifying sites, establishing priorities, cleaning up, and enforcing.

EPA will also monitor the development of alternate cleanup technologies in various states and make this information available.

Direct Federal response will be limited to emergency situations, upon request from a state. Response to UST "emergencies" is typically at the local level. If direct Federal response is necessary, it will be limited to abating the emergency, but will probably not extend to cleaning up the site. ■

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**FOR MORE INFORMATION** on the LUST Trust Fund, call the EPA Hotline, 800/424-9346 (in Washington, D.C., 382-3000), or contact the UST Coordinator in Your EPA Region. EPA has also prepared a fact sheet, **The Trust Fund For Leaking Underground Storage Tanks**, which can be obtained by calling the Hotline.

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*How much LUST could a Trust Fund Bust*

*If a Trust Fund could bust LUST?*

*A Trust Fund would bust*

*All the LUST it could bust.*

*If a Trust Fund could bust LUST!*

## EPA HQ UPDATE

### LUSTLINE

Editor, Ellen Frye

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Helga Butler, EPA Project Officer  
Jennie Bridge, NEIWPCC Project Officer  
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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 Northeastern 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

### UST Regulatory Development Status

The proposed UST regulatory packages addressing technical standards, corrective action, financial responsibility, and state programs entered final Agency "Red Border" review in early February. It was sent to the Office of Management and Budget (OMB), at the same time, for concurrent review. OMB has already cleared the package for proposal in the Federal Register. EPA's review period ends in early March. The anticipated Federal Register publication date is for late March or early April. A sixty day public comment period will follow. Three public meetings are tentatively scheduled to be held in San Francisco, Dallas, and Washington, D.C.

The Agency plans to conduct an "options review" for the "final rule" in August or September. A final rule is currently scheduled to be promulgated in February 1988.

The proposed requirements will be for both petroleum and chemical UST systems. The direction of the proposal is the same as was discussed in the last issue of LUSTLine. The proposal will defer action in several areas, including wastewater treatment, used oil, bulk storage, sumps, and hydraulic lift tank systems. They will be addressed at a later date.

### Special Projects Funded by OUST

EPA has funded a number of "special projects" some have been mentioned in other articles in this issue of LUSTLine, others have been mentioned in past issues. Here are a few other special projects which are approved and underway.

• U.S. Conference of Mayors - UST's and the Cities

The U.S. Conference of Mayors will conduct surveys and hold 4

# Proposed Financial Responsibility Rule Flexible, But Firm

The underground storage tank owner or operator, especially independent owner/operators or leased dealers, are having a tough time finding insurer's who will write gasoline station insurance policies. On top of this, the UST owner is learning that no matter what, by law, he must be able to show "financial responsibility".

What does this ponderous term "financial responsibility" mean? It means, according to RCRA, as amended by the 1986 Superfund Amendments and Reauthorization Act (SARA), that a tank owner or operator must have insurance or other financial resources to pay for cleanup actions and for bodily injury or property damage caused by accidental leaks or spills from underground storage systems. Tank owners must be able to show, at any time, that they are sufficiently covered for such an accident.

This month, EPA will publish a proposed "financial responsibility rule" which will apply only to UST's containing petroleum. Notice of proposed rulemaking addressing UST's containing other regulated substances will be published at a later date. EPA is well aware of the problem with insurance and has written proposed rules which allow for a wide range of mechanisms, to be used either singly or in combination, for ensuring financial responsibility for all tank owner/operators.

Under the proposed rule, which applies to any tanks subject to EPA technical rules, either the owner or operator (not both) must demonstrate financial assurance. States and the Federal government are considered to be in compliance and are not required to obtain special financial assurance. Owners or operators will be released from financial responsibility at tank closure, or if a leak or spill is detected or suspected, once corrective action (cleanup) is complete.

## How Much Coverage Will Be Required?

The proposed rule will require minimum coverage of \$1 million per release occurrence for all petroleum underground storage tanks. This amount will cover all corrective action and third party damage costs for 99% of all releases. Annual aggregate coverage will be determined on a graduated scale going from \$1 million to \$6 million, depending on the number of tanks.

## Financial Assurance Options

Besides insurance, the law authorizes the use of a variety of other financial assurance options such as guarantees, surety bonds, letters of credit, or self-insurance. Other acceptable methods in the proposed rule include indemnity contracts, risk retention group coverage (a form of insurance), state-required mechanisms, state funds, or other assurance. Mechanisms may be used singly or in combination.

## Reporting and Record-keeping

Evidence of financial assurance and a certificate of compliance must be maintained at the UST facility or place of business. To insure that EPA receives financial assurance information when needed, evidence of coverage must be submitted to EPA only: 1) with new tank notification; 2) within 30 days of a known or suspected release; and 3) when coverage is being cancelled or otherwise rendered ineffective and the owner/operator is unable to obtain alternate insurance. EPA also has the authority to require that information be submitted at anytime.

## Suspension of Enforcement

EPA may suspend enforcement of the rule for owners or operators in a particular "class" if it is determined that financial mechanisms are not "generally available" for UST's in that class and other conditions are met. A class must submit evidence that financial mechanisms are unavailable for both owners and operators in the class. Enforcement can be suspended for no more than 180 days, with additional suspensions allowed under specific conditions.

To be eligible for suspension of enforcement, owners and operators must form their own classes and demonstrate that 1) financial assurance mechanisms are not generally available, and 2) either steps are being taken to form a risk retention group, or the state in which the UST's are located is taking steps to establish a fund to provide coverage.

## Getting The Word Out On Financial Responsibility

EPA is planning an extensive outreach program for the regulated

community, insurers, and the states. For example, the State of Virginia is close to having legislation which would set up a State insurance program through a Trust Fund. Sammy Ing, of the EPA Office of Underground Storage Tanks, is working with State officials on this effort and has copies of the bills and the proposed State insurance plan available for other interested parties. Sammy is responsible for Financial Responsibility at OUST and can be reached at 202/382-7903.

## An Insurance Update

Until recently the Planning Corporation, through the Pollution Liability Insurance Association (PLIA), and Federated Insurance were the two major insurance groups marketing and writing insurance policies for UST's.

As of July 1, 1987 the insurance program currently sold by the Planning Corporation will not be reinsured by PLIA. That means no new policies or renewals will be issued past that date. However, policies written by Planning Corporation before that date will be honored for the remainder of the policy life. PLIA, on the other hand, will continue to reinsure any policies written by its member companies, but they will not offer the same package that Planning Corporation had offered.

Tom Knowlton, President of PLIA, explains that an insurer's decision to issue a gas station insurance policy follows the same principle as a decision to issue a life insurance policy, the insurance company has its criteria and if you qualify you get the policy.

The quandary of UST insurance is by no means resolved. What is true about insurance availability today may change by tomorrow . . . it may get worse, or it may get better. EPA is actively working with the insurance industry, the regulated community, and the states to find ways to provide coverage for all UST owners. We'll keep our readers posted. Meanwhile, check into the other options that are available or that show promise for the near future. ■

# What The UST Owner Needs To Know About Installation

What does the UST owner or operator need to know about tank and piping installation? He needs to know that the burden of proper underground storage and piping installation is on him (or her). Once the owner or operator fully realizes and thoroughly digests this fact, his thirst for additional knowledge on installation may escalate accordingly.

If you are an owner/operator you may be saying to yourself, "I'm supposed to know about installing tanks? That's why I hire an installer — he's the one who is supposed to know how to do the job!"

But, the lamentable truth is, a guy can say that he is an installer. He can say, "No problem, I've got a backhoe . . . I install tanks all the time." But is he doing the job right? Does he have any idea of what "right" is?

This is where you, the tank owner, must be in command of the situation — you are the consumer. You want the job done properly. You want to ask the right questions, find the installer who comes well recommended, and check on his experience and qualifications. Granted, it is work! However, if you put yourself in the right frame of mind you can doggedly mastermind the task . . . or, you can hire a responsible engineer or consultant to oversee the project.

As recently as 2 or 3 years ago, tank owners simply put installation jobs out to bid, and the lowest bid got the job. Cost, more than qualification, seemed to be the deciding factor. But this approach is changing, because issues of liability, the cost of leaks, and federal, state, and local UST regulation have imposed an "era of enlightenment" upon the tank owner.

## Leak Enlightenment

Part of this new enlightenment is the knowledge that corrosion, structural failure and loose fittings are considered the major causes of underground storage system leaks. Most of these failures stem from installation-related factors.

Steel tank or piping corrosion is often set off by a marred steel surface or improper backfill, both installation bloopers. Also, lack of cathodic protection, improperly installed cathodic protection, or insufficient cathodic protection may allow corrosion where it could have been prevented.

Fiberglass reinforced plastic (FRP) tanks may fail or be damaged because of improper backfill compaction, not enough backfill cover, inadequate spacing between tanks, "rough" handling techniques during installation, and/or improper tank anchoring.

Piping failure may be caused by such installation malpractices as the use of incompatible materials, improper pipe fitting "dope" compounds, failure to tighten the piping joints, and failure to use electrical insulators at the piping joints.

## "It's a Jungle Out There"

There are a number of people involved in the installation process. A tank owner or his representative must not only interact with the tank manufacturer, sales representative, and installers, he must also deal with the regulatory agency inspectors, other petroleum equipment dealers, those who will operate the installed equipment, and perhaps others who play some role in the installation.

Needless to say, "it's a jungle out there" and the tank owner must be Tarzan. He needs to know which vine to swing from, who's beating the drums, who's delivering the pipes. He needs to know that steel tanks must be electrically isolated from the piping, and that the tank should be tested before it is covered.

Let's face it, if concern for human health and the environment isn't enough, the issue of liability may be the inspiration any owner needs to fully orchestrate an ace installation. EPA plans to offer assistance to owners by providing guidance on issues associated with installation. For example, the Agency is considering developing guidance on factors that should be included or considered in an installation contract. While the owner has the primary responsibility for the installation, he can also put the installer's "head on the block" through his owner/installer contract.

## Making Sure The Job Is Done "Right"

Proper installation is no mystery. Information on how to install a steel or a fiberglass tank properly is readily available, and more installation information will soon be available through EPA, states, and the industry. The more a tank owner knows

about installation, the better equipped he is to ask the right questions and to evaluate the answers.

Any reputable tank manufacturer attaches installation instructions onto the delivered tank. The manufacturer's local sales representative should be able to help steer you to a manufacturer-trained installer or to an installer with a reputation for excellence.

For additional written material on tank installation, The Petroleum Equipment Institute's (PEI) manual, **Recommended Practices for Installation of Underground Liquid Storage Systems**, is probably the best single source of information, currently available, on the installation of both steel and FRP tank and piping systems. Note, the PEI manual describes both tank and pipe installations. Manufacturer instructions focus on tank installation.

EPA's **Interim Prohibition Guidance for Design & Installation of Underground Storage Tanks** manual and Maine's **Tank Installer Study Material** are also current and available. Maine has recently developed an **Installation Checklist** which can be obtained by calling David McCaskill at the DEP, 207/289-2651. Owens Corning and Xerxes both provide installation checklists for their fiberglass tanks. The Steel Tank Institute (STI) provides an installation checklist for sti-P3 tanks.

The PEI Certification/Licensing Study Committee is preparing a model legislative act and examination for licensing underground tank installers. These documents, which should be available in June, will be handy for state or local regulators who are considering going the route of installer certification. The model exam will include about 175 multiple choice questions on all phases of installation. The installer test would include any 75 of these questions. This is similar to the certification program already underway in the State of Maine.

## EPA/NFPA Videos

The National Fire Protection Association (NFPA), in cooperation with the EPA Office of Underground Storage Tanks (OUST), will produce two videos this year and, yes, one of them will be on installation. The other video will be designed more for general education on LUST.

## Audiovisual "How To's" from the Manufacturers

Besides written installation instructions, the steel and fiberglass manufacturers have also come out with the following videos and slide shows on installation:

### Owens/Corning Fiberglas

**Tank Installation Techniques Modules 1-2-3** Module: #1 Backfill - 16 min., #2 Anchoring - 9 min., #3 Adding Tanks to Existing Locations - 3 min. Video tape.

**Performance Partners - Fiberglass UST Installation** (98 slides with script - no tape)

free loan. Shows important aspects of installing fiberglass tanks.

Contact: Owens/Corning Fiberglas, Fiberglass Tower, Toledo, OH 43659 419/248-8080

### Steel Tank Institute

**STI-P3 Tank Installation** (12 minute video tape) Quick overview of proper sti-P3 installation. A longer version of this is due later this year.

**STI-86 Containment System Installation** (video)

**Cathodic Protection Monitoring** (video)

These tapes are available for limited free loan or for purchase - \$50.

Contact: Gary Lorenz, STI, 728 Antony Trail, Northbrook, IL 60062 312/498-1980

### Buffalo Tank Corporation

**"Do's and Don'ts of Underground Tank Installation"** (20 min. slide/tape show) 3 day free loan. Good overview of installation problems and procedures. Steel tanks primary focus.

Contact: Charles Erdman/Darlene Bower, Buffalo Tank, Box 2755, Baltimore, MD 21225 (301) 355-1300 or 1-800-368-2105

The installation video will be directed toward tank inspectors, installers and owners. It will show how to properly install a tank and point out checklist items inspectors will look for in order to "OK" an installation. In many communities it is the fire personnel who inspect and approve tank installations.

The "general education" video will be similar to NEIWPCC's slide/tape show "Here Lies the Problem", but the video format will make the NFPA production more accessible for television broadcast. The NFPA piece will stress the need for good state and local programs to handle tank problems.

NFPA has a satellite broadcast system with over 1,500 "downlinks" in fire departments around the country. These downlinks, receive the satellite signals, tape the broadcast, and make copies to share with other firehouses in their cities. Fire departments and members of the community (such as tank owners who want to know what to expect from their installation contractor) are encouraged to use these tapes. Since government produced videos are not copyrighted, copies are available to anyone for the cost of tape and copying.

The videos are scheduled for broadcast in mid-September. Marcel Moreau, who helped develop the installation training program for the State of Maine, is a consultant to the project. The NFPA contact is Jim Smalley (617) 770-3000 and at EPA, Helga Butler, (202) 382-4756.

## States Begin To Tackle Installation

Maine and Florida are the only two States which have laws which call for UST installer licensing programs, but rumblings are being felt in Maryland, Wyoming, and Kansas. The Maine licensing program is in full operation and serves as a

model for all who are considering such a possibility.

Florida has released a draft "storage tank installation form", covering all aspects of tank installation, which the State proposes to have contractors fill out to certify that installation jobs have been carried out according to State rules. A State Board is currently preparing an exam and procedures for Florida's tank installers licensing program, which should go into operation later this year.

Kansas and Wyoming are getting close to having legislation requiring the testing and licensing of installers. Maryland has formed a Subcommittee On Certification of Underground Tank Installers which is charged with writing legislation and developing a program for training, testing, and certifying tank system installers.

The *TulsaLetter*, put out by the Petroleum Equipment Institute, notes that the City of Cheyenne, Wyoming has had a tank testing and licensing requirement on the books for the past ten years. Also, the City of Great Falls, Montana has adopted rules requiring "petroleum facilities contractors" to pass a written test. The need for this measure followed a series of costly UST leaks in that City.

Massachusetts is persuing the authority to set up an installer certification program and has already created a UST Installation Advisory Board which has begun preparing installation guidelines and a checklist.

In Canada, the federal government and the provinces agree that installer certification is desirable. They are developing an installer's handbook, which would be the text for a three week course they will set up to be taught in community colleges. Experienced installers would be expected to attend 1 and 2 day seminars. Installer training is currently required in the Province of

Prince Edward Island. Training requirements are also in draft for two other provinces. ■

## EPA Tallies Exempt Farm & Heating Oil Tanks

When Congress crafted the 1984 Subtitle I Hazardous and Solid Waste Amendments to RCRA, it sensed that heating oil and small farm tanks might pose different challenges . . . have different characteristics . . . than their big brothers, the greater than 1,100 gallon regulated underground storage tanks. Thus, Congress directed EPA to study these small motor fuel and heating oil tanks that are exempt under current law, and report back by November, 1987. EPA's mission is to recommend whether and how to regulate these tanks and include estimates of their numbers and geographic distribution.

EPA now has preliminary findings on estimates of tank numbers and geographic distribution. Based on data from the Census Bureau, Department of Agriculture, and Department of Energy, these estimates show that in the United States there are nearly 3 million residential heating oil tanks, 830,000 commercial and manufacturing heating oil tanks, and 570,000 farm and residential motor fuel tanks . . . a total exempt tank population of over 4 million — many more than the estimated 1.5 million tanks currently subject to regulation.

Results show that exempt tanks are most prevalent in the northeast where heating oil is widely used. Heating oil represents about 87% of the exempt tank UST population.

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Soils contaminated by leaks or spills from underground petroleum storage tanks pose 3 principle hazards: 1) the risk of explosion, due to accumulation of vapors in enclosed spaces; 2) the potential for groundwater contamination; and 3) the presence of nuisance odors in nearby homes or businesses. The responsibility for contaminated soil cleanup rests with the states. This article gives empathetic recognition to the snafus associated with soil cleanup and points out the more promising remediation approaches and technologies currently plied or planned.

Readers are encouraged to contact us if they have comments and/or additional insight on this subject.

## The New Kid On The Block

Petroleum contaminated soil is the new kid on the block of national environmental concerns. Attention to the analysis, disposal and treatment of contaminated soil has surfaced in the last year or two — as a by-product of Federal and state LUST initiatives. While there is no national consensus on how these soils should be handled, as more and more contaminated soil is unearthed, there appears to be a growing consensus that contaminated soil is a problem.

Strategies for site investigation, remediation and removal vary widely from state to state. Until recently, formal or informal guidelines addressing motor-fuel contaminated soils were virtually non-existent. However, according to a 1985 survey done by the University of Massachusetts, at least 5 states now have formal standards and 18 states have informal standards.

When it comes to dealing with petroleum contaminated soils, each state has its own style and its own relative sense of purpose. Site cleanup determinations are based upon many approaches ranging from the simple see and sniff technique, to detailed sampling and analysis.

Some states consider all contaminated soil a "hazardous waste" and require appropriate disposal, which means trucking it to a licensed hazardous waste landfill (often located in another state). Other states simply require on-site or off-site aeration to volatilize the hydrocarbons. Some states allow the soil to be returned to the ground, and some require disposal at a certified landfill.

Many states, however, are beginning to consider and explore alternative technologies. Massive soil excavations and massive tipping fees will, hopefully, prove to be the primi-

tive phase of an evolutionary process which seeks to discover practical cleanup solutions.

The apparent gamut of site assessment and remediation practices, and dispositions toward what is considered "hazardous", seems to reflect the level of state or local public involvement. The more involved and concerned the public, the more stringent and deliberate the regulatory measures.

You may wonder how EPA fits into this flurry of activity. Indeed, corrective action will be an important part of the proposed UST regulations projected to be released in April. But, it looks like EPA will leave the job of developing standards or guidelines for cleaning up petroleum contaminated soils to the states.

The Agency has learned, in more than one situation, that some tasks are best left to the states, because, in general the state regulatory personnel are more familiar with the peculiarities of their own environmental infrastructure. Soil varies not only from state to state, but, in some instances, from square yard to square yard.

## The Nature of the Beast

Soil is far from homogeneous. Its chemical and physical properties are highly complex, which means that risks associated with the presence of petroleum can vary tremendously between different sets of soil, hydrologic and climatic conditions. In addition, petroleum products, such as gasoline, kerosene, and fuel oils, each contain hundreds of distinct organic compounds and additives, some of which are known or suspected carcinogens. The interaction of all of these variables is neither straightforward nor well understood.

There is a general dearth of knowledge on how to accurately assess the concentration of product in the soil, and how to evaluate potential risks to health, safety and the environment. At present there are no defined acceptable limits for detecting or sampling petroleum contaminated soils. There is no good information on how low a level is significant. There is no proven sampling technique which guarantees that what is in the soil won't be lost in the process of collecting. Transferring contaminated soil from the ground to the laboratory for analysis is like transferring feathers from one

pillow to another . . . its hard to be sure you got everything.

To determine the presence of contaminants in the soil, investigators commonly use a combination of techniques; sensory, total organic vapor analyzers, soil coring and subsequent gas chromatographic (GC) analysis, and, finally, GC-MS confirmation. A few states and communities have begun to use portable gas chromatographs (GC's) for petroleum product contamination situations.

The portable GC makes field analysis possible at a lower cost than if samples were sent to a lab and, more important, provides the field inspector with immediate results. A good GC separates a mixture of volatile solvents into individual components and then quantitatively and qualitatively measures the components.

Cleanup decisions for petroleum leaks or spills generally rest with the local site inspector or coordinator. These decisions are generally evaluated on a site-specific case by case basis. Due to the complex nature of the soil environment, the field inspector needs flexibility in evaluating each case. However, guidelines for field protocol are also essential. Such guidelines are especially valuable because our concern about petroleum contaminated soil is so relatively new and, in many instances, there is a shortage of field experience.

There is little doubt that the LUST site assessment deficiencies we have pointed out, so far, will require accelerated research commitments. Chances seem good that technology will be "hot on the trail" of finding better ways of handling soil contamination assessment. The same goes for site remediation and soil disposal.

## To Dig or Not To Dig

There are a number of "burning questions" when it comes to site remediation. Heading the list is, "how clean is clean?" — a question far too weighty for this newsletter. Other questions center on whether or not to excavate the contaminated soil, to ignore it, to burn it, to land farm it, to treat it in place, or to extract the product in place.

One obvious answer to any of these questions is not to "put all your eggs in one basket" . . . or two baskets. The solution must fit the circumstances. As one consultant



# Soils Before They Get To You

suggests, the answer is two words, "it depends." In some situations it is suitable to excavate the contaminated soil and mound it or land spread it to allow the natural processes of volatilization and biodegradation to clean it up. In other situations more elaborate technologies must be employed. Ignoring the contaminated soil is generally not an option because it provides a reservoir for future groundwater contamination.

The excavation of vast amounts of soils for removal to hazardous waste facilities or certified landfills is an expensive and impractical option. Landfill space has become the final resting place for vast amounts of municipal refuse, but these areas are filling rapidly. Technology has the potential for allowing us to minimize our trips to dumpsites. We have the option of choosing not to dig. Our choice will depend on a variety of health, safety, and environmental considerations as well as our prudent use of available technology.

The remainder of this article is about what can be done with soil which is removed from the ground and what can be done if the contaminated soil is not removed. We cannot give answers about what should be done. We are simply outlining some possibilities.

Two important considerations should be laid forth, at this point. The first is that while techniques for evaluating or remediating contaminated soils may "look good on paper", their success depends, largely, upon the professional who is out there doing the job. Qualified professionals are not in abundance, yet.

Second, most remediation methods, whether they involve soil excavation or in-place product removal, have some air pollution associated with them — the contaminant is simply being transferred from the soil realm to the air realm. This air concern can be reconciled, but it should not be ignored. The advantage to air exposure is that it is relatively short-lived compared to the lingering subterranean presence of such pollutants. However, some short-lived exposure can be highly noxious and dangerous while it persists.

## To Dig

Soils have biological, physical and chemical dynamics which can be incorporated into cleanup tech-

nologies such as land farming or more sophisticated bioreclamation techniques. In **land farming**, the contaminated soil is spread over an agricultural field, and naturally occurring microorganisms are assisted in utilizing the petroleum hydrocarbons as an energy source. The result is an increased degradation of petroleum constituents. This is accomplished through soil aeration (tilling) and fertilizing.

There has been some interest in incorporating contaminated soils directly into **asphalt** as a filler. This approach burns off many of the petroleum constituents. The residual soil is then incorporated into the asphalt mix. Plants that do accept these soils have strict soil specifications. Massachusetts has allowed this as a "recycling" alternative. However, the State presently has no batching plant which will take the soil.

Some regulators have looked at the possibility of simply **incinerating** soil, then using it as cover material in landfills. John Amadon, Soil Scientist at the Vermont Department of Water Resources, cautions that "incineration turns soil into 'dirt'." Dirt, he says, "has no microorganism's or other physical properties which make soil dynamic. For example, soil can oxidize chromium, but dirt can't." Amadon feels that by turning soil into dirt, heavy metal once held by the soil will readily leach out.

Some scientists feel that soils which are not heavily saturated with hydrocarbons are suitable as cover material in municipal landfills. If the soil is spread out over the landfill the hydrocarbons quickly volatilize and biodegrade.

## Not To Dig

The most common petroleum recovery technique is the **liquid recovery well**. The free product is drawn into a water table cone of depression. In the recovery well, an oil/water separator is used to skim the free product from the water surface at the cone of depression. One problem with this approach is that while the drawdown well removes the free product, it increases the volume of residually contaminated soil.

A second *in situ* technique is **soil venting**. Through venting, contaminants in the vadose zone are provided with an evaporative pathway through soil borings, trenches, etc.

A third technique which is gain-

ing wide attention and acceptance is **vacuum extraction**. With this technique, extraction wells are placed in the center of the residual soil contamination, and high-vacuum, high capacity pumps are used to induce air flow through the contaminated soil. The resulting enhanced volatilization of petroleum products has the potential to remove large quantities of any volatile product in the soil. This technique is presently being used by such remediation consultants as Terra Vac, Inc., Woodward-Clyde Consultants, and Goldberg, Zoino Associates.

**Enhanced bioreclamation** is a promising *in situ* technique which can be used to remove the adsorbed hydrocarbons (hydrocarbons which are incorporated into the soil matrix.) Oxygen and nutrients are directed to the zones of petroleum contamination to foster a climate for microbiological activity. Under the right conditions, this technique can be cost effective and efficient.

## For More Information

We have offered a very brief description of the petroleum contaminated soil problem. More and more seminars are being offered on this subject and more information will soon be available which summarizes the variety of remedial techniques.

The Vermont Legislature directed the State Department of Water Resources and Environmental Engineering (DWREE) to provide a plan for managing contaminated soils in a way which would benefit public health, the environment, and be less of a financial burden on the responsible parties. The Department has just released a **Petroleum Contaminated Soils Report** which is an excellent review and State perspective on the remediation and disposal problem. The report can be obtained by writing: UST Program, Department of Water Resources, 103 S. Main Street, Waterbury, VT 05676 or calling 802/244-8702.

The American Petroleum Institute will soon release a literature review of **Soils Impacted by Motor Fuels**. This publication will provide the industry's perspective of the problem and survey current analytical and remedial techniques. ■

## REGIONAL UPDATE

*This Regional Update focuses on Region IX and is written by Eric Yunker, Region IX UST Coordinator, (415/974-8160)*

### UST Regulation in the Southeast and Pacific Islands

Region IX covers a vast area from the states of Arizona, California, Nevada, and Hawaii to the territories of Guam, American Samoa and the Northern Mariana Islands. The common link in Region IX is a heavy reliance on groundwater for both domestic and agricultural usage. The portion of total freshwater usage which depends on groundwater is about 58% in Arizona; over 40% in California and Hawaii and 20% in Nevada. In addition, groundwater supplies roughly 90% of all domestic needs for rural populations in the Region. These factors have resulted in a strong interest in regulating UST's throughout the Region.

All of the States and Territories in Region IX have received grant funds from EPA to help develop and implement individual UST programs. A variety of programs now exist, ranging from the very comprehensive and stringent requirements in California to the newly emerging programs in all other States. Arizona in particular is aggressively pursuing suspected leakers and requiring clean-up of known releases. One common activity for all States is monitoring installations and promoting compliance with the interim prohibition. This is being accomplished primarily through agreements with local agencies who are already involved with enforcing fire and health codes.

### Notification Results

Notification forms received to date indicate there are approximately 77,000 facilities which contain 193,000 tanks in Region IX. An estimated 20,000 additional tank notification forms are expected. California has already established an automated data management system, while Arizona, Nevada, and Hawaii are currently in the process of developing data systems using EPA software. Data collected in California, for example, indicates that over three-fourths of all tanks (165,000) contain motor fuel.

### State Programs

California has been a national leader in the regulation of underground storage tanks since 1983. Initial concern came to light from the discovery of leaking chemical storage facilities which contaminated a public groundwater supply in Silicon Valley, the center of the electronics industry (See "Industrial Chemical Releases in Silicon Valley" which appeared in the August 1985 issue of LUSTLine). California law established a statewide inventory program and a permit and monitoring program to be implemented by county and city agencies.

Currently 101 local agencies implement the California program. In August 1985, the State issued comprehensive regulations governing new tank design, construction and installation standards; leak detection requirements for new and existing tanks; leak reporting and response procedures; and allowable repairs and closure. Secondary containment is required for new tanks although a less extensive interceptor system is allowed for motor fuel tanks. This later alternative has not been widely used, however. The current focus of the California program is on site cleanup of leaking UST's. Over 2400 sites have been identified as leaking and over 100 are added monthly. State initiatives for this massive problem include technical training for state and local personnel and the development of guidance documents by a State Task Force.

The California State Water Resources Control Board issued a **Report to the Legislature** in January 1987, which summarizes data concerning leaking underground storage tanks. Copies can be obtained by contacting Betty Moreno at (916) 324-1262.

The Arizona law regulating UST's went into effect in August 1986. The extent of jurisdiction is the same as the federal law. The Arizona Department of Health Services (ADHS) has authority to develop regulations governing installation, and leak detection, and standards for cleanup of releases from UST's. Although much of the program will be specified in the regulations to be written over the next several years, five provisions became effective immediately: tank registration; interim tank construction standards; leak detection; notification of releases

and action to stop releases. Current program emphasis is on existing leaks. Almost 200 sites have been listed for cleanup.

Nevada has recently completed notification public outreach meetings throughout the State. Over 6,000 tanks have been registered to date with an estimated total of 10,000 tanks. Existing authority to regulate UST's is currently being reviewed. Hawaii passed UST legislation which went into effect March 1986. The requirements parallel those in the federal law and will be specified in regulations to be developed over the next several years.

The Territories of Guam, American Samoa and Northern Mariana Islands have all completed their notification programs and are currently working to develop legislative authority. EPA has agreements with each territory to monitor installations for compliance with the interim prohibition. Guam is also currently establishing a leak detection program for UST's in environmentally sensitive areas.

### Indian Lands

Indian lands represent a special case where EPA is directly responsible for implementing the UST program. There are approximately 130 Indian tribes located in Region IX for which over 700 tanks have been registered. The notification data will be processed into a computerized system using EPA software. Later this year EPA plans to develop UST programs on Indian lands through cooperative agreements with Indian tribes. One of the largest tribes and the most likely candidate for an agreement are the Navajo. They successfully conducted the notification program and are anxious to implement additional requirements of the program. ■

### Regional Matrimony

The EPA Office of Underground Storage Tanks has worked hard to foster good communication among its Regional Coordinators by providing opportunities for information exchange and interaction. Apparently OUST succeeded beyond all expectations. In February, William Rhea, the Region VI UST Coordinator, married Faye Sandberg, the Region VII UST Coordinator. Congratulations to both of you! The only sad part is Region VII is losing a valued UST Coordinator. Faye Rhea is moving to Dallas.



## Region X UST Enforcement Feasibility Study

EPA Region X is undertaking an enforcement feasibility study in Washington, Oregon, Idaho and Alaska. The study is being conducted by Planning Research Corporation and funded by EPA headquarters as a special regional project.

Because underground tanks are so numerous and widely distributed, conducting on-site tank-related activities (e.g. inspecting tank installations/removals or reviewing recordkeeping and inventory data), will be relatively difficult at the state or federal level. This is particularly true in the larger western states, because of the travel distances involved. Therefore local involvement is recognized to be an important factor in some aspects of program implementation.

Local fire departments are logical local groups for UST involvement. Although their responsibilities differ somewhat from those of the state or federal government, they are already involved with underground tanks to some extent under the Uniform Fire Code. However, county and city fire departments differ widely in their degree of involvement with tanks, depending on whether the department is composed primarily of paid personnel or volunteers, and on the type of local arrangement between the city, county and district fire departments.

At this time, Region 10 states do not know to what extent most local fire departments are acutely involved with tank management or inspections, or the degree to which they are willing to become further involved. Some fire departments have shown great interest in expanding their tank responsibilities, and a few have even computerized their data sufficiently to be able to generate a list of all the tanks in their jurisdiction. Others are understaffed and uninterested in expanding their present role.

The first phase of the project is a telephone survey to contact approximately 150 local fire departments. A questionnaire was developed to aid in the interviews, and the survey is now underway. The survey attempts to identify the type of tank activities now conducted, the level of effort presently expended, the degree of staff tank expertise, the size of the local UST universe, the existence of local regulations (if any), the degree of interest in (or barriers to) the department's accepting a greater role in tank management, and similar issues. A report summarizing the results of each state survey will be completed around April.

The information obtained from the survey will help to identify areas in each state where fire departments can be expected to aid the state and EPA in inspections or other local UST activities. In many cases, the "help" may be nothing more than an agreement to report tank leaks or improper tank installations to the state. In other cases, a department may agree to increase the items they inspect during installation to match federal requirements, or to review inventory records. We will then seek to formalize these agreements through the establishment of Memoranda of Understanding between EPA, the state, and local fire departments.

State program personnel are enthusiastic about the project, because for the next year, state programs will be oriented primarily toward program development activity such as developing regulations, establishing statutory authority, and investigating funding mechanisms. This project will aid in early establishment of a local presence and a somewhat united approach to tank management. It will also provide the states with a good information base and a possible framework for later expansion of an inspection/enforcement network. ■

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Joan Cabreza, Region X UST  
Coordinator, (206) 442-0344

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### EPA Headquarters Update *continued*

municipal workshops to, ultimately, produce an in-depth UST operators handbook . . . a "how to" book for managing municipal UST's. Through this project, EPA hopes to learn what municipalities throughout the country know and don't know about managing their UST's, and how decisions are made. The project will provide a forum for information exchange — city tank managers will share tank management problems and success stories. The handbook will be the means for identifying these problems and presenting solutions. EPA plans to distribute the handbook to the people who manage local tank programs.

#### • Tank Installer Certification — The Lessons Learned

The State of Maine will document its installer certification program experiences.

#### • Regional Distributors Notice Verification

Region I and states will survey all petroleum and chemical distributors to request verification that they have

complied with their responsibility to notify tank owners of the Federal UST notification requirement. Those distributors who were unaware of their responsibility will be asked to submit their plan to comply. This collected information will provide EPA with a "snapshot" of how well distributors have complied with this congressional mandate.

#### • Tank "Autopsy" Study

The Department of Health Services in Suffolk County, New York will study UST failure due to corrosion. Tank failure will be correlated with such variables as tank age, soil, depth to water table, and backfill. ■

## TANK TALK

EPA Region V has established a special project grant with the University of Wisconsin to develop a technical newsletter on underground storage tanks. The newsletter will address a series of technical issues related to tank systems, including: cathodic protection, tank installation, release detection and corrective action. The newsletter will be published every other month for an initial period of one year. The first issue is expected to be out in April. Distribution will be to U.S. EPA Headquarters, the U.S. EPA Regional offices and state agencies. For further information contact Diane Sharrow at (312) 886-3718.

Marcel Moreau, formerly of the Maine Department of Environmental Protection, has put his informative and entertaining slide show about European tank technologies on video tape. The presentation begins with Moreau's observation that there are significant similarities between the styles of European gargoyles and underground storage tank technology.

Those who have seen Moreau's live presentation have gained considerable insight on all aspects of European underground petroleum storage practices. Many of these practices have proven effective (in West Germany and France especially) and are receiving serious consideration as alternative technologies in this country.

The 30-minute production, *Gas Tanks & Gargoyles: A Look at European Underground Petroleum Storage Technology*, is available for \$150.00 from Media Source, 45 Casco St., Portland, ME 04101.

Moreau left the DEP in December to embark in private consulting on

*Continued on page 10*

# Florida's Early Detection Incentive Program A Unique Approach To LUST'S

The Florida SUPER Act of 1986 mandated the Department of Environmental Regulation (DER) to establish an Early Detection Incentive (EDI) program to encourage the early detection, reporting and cleanup of contamination from leaking underground (and above ground) petroleum storage tanks. The program sets forth a 15 month "grace period" during which a tank owner/operator can report a petroleum leak and have it cleaned up, courtesy of a special State Trust Fund. The Fund is financed through a ten cent tax on every barrel of petroleum product that is imported into or produced within the State.

The EDI program was inspired by DER's concern that the longer a leak remains undetected, and the longer remedial action is delayed, the greater the threat to public health, safety and welfare and to Florida's environment . . . and the greater the eventual cost to contain and remove the contamination. Thus, if cleanup action can be initiated quickly, all parties should benefit.

The DER has established a "grace period" from July 1, 1986 to September 30, 1987. To enroll in the EDI program, owners or operators of petroleum storage facilities must contact the Department about any leaks or suspected leaks from their petroleum storage facilities. The owner fills out an application and the State does an on-site inspection to determine eligibility.

What constitutes LUST owner/operator eligibility?: 1) the facility cannot be a Federal facility; 2) the owner cannot deny the State inspector access to the facility; and 3) by way of DER site inspections, if it is determined that the facility operated in a grossly negligent manner, the facility may be deemed ineligible.

Once eligible, the owner/operator has two alternatives: 1) he can opt to have the State cleanup the leak, or 2) he can have the site cleaned up himself and be reimbursed by the State.

As of March 2, 1987, 477 sites requesting State cleanup have enrolled in the EDI program. Another 298 sites will do their own cleanup and seek State reimbursement. These numbers are expected to swell by the September 30th deadline. In addition, the DER has a file of 575 release incidences which were discov-

ered or reported prior to July 1987. Most of these sites have been cleaned up, and owner/operators have applied for State reimbursement.

To get the word out to tank owners, the DER has put out public service announcements to 50 TV stations and about 200 radio stations. The DER held a symposium on the program in October and a Statewide toll free number is proffered on all brochures, applications, and other written and verbal LUST communications.

"I think everybody involved in the Department looks at this as a 'one of a kind' program," explains Craig Ash, EDI Public Information Coordinator. "We're excited about the program with a kind of 'pioneer' spirit."

Most of the hindrances to the new program have been associated with "staffing up" for the occasion. On the one hand, the Department had to find a place to put the additional staff required to do the job. On the other hand, a hiring freeze, imposed by the new Governor, caused a delay in getting the additional staff. District inspectors have especially felt the pinch in responding to EDI inspections.

## Three New Rules To Watch For

The SUPER Act legislation requires the DER to make 3 rules associated with carrying out EDI — and the last two of these rules are "toughies".

First, the Department must develop a "priority ranking rule", which sets a site cleanup protocol. Priority considerations will include fire/explosion hazard, threat to drinking water supplies and the potential migratory fate of the leaked product.

Next, is the "site criteria cleanup rule", which presents the great "how clean is clean?" challenge. The Florida DER stands to be the first state (or federal) agency to physically tackle this issue and pin it down in writing. Mind you, this rule refers specifically to petroleum products.

Cleanup criteria will likely include such factors as: threats to human

health, size of affected population, present and future uses of aquifer or surface water and proximity to public drinking water supplies, natural rehabilitation processes, and State water quality standards.

Finally, the DER must write a "reimbursement rule" which will provide guidance for cleanup reimbursement of reasonable costs. Since "reasonable" is a relative condition, this rule could present challenges. ■

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## Tank Talk continued

underground petroleum storage technology, management and regulation. He can be contacted at (207) 377-9642.

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A trade association of all domestic UL listed fiberglass tank and pipe manufacturers was formed in early January. The new **Fiberglass Petroleum Tank & Pipe Institute** will promote the use of fiberglass-reinforced thermosetting plastic tanks and pipes by the petroleum storage industry through; FRP information dissemination, development of industry standards, and liaison with code writing, regulatory, and legislative groups.

Edward C. Nieshoff, previously with Owens-Corning Fiberglas, is Executive Director. Nieshoff is well known by both petroleum industry and UST regulatory folk. He can be contacted at the Fiberglass Petroleum Tank & Pipe Institute, One SeaGate, Suite 1001, Toledo, Ohio 43604 (419)247-5412.

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The March 1987 issue of the **Commercial Carriers Journal** has run a trilogy of timely reports on LUST-related topics. The first report is an analysis of EPA's proposed rules for underground petroleum storage tanks; second is a state-by-state survey of current and proposed state UST legislation; and third is a "buyer's guide" to such UST hardware as tanks, piping, and leak detection devices.

The Journal circulates to about 78,000 motor carrier subscribers who share a growing interest in UST management and regulation. In fact, the Journal intends to reproduce issues of LUSTLine, in part or in whole, to enhance reader awareness on the subject. Single copies of the March 1987 issue are available upon written request from: Commercial Carrier Journal, Chilton Way, Radnor, PA 19089.

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Environmental Canada, EPA's Canadian counterpart, is now put-

*Continued on page 12*

# New Jersey ECRA Program Fuels LUST Survey

For some time the percentage of underground storage tanks (UST's) which are leaking has been a hotly debated issue. From a regulatory perspective a feeling for such figures is essential in determining staffing and budgetary requirements. But, facilities with large numbers of underground tanks should also take notice, because in New Jersey, at least, many of these facilities have leaks.

The Bureau of Underground Storage Tanks (BUST) within the New Jersey Department of Environmental Protection (NJDEP) is currently conducting a survey to assist in calculating program needs and developing technical regulations as a result of New Jersey's new Underground Storage of Hazardous Substances Act (signed September 3, 1986).

Initially, the purpose of the survey was simply to determine the number of leaking tanks. However, preliminary results have encouraged BUST to investigate further to see if there is a relationship between physical factors such as age, tank type, and the tendency to leak.

Those cases which were subject to the New Jersey Environmental Cleanup Responsibility Act (ECRA) between January 1985 and May 1986 comprised the surveyed population. ECRA is an environmentally beneficial law which regulates the sale or closure of industrial facilities which also use hazardous substances. The facility owner must demonstrate that his site is "clean" before sale or closure can take place. This includes the testing of all UST's.

During the survey period, January 1985 to May 1986, tank integrity could be determined for the ECRA program in a variety of ways: 1) discrete 6" soil samples below the bedding of the tank; 2) ground water monitoring wells; 3) precision testing in accordance with NFPA 329; and 4) discrete 6" soil samples in the bottom of a tank excavation. Any test method which indicated contamination would have been followed up by more sampling.

Unlike many other states, both the ECRA and the UST laws regulate heating oil as a hazardous substance. Since ECRA does not regulate gas stations, these types of facilities are excluded from consideration here.

The preliminary results are as follows:

Total cases surveyed . . . . . 1200  
Total cases with UST's . . 392 (32.6%)  
Total number of UST's  
for 392 cases . . . . . 862  
(average is 2.2 tanks per case)

Of the 392 cases with UST's:  
211 (53.8%) did not have any leaking UST's  
181 (46.2%) had at least one leaking UST  
(average is 1.7 LUST's per case)

Of the 862 UST's:  
550 (63.8%) were not leaking  
312 (36.2%) were leaking

The amount of LUST's was not surprising to BUST staff who worked previously on the remediation of ground water contamination due to leaks. It was surprising, however, that nearly 50% of the facilities with tanks had leaking tanks. In the weeks to come we will review each of the 392 ECRA case files to see if there are any trends. For questions concerning the new UST law or ECRA, contact the Bureau of Underground Storage Tanks, NJDEP-DWR, CN-029, Trenton, New Jersey 08625 or call (609) 984-3156. ■

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Michele Rawleigh (609) 984-3156

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## EPA UST Computer Program Alive and Well In New Hampshire

Perhaps your UST notification data is managing just fine, or perhaps you've got so many data management aggravations you can scarcely surface for air. If your state is on the frustrated end of the data management spectrum, it may help you to know that in New Hampshire, we had some problems with EPA's computerized data management system, but, alas, the system is now working satisfactorily.

New Hampshire has been using the EPA Revelation Data Base Management System since April 1986. Currently, over 3,200 facilities out of the 3,950 facilities reporting have

been entered. The reporting capability is fairly easy and very versatile. The program can easily generate customized reports and listings and sort any of the data items . . . in just about any format desired. The data can be sorted to produce such information as alphabetical listings by city or numerical ordering by I.D. number within the city listing.

We expect to generate lists, based on tank ages, that will correspond to New Hampshire's required UST testing and replacement schedules. The lists will be used to check on compliance, and to send out notices of action required.

So far, EPA has issued two software updates to make minor corrections and refinements to the program. We experienced one glitch in the system in September 1986. Ray Michie of Versar, Inc. (703/750-3000), the company contracted by EPA to produce and service the program, was cooperative and helpful in working with us to solve the problem. At one point, when all efforts failed, the entire data base was shipped to Michie. He quickly sorted out the problem. Since then, we have been satisfied with the system.

One possible built-in glitch is that the program comes with a data management system for small data bases. This is the starting point for anyone using the program. However, when approximately 1,000 facilities have been entered, this data system becomes overloaded. At this point, the Tank and Facility files should be reformatted into another data management system (LNK) which is suited to large data bases.

When the reformatting, or recreation, is completed, the anticipated number of records and approximate record size must be entered. Then, if the data base exceeds the record size by about 10%, the file should be reformatted again. Keep in mind, your storage capacity must be at least twice the size of the data base, since a duplicate file is created during the file system reformatting. The reformatting process is actually very easy and takes little time, but Versar should be contacted for details on how this operation is performed. Once the appropriate reformatting is done, the searching, sorting, retrieval, and entry speeds increase tremendously.

New Hampshire will be adding screens for inspections and such data as spill response, cleanup, and follow-up. The Revelation Data Base Management System provides a cook book programming capability

*Continued on page 12*

### EPA Tallies Exempt *continued*

EPA's decision on whether or not to regulate will not be affected by precise knowledge of tank population. The bottom line is, there are a lot of less than 1,100 gallon UST's out there. It is more important for EPA to understand exempt tank characteristics . . . do they leak like regulated tanks? To study these tanks, EPA is looking at state and local reports and has funded studies in Massachusetts and Connecticut.

The Barnstable County (Cape Cod), Massachusetts study, among other things, will evaluate the release potential of the presently exempt consumptive use heating oil tanks. Because the entire Cape is considered a sole source aquifer, County health and environmental officials feel it is essential to determine the appropriate degree of regulation for UST's in the non-regulated category.

In Connecticut, Department of Environmental Protection (DEP) regulations which were effective in November 1985, did not include the Federal small motor fuel farm and residential tank exemption. Their notification requirement applies to all motor fuel tanks regardless of size. The Connecticut study will identify the status and extent of underground storage or oil/petroleum use at farms in the State.

While Connecticut is generally not considered a typical agricultural State, the smaller, more dispersed, old family farms that are now being developed as housing lots with on-site water wells could lead to serious environmental problems if old stor-

age tanks are found to be leaking.

In studying exempt tanks, EPA will also be checking with such experts as tank manufacturers, installers, and regulators to determine if exempt tanks are constructed or installed differently than regulated tanks. Finally, the Agency will scrutinize the residential, commercial, manufacturing, and farm sectors and try to imagine how they would be regulated if they were to be regulated. ■

### Tank Talk *continued*

ting out a **Leaking Underground Storage Tank Newsletter**, which covers UST news in Canada. The newsletter can be obtained, free of charge, by contacting Kelly Karr, Canadian UST Coordinator, at: Environment Canada, 13th Floor Place Vincent Massey, Ottawa, Ontario K1A0E7, phone (819)953-1125.

### EPA UST Computer *continued*

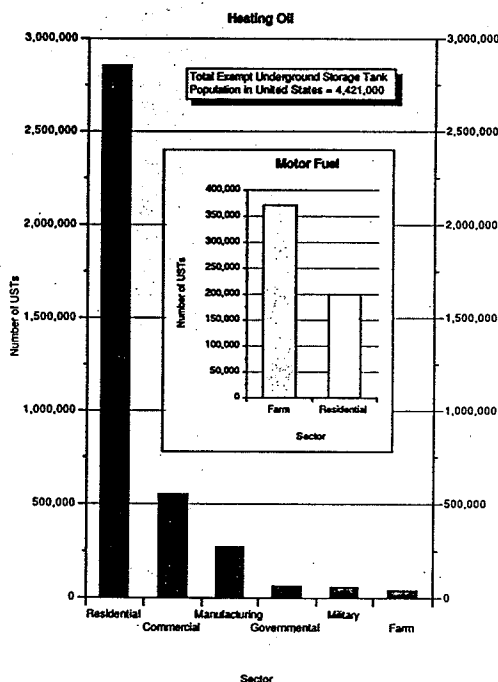
which makes it accessible to UST personnel who are not computer programmers. The UST staff feel this program will adequately meet their needs, with minimum cost and without the need for extensive professional programming.

Phil Lavoie, New Hampshire DES  
603/271-3444

### Revelation User's Group in the Works

EPA is preparing to set up a Revelation Data Management System "user's group" to work toward using the system more effectively, to provide technical assistance, and to plan future directions and possibilities for the program. The group, which will be located in Oklahoma, will be a resource for all states using the EPA system for their UST programs.

Figure 1 Exempt Tank Population Estimates by Sector



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