

TANK BULLETIN

Bureau of
Spill Prevention and Response

Issue Number 10
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STATUS OF CHEMICAL STORAGE REGULATIONS

The New York State Department of Environmental Conservation is nearing completion of the Phase II Chemical Bulk Storage (CBS) Regulations. This document consists of newly proposed 6NYCRR Parts 598 and 599 and revisions to existing Parts 595 through 597.

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Part 598 will cover procedures and requirements for storing and handling hazardous substances. Included are requirements for facility owners to prepare a spill prevention report within two years of the effective date of these regulations. The report must include, among other things, a copy of the registration application, site map, a status report on compliance and a spill response plan. By December 22, 1998, owners must provide secondary containment for aboveground tanks, transfer stations, drum storage areas and some ancillary equipment.

Part 599 will contain technical standards for new and substantially modified facilities. There are specifications for aboveground and underground tanks (AST and UST), installation and closure, equipment design, leak detection and spill prevention methods, and facility inspection and maintenance procedures.

There will be modifications proposed to Part 595 requiring the reporting of any release which causes an environmental, safety or health concern, even if the release is less than the reportable quantity (RQ). Releases exceeding RQ's are still to be reported, but there is a proposed provision for one time reporting of continuous and stable releases.

Proposed changes in Part 596 are largely organizational. Definitions will be consolidated in this part. Sections on spill response and corrective action, formerly in Part 595, are now Part 596.

Part 597 which consists of New York State's list of hazardous substances will be amended by removing thirty-seven (37) existing substances, adding forty-seven (47) new substances and updating the reportable quantities of one hundred sixty-four (164) substances. There are some typographical errors which will also be corrected.

New York State Department of Environmental Conservation

Mario M. Cuomo, Governor

Thomas C. Jorling, Commissioner



HEALTH and SAFETY - A TOP PRIORITY

by Simon Wu, Chemical Engineer

Each year, injuries and deaths occur during the installation, inspection, repair or closure of storage tanks. If you store or handle petroleum or chemicals, be sure you are well trained and understand the dangers inherent with these products. The following discusses four (4) common dangers which are present at a storage facility:

- confined spaces
- fire and explosions
- toxicity
- excavations

Confined Spaces. According to the US Occupational Safety and Health Administration (OSHA), a confined space is defined as any space or enclosure that has limited openings for entry and exit and inadequate ventilation. Normally this is defined as any space 4 feet or more in depth. The OSHA's final rule on this is on 58 FR 4462, January 14, 1993.

Confined spaces include manholes, basements, excavations, underground vaults, silos, tank cars, and storage tanks. A confined

space is considered hazardous because it may contain a dangerous gas or be devoid of oxygen. A person who enters these spaces can lose the ability to respond, avoid or escape danger. The primary danger in a confined space is asphyxiation, but there may be mechanical hazards or the potential for explosion and/or fire.

The National Institute of Occupational Safety and Health (NIOSH) report entitled, "Criteria for a Recommended Standard for Working in Confined Spaces" (1979), has established three classes of confined space as indicated in the table below.

Earthen excavations and basements are usually class B or C confined spaces. Class C spaces may be entered with precautions. Class B entries should not be done without proper training and careful planning. Tanks are considered Class A spaces. Class A spaces should be avoided entirely by those employees without rigorous training, careful planning and proper procedures.

The safest way of dealing with a confined space is to not enter it. Employees who have no business in confined spaces should never enter one.

An entry plan should be developed. The entry plan should identify the confined space location, work to be performed, structural integrity of the access, the known and potential hazards, the checklist of physical and electrical isolation from other systems, the method of ventilation and air supply, the method of monitoring the confined space conditions, safety and protective equipment, the attending system for the workers, and emergency rescue procedures and equipment.

Entry into a confined space should occur only after a permit is issued by your company's safety officer. The permit specifies the location and type of work to be done, certifies that all existing hazards have been evaluated and identifies the necessary protective

Classification of confined Spaces	Description	Characteristics of Atmosphere		
		O ₂ Content	Flammability (% of lower flammable limit)	Toxicity (Concentration of substance in the atmosphere)
Class A	immediate danger to life or health (IDLH)	equal or less than 16 % , or greater than 25 %	20% or greater	at IDLH
Class B	potential for injury or illness if no preventive measures is taken	16.1 - 19.4%, or 21.5 - 25%	10 to 19 %	between PEL & IDLH
Class C	potential hazard, but no modification of the work procedure is required	19.5 to 21.4%	10 % or less	below PEL

LFL = lower flammable limit; PEL = permissible exposure limit



Confined space should be continuously monitored for explosive and toxic gases, and oxygen deficient atmospheres. Appropriate personal protective equipment must be worn before entering the confined space.

measures that need to be taken to insure the safety of each worker.

The OSHA regulations state that there must be a designated safety monitor called an "attendant" on Class A and B work. The attendant maintains communications and monitors workers inside the confined space. However, this person never enters the confined space, **even for rescue**. Rescue and other entry duties must be assigned to other personnel. Unplanned rescues, such as when someone instinctively rushes in to help, typically result in multiple fatalities.

Inadequate supply of oxygen is a frequent problem in confined spaces. Any atmosphere with less than 19.5 percent (by volume) oxygen is life threatening. See the chart below. The atmosphere with less than 19.5 percent oxygen should not be entered without a self-contained breathing apparatus (SCBA).

Oxygen deficiency is most likely to occur in low-lying areas where

heavier-than-air vapors accumulate but it can also result from activities such as welding, cutting, brazing, rusting, and bacterial action or fermentation. Workers should always be alert to situations that could create oxygen depletion, and should never enter into such situations without first monitoring the oxygen level. Workers should also keep in mind that even when oxygen

or closure activities, and when release investigation procedures are performed. When working with petroleum products and many other chemicals, you must be constantly on the alert for conditions which might cause a fire or explosion.

In order for a fire to occur, three primary elements must be present: fuel, oxygen and a source of ignition. These three elements are often expressed in a triangle, called a fire triangle. Each side of the triangle represents one of the necessary elements of fire. The center of the triangle represents the optimal mixture of the three for ignition. If any of the elements is removed, there can be no fire.

The minimum temperature at which a liquid gives off sufficient vapor to form an ignitable mixture in air is called Flash Point (FP). The lower the flash point, the better the chance for an explosion.

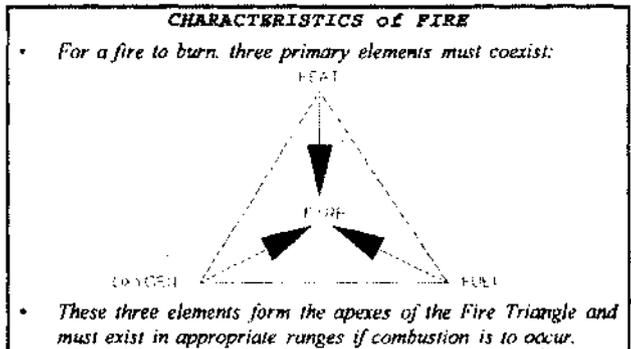
Flammable vapors will not burn

Confined Space Entry Standards

"Safety Requirements for Confined Spaces", Z-117.1, 1989 American National Standards Institute, Customer Service 11, West 42nd Street, New York, New York 10036. Price \$30
NIOSH, "Criteria for a Recommended Standard: Working In Confined Spaces", No. 80106, Government Printing Office (#017-033-00353-0)

is deficient for human well-being, there may be enough oxygen for a fire or explosion.

Fires and Explosions. Explosions and fires are the most immediate hazards during tank inspection, tank removal



Percent Oxygen	Physiological Effects
16% - 12%	accelerated breathing and heartbeat, impaired attention and vision, thinking, and coordination
12% - 10%	faulty judgement, poor muscular coordination, rapid fatigue, possibly permanent heart damage
10% - 6%	nausea, vomiting, loss of movement, unconsciousness followed by death
less than 6%	convulsions, sporadic breathing, death in minutes



below a minimum concentration of the vapor in the air. Mixtures below this minimum are said to be too lean. Similarly, a flammable vapor will not burn if its concentration exceeds a certain value. Such a mixture is said to be too rich. These two boundary conditions are referred to as the Lower Flammable Limit (LFL) and Upper Flammable Limit (UFL). Vapor concentrations are usually expressed as a volume percent in air. The table below delineates fire hazard properties of acetone and selected petroleum products.

If you measure the vapor concentration and it falls outside of the flammable range, do not become complacent. Vapor concentrations of lean mixtures can collect and increase to a point within the flammable range while rich mixtures can become diluted. Therefore when working in an environment with flammable vapors, continuous monitoring of the atmosphere is needed.

Any chemical with a flash point less than the air temperature (such as gasoline or acetone) is highly flammable and dangerous.

An important characteristic is vapor density. A chemical with a vapor density greater than one (1) will be heavier than air, and if less than one it will be lighter than air. Vapors from products such as gasolines, that are heavier than air and are also flammable, can concentrate in low lying areas and may pose a hazard in those areas. Explosions are not necessarily the result of vapor combustion only. Any material that can burn, if exposed to sufficient heat, and confined as in a tank, can explode with tremendous force. In a closed tank, flammable liquids, such as gasolines, expand when heated.

When the pressure inside the tank exceeds the designed pressure strength, a pressure release explosion can happen.

The following are several tips on how to avoid fire and explosion hazards.

- Monitor the work environment with a combustible gas indicator (CGI) to assure the atmosphere is not within the flammable range of any material present.
- Immediately evacuate all personnel from the danger area and notify the fire department if the instrument indicates a potential for an explosion or fire.
- Eliminate all sources of ignition such as lighted cigarettes, open flames, static electricity and sparks. Static electricity and sparks can be generated by the transfer of products, motors, humans and other activities. They can be minimized by using explosion-proof equipments and by properly bonding and grounding product transfer activities.
- Purge or ventilate the confined space to reduce the concentration of flammable vapor. When purging a tank, the concentration of vapors in the tank may begin in the flammable range, or may

go from too rich through the flammable range before a safe concentration of 20% of the LFL is achieved. Purging should not be undertaken on hot, humid, or still days because the still air will not disperse the flammable vapors.

Inerting a tank by introducing dry ice (CO₂) or compressed nitrogen is an alternative tank safety precaution. The inert gas does not neutralize the flammable vapors in the tank; it simply displaces the oxygen. During the process, the inert gas should be introduced under low pressure, or at low flow rate, in order to avoid producing static electricity.

Toxicity. Workers should be trained and should know which situations to avoid and what precautions to take to avoid exposure to toxic chemicals. Toxic chemicals are poisons which endanger health by damaging living tissue, impairing the central nervous system, causing illness, allergies or rashes and causing cancer or birth defects.

The route of entry into the body is through the lungs, skin or digestive system. Inhalation is the most rapid and the major exposure route. Ingestion is a less common exposure route for most organic

FIRE HAZARD PROPERTIES OF SELECTED PRODUCTS

Product	Flash Point °F(°C)	Flammable % by (Lower) LFL	Limits volume (Upper) UFL	Vapor Density (Air=1)
Acetone	15° (-9.4)	2.6	12.8	2.0
No. 2 Fuel Oil*	126-204 (52-95)	1.3	6	2
Gasoline*	-45(-43)	1.4	7.6	3-4

* - value may vary for different chemical composition.



solvents than inhalation. Absorption through the skin can be a problem for contractors who work regularly with petroleum tank systems.

Exposure can have acute or chronic effects. An acute reaction is one that reaches its most severe state within hours or days, such as nausea, headaches and rashes. A chronic reaction such as cancer or liver damage, develops slowly, over a period of months or years.

How a chemical affects your body depends on the length and intensity of the exposure, or the "dose". Researchers have quantified chemical effects by studying dose-response relationships. Various threshold values, such as lethal dose (LD), lethal concentration (LC), immediately dangerous to life and health (IDLH) value, permissible exposure limit (PEL), threshold limit value (TLV), threshold limit value-time weighted average (TLV-TWA), threshold limit value-short term exposure level (TLV-STEL), etc. have been established. These values are used as control standards by industries as well as government agencies.

Excavations. Excavation work is one of the most hazardous activities in the industry. Cave-ins cause over 5,000 injuries and deaths a year. When installing a new tank or removing an old one, the excavation must be shored or

properly sloped. Boulders or concrete or other debris that might slide into the pit should be removed from the rim of the excavation. Machinery should also be placed away from the edge. Excavations may also be considered a confined space as discussed earlier.

OSHA has established regulations for work in excavations. See 29 CFR 1926.650. For any earthen excavation greater than 4 feet in depth, OSHA requires that workers in the excavation be protected from cave-ins by sloping, benching or shoring of the excavation walls. A rule of thumb which may be helpful is that the excavation wall is safe if it is no steeper than 1.5 horizontal to 1 vertical. This applies to all soils. If you or your employees work in excavations you should obtain a copy of section 1926.650 of the federal regulations.

Health and Safety Protection - Training is the best way of protecting health and improving safety. Congress, after much pressure from unions and concerned workers and citizens, decided that workers in a variety of occupations who are exposed to hazardous chemicals should be trained to work safely with hazardous materials. OSHA has set requirements for the health and safety training for a variety of workers. It did this in a document usually referred to as "1910.120" (or, 29 Code of Federal Regulations

1910.120).

Aside from the legal obligation employer may have for training employees, it makes sense that workers undertake rigorous and continuous training (and re-training) covering all hazardous duties related to storing and handling hazardous substances.

Material Safety Data Sheets (MSDS) are an important source of information on the physical and chemical properties and toxicity of a hazardous substance. If the MSDS sheet does not have all the information you need about a chemical, contact the supplier of the MSDS sheet and ask questions.

Monitoring the atmosphere of the work environment is very important. The first gas to check for is oxygen. Oxygen meters must be properly calibrated for the altitude of operation. Oxidizers such as chlorine, ozone and acid gases interfere with the operation of the detector.

A combustible gas indicator (explosimeter) is useful if you suspect a flammable gas to be present. It measures the concentration of flammable vapors in air and indicates the results as a percentage of the lower explosive limit of the calibration gas. As with the oxygen meter, it must be calibrated and may not provide accurate measurements under certain circumstances.

EPA Finalizes Additional Financial Responsibility Mechanisms for Local Governments

On February 18, 1993, EPA promulgated additional assurance mechanisms for use by local government entities that own or operate petroleum underground storage tanks. These mechanisms will help local governments comply with the UST financial responsibility requirements and add to the mechanisms previously defined in 53 FR 43322, October 26, 1988. Local government entities will have until February 18, 1994 to demonstrate proof of financial responsibility.

The term local government is generally intended to include counties, municipalities, townships, separately chartered and operated special districts, independent school districts and Indian tribes.

The additional mechanisms allowed are: 1) Bond Rating Test, 2) Worksheet Test, 3) Government Guarantee, and 4) Fund Balance Test. A combination of mechanisms may be used.

EPA developed this rule to address the unique financial characteristics of local governments, and to allow financially capable entities the opportunity to self-insure.

Additional information and a copy of the rule may be obtained by calling EPA's RCRA/Superfund Hotline, Monday through Friday, 8:30 am to 7:30 pm EST. The toll-free number is 800 424-9346; for the hearing impaired, the number is TDD 800 533-7672.



Contractor Dies In Tank Accident

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

The long-buried tanks had popped to the surface after a week of heavy rain raised the groundwater level. An environmental official earlier had advised Martin to contact a pollution specialty contractor to remove fuel from the tanks, dismantle the underground system, and remove the tanks. Instead, Martin hired Jackson at \$5 per hour to undertake the project. This was the first time Jackson had ever worked on underground storage tanks.

Jackson was last seen alive standing on top of one of the tanks. One published report said that Jackson was reaching for his cooler when he slipped and was crushed between the tanks. Another said that the tank rolled 180 degrees and threw Jackson between the tanks after he cut one of the hold-down straps. It took fire and rescue teams more than five hours to secure the tanks and remove Jackson's body from beneath the concrete anchor in the muddy, fuel-contaminated tank hole.

The Petroleum Equipment Institute (PEI) receives at least one report a



Accident such as fall, rollover, or fire/explosion can occur at a site like this one

month about a serious accident involving men working in, around, or on top of UST's. Most of the accidents involve workers who have not been trained in the specific tasks to which they have been assigned. Tank operators and owners need to make an issue of safety when contracting with a company or an individual to install, service, or remove tanks.

Qualification and experience in safe tank installation and removal should be as important as price.

Editors Note: This tragic accident happened in Charlotte County, Florida, as reported to the NYS DEC by the Petroleum Equipment Institute.

Free Audit From NYS Department of Labor

If you need assistance in developing a health and safety program for your business, the New York State Department of Labor offers a free consultative service. A Department of Labor safety specialist will visit your site, review operations and advise you on OSHA requirements and methods of improving safety. No fines or penalties will be imposed as a result of the audit.

For more information contact the Department of Labor, Consultation Services Program, Albany, New York, phone 518-457-2810.



Manual Available On Aboveground Tank Installation

The Petroleum Equipment Institute (PEI) has recently published a new manual entitled "Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling." This 36-page manual details ways to help minimize leaks and spills, storage system failures and reduce fire-safety and environmental hazards, while avoiding procedures that will needlessly increase costs.

The document covers stationary, shop-fabricated, horizontal and vertical tanks built for aboveground storage of flammable and combustible fuels.

The single copy price of RP200-92 is \$15.00 including postage and handling. Write to PEI, P.O. Box 2380, Tulsa, OK 74101-2380 or call (918)-494-9696.



Guidance On Aboveground Tank Inspections

by Paul J. Sausville, P.E.

Guidance on performing structural inspections is available from the American Petroleum Institute (API) at 202-682-8375.

7 Important API publications to review include:

- API Standard 650, Welded Steel Tanks for Oil Storage
- API Standard 653, Tank Inspection, Repair, Alteration and Reconstruction
- API Guide for Inspection of Refinery Equipment

Inspections require the assistance of personnel with specialized training. These specialists will assess the structural integrity of the tank including an inspection of the shell, bottoms, seams and foundations.

Shell and Bottom Plates - Thinning or pitting of the tank shell or bottom can occur due to corrosion. Thickness measurements should be compared with criteria in API Standard 653 to determine if the

tank is fit for continued service.

Tank Welds - Aboveground tanks are constructed of rigid steel plates. Aligning and welding the seams of these plates requires a great deal of skill. Not all tanks were built with a high level of workmanship. During the inspection, weld joints should be checked for proper alignment, tightness and porosity in accordance with API 650.

Roundness - Tank distortion and roundness should be carefully examined. Any out-of-roundness greater than 1/2 inch at the 1 foot level above the tank bottom, or 1 1/2 inches above the 1 foot level may be out of tolerance with API standards. A qualified engineer should be consulted.

Foundations - Tanks on earthen grades frequently settle and begin to tilt. Any tank which is more than 1 inch out of plumb in 17 feet should be examined by a qualified engineer to see if continued service is warranted.

Bulges or depressions in the tank

bottom are usually brought on by settlement. They are signs that the steel is undergoing abnormal stresses. The bottom must be evaluated further or repaired if the deflection from a horizontal plane is greater than 0.03 of the radius of the area affected.

Foundations should be level and free of washouts which may have been created by stormwater. Concrete slabs and ringwalls should be inspected for cracks and spalling. Any settlement should be documented and checked to see if alignment with piping systems or tank bottom integrity have been affected.

Other Considerations - As part of the inspection, the overall operability of the tank should be assessed. Vents should be inspected and reviewed for adequacy. Gauges, alarms, pumps, valves, cathodic protection systems and secondary containment systems should all be examined. Painted surfaces and internal liners should be checked and any needed repairs made.



Question and Answer Section

Question - "Do double-walled aboveground tanks meet the secondary containment requirements set forth in the State Petroleum Bulk Storage (PBS) Regulations?"

Answer - Double-walled aboveground tanks do not satisfy regulatory requirements for secondary containment found in Section 613.3(C)(6) of the PBS Regulations. While double-walled tanks provide adequate protection for underground tanks which are subject to corrosion, they do not serve a similar purpose when used aboveground.

Secondary containment for aboveground tanks usually consists of dikes and impoundments which serve the following purposes;

- containment of overfill spills which usually discharge from the vent;
- provide a fire break;
- collect spills at fill ports and from ruptured delivery hoses;
- contain leaks from pumps, valves, and connections to the tank;
- contain discharges from valves left open by accident;
- provide a barrier between traffic areas and the tank; and
- contains spills caused by bullets and other actions by vandals.

For a secondary containment system to be effective it must catch and contain spills which may occur at the site. A system of ditches and remote impoundment may be an effective method of protection. This system not only meets the criteria above but lowers the potential for a pool fire within the containment basin at the base of the tanks.



INTERNAL INSPECTION OF ABOVEGROUND PETROLEUM TANKS

by Joe McDonald, MOSF Coordinator

New York State has approximately 20,000 aboveground petroleum storage tanks with capacities ranging up to 10 million gallons. Since December 27, 1985, the Department of Environmental Conservation (DEC) has required owners or operators of these tanks to perform monthly visual inspections to identify any leaks and maintenance deficiencies.

Starting on December 27, 1990, DEC's Petroleum Bulk Storage Regulations have required that certain aboveground petroleum storage tanks and connecting underground pipes be inspected every ten years. These inspections may include a combination of tightness testing and a detailed structural inspection of the walls and tank bottom.

Inspection of petroleum storage tanks must be performed with both safety of personnel and compliance with the regulations in mind. Only qualified personnel should prepare the tank for examination, perform the inspection and provide the follow up documentation.

To help tank owners or operators understand the Department's regulations, the following questions are addressed.

What size storage tanks must be inspected ?

All aboveground petroleum tanks with a capacity of 10,000 gallons or more and smaller tanks "which could reasonably be expected to discharge petroleum to the waters of the state" must be inspected when the tank is ten years old and every ten years thereafter. Even tanks less than

10,000 gallons of capacity, if in contact with the ground or near surface water, must be inspected.

In general, any tank within 500 feet of a stream, well, wetlands, lake, storm drain, or classified aquifer is required to be inspected every ten years.

Are any aboveground tanks exempted from the ten-year inspection requirement ?

Yes. Tanks which are entirely aboveground, storing #5 or #6 fuel oils, or installed to meet DEC's construction standards are exempt from ten-year inspections. Construction standards require that new tanks have secondary containment under the tank bottom, have a leak monitoring system and be constructed to meet design and manufacturing standards set forth by Underwriter's Laboratories or the American Petroleum Institute.

How do I prepare a tank for an internal inspection ?

Safety and prior planning are two key elements to a successful inspection. Internal inspections require that all petroleum liquids and vapors be removed prior to entry by personnel. A "Safety Plan" must be written and approved by the company's safety officer to minimize the explosion and health hazards associated with petroleum products.

What do I do with the waste often found in the bottom of the tank ?

Liquids or solids found on the bottom of the tank which can not be used as initially intended are generally considered waste and must

be properly handled and disposed. Proper disposal will require that a transporter, permitted by this Department, transport the waste material to a permitted treatment facility for further use or disposal.

What is an acceptable inspection ?

A ten-year inspection must consist of a precision tightness test of the tank and connecting underground lines, or an internal inspection of the tank walls and bottom for leaks and metal thickness using an acceptable nondestructive examination (NDE).

Because most tightness tests are incapable of detecting bottom leaks in aboveground tanks at the rate of 0.05 gallons acceptable by DEC, testing is acceptable only for piping and for tanks on a case-by-case basis. Anyone attempting to perform a tightness test should work closely with the regional DEC engineer to ensure that the test is valid and meets DEC requirements.

Internal inspection must be conducted by a qualified person using accepted industrial testing and inspection practices. This generally includes the use of one or more nondestructive examination procedures.

What is a nondestructive examination (NDE) ?

Nondestructive examination is a series of measurements of the tank shell, welds, seams and tank bottom for porosity, tightness and soundness. NDE may be accomplished by using magnetic particle, ultrasonic, liquid

penetrant, radiographic or other methods conducted by qualified inspectors. The NDE is an accepted industrial testing and inspection practice found in such publications as American Petroleum Institute (API) 653, "Tank Inspection, Repair, Alteration and Reconstruction"; API 650, "Welded Steel Tanks for Oil Storage"; or American Society of Mechanical Engineers (ASME), "Boiler and Pressure Vessel Code".

What about reporting ?

The owner or operator must keep a record of monthly and 10-year inspection and provide them to DEC upon request. All tightness test or internal inspection reports must include the facility registration number, tank identification number, date of inspection, results of inspection, and the inspector's certification, signature and address.

What is a tank inspector's certification ?

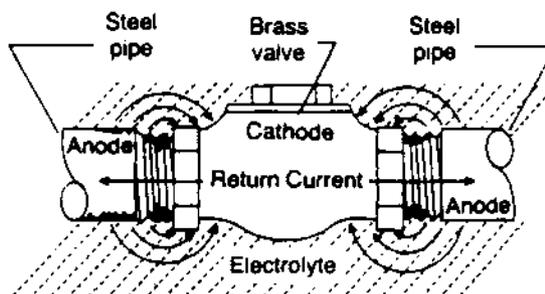
American Petroleum Institute (API Bulletin 653) has established standards and certification requirements for tank inspectors. Owners or operators should verify that the inspector they hire is certified by API. The tank inspector will then certify to the tank owner that the tank is sound and the inspection has been performed in a manner consistent with the DEC regulations.

How long must the records be maintained ?

Reports must be maintained and made available to the Department for a period of at least ten years. If any test or inspection reveals a leak, it must be reported within two (2) hours to DEC Spill Hotline by calling 1-800-457-7362.

Why Do Pipes Leak ? Bimetallic Corrosion May Be the Cause.

Have you ever noticed that when two different metals are fastened together (such as copper to steel) that serious corrosion of the joint occurs. The cause of the corrosion can be



An Example of Bimetallic Installation

- ☛ Always connect steel pipe flanges with steel bolts
- ☛ Always connect copper pipes to copper pipes
- ☛ Always connect brass valves to other brass fixtures
- ☛ Always connect new steel pipes to other new steel fixtures

traced to the corrosion cell created by the two different metals and the moisture which has activated the corrosion process. Electrical current is actually flowing from one metal to the other (through the moisture or electrolyte) thus corroding the metal which is losing the current. See diagram. Even connecting old rusted steel to new steel can set up a corrosion cell. The rate of corrosion can be substantially lowered by connecting "like metal" to "like metal" (i.e., steel to steel, brass to brass, etc.)

Uninformed repairmen frequently connect dissimilar metals thus causing the joint to corrode at an abnormally fast rate. A leak to the environment is the end result.

Industry Rushing to Meet OPA Deadline

Facilities facing a Feb. 18, 1993 deadline under the Oil Pollution Act of 1990 (OPA 90) to submit oil spill response plans or cease operations scrambled to assemble plans in accordance with proposed regulations published in the federal register on February 17, 1993 by the U.S. Environmental Protection Agency (EPA).

In the absence of timely regulations from EPA, which were due Aug. 18, 1992, many facilities are examining related guidance put out by the Coast Guard and the Department of Transportation's Research and Special Programs Administration (RSPA), and turning to trade associations, consultants and attorneys for advise.

Despite the late arrival of this information, facilities that expect to be covered by OPA 90 (see 40 CFR 112 or the Spring 1992 issue of the TANK BULLETIN) should have made a "good faith" effort at preparing response plans and should have submitted them to EPA by the Feb. 18 deadline.

Regulated entities should certify that they have calculated the "worst-case discharge" planning volume for their facility and have the necessary private resources under contract to clean up such a spill. Facilities should then request EPA permission to continue operating for two years without an approved plan as per OPA 90. For further guidance, contact EPA at 908-906-6905.



ENFORCEMENT NEWS

Inspections by Department staff during 1992 identified hundreds of violations of the Department's Petroleum Bulk Storage (PBS) regulations. From late 1991 to date over 150 facilities have been fined and dozens more are pending legal action by the Department. The most frequent violations noted were: failure to register tanks, failure to notify the Department of a spill, failure to test tanks and failure to install secondary containment.

Under the Petroleum Bulk Storage law, enacted in 1983, owners and operators of underground and aboveground tanks with a combined capacity of more than 1,100 gallons are required to register their tanks with the Department and undertake spill prevention measures. Facilities such as apartment buildings, shopping centers, gas stations, utilities, motor vehicle fleet operators and petroleum dealers usually are subject to this law. Currently, there are approximately 40,000 facilities registered with the Department. It is believed that approximately 12,000 additional facilities have not registered.

Tank owners and operators should be aware that the Department's efforts to enforce the PBS regulations are ongoing. Violations of the PBS regulations are subject to penalties of up to \$25,000 per day of violation. If you need assistance, registration forms, or a summary of the regulatory requirements, please contact the nearest DEC regional office or call the Department's Bulk Storage Helpline. The toll-free number is 1-800-242-4351.

The table below is a selection of cases resolved from late 1991 to January 1993. It does not reflect all cases. In addition to the frequent violations noted above, this table includes cases involving failure to remediate spills and failure to meet the retrofitting requirements of the PBS regulations.

Recent Enforcement Cases

New York City

	<u>Penalty*</u>
Terminelle, Brooklyn	\$100,000
GATX, Staten Island	90,000
NYC Housing Authority	500,000**
Other (64 cases)	***

Westchester, Dutchess, Ulster, Orange and Putnam Counties

Jay Electric, New Rochelle	\$2,500
Shoreline Oil, New Rochelle	2,000
British Petroleum Corp., Ellenville	2,000
Spiegel & Son Fuel, Tuxedo Pk.	2,000
Advance Fuel, Port Jervis	1,000
Sparrowbush Oil, Sparrowbush	1,000
Mahopac Fuel, Mahopac	2,500
Agway Petroleum, Verbank	3,000
Marist College, Poughkeepsie	500
Kalaydjian Pontiac, Mt. Kisco	800

Rensselaer, Albany, Otsego, Schoharie, Schenectady, Columbia and Montgomery Counties

Bray Terminals, Rensselaer	\$2,250
Foster Refrigeration, Hudson	2,750
Denny's Fuel Service, Rotterdam	2,000
Key Bank, Cooperstown	1,000
Main Brothers Oil, (4 facilities)	15,000
Agway Petroleum, (7 facilities)	27,750
Powell & Minnock, Coeymans	4,000
Town of Edmeston, Edmeston	250
Sun Refining & Mktg., Rensselaer	10,000
Tiffany's Petroleum, Delanson	3,000

Rensselaer, Albany, Otsego, Schoharie, Schenectady, Columbia and Montgomery Counties (cont'd)

	<u>Penalty</u>
Dreyfus Energy, Green Island	12,000
Sears Petroleum, Glenmont	4,000
Niagara Mohawk, Chatham	2,500
Amtrak, Rensselaer	100,000
Bassett Hospital, Cooperstown	2,500
Wever Petroleum, Schaghticoke	12,000
Otsego Co. Public Safety, Cooperstown	1,500
Eagle Oil, Ft. Plain	2,500
Penske Truck Leasing, Fultonville	3,000
Browning Ferris Ind., Colonie	4,000
Keaney, Sharon Springs	100
Gelbsman, Oneonta	250

Saratoga, Essex, Franklin, Fulton and Washington Counties

Mobil Oil, Wilton	\$2,500
Cumberland Farms, Whitehall	7,500
Francis Bezio, Keesville	7,000
Gilmore Oil, Johnstown	500
Griffith Oil, Elizabethtown	2,000
King Fuels, Moreau	5,750
Lawrence's, Keene	2,500
Leroux Oil, Ft. Covington	1,000
Mid Valley, Lake George	6,750
Malone Oil, Malone	5,000
Muzikar's Service, Schuylerville	2,500
Ken Pickreign, Tupper Lake	100
P.J. Hyde & Sons, Saranac Lake	500
Saratoga County, Ballston Spa	10,000

Recent Enforcement Cases(cont'd)

Saratoga, Essex, Franklin, Fulton and Washington Counties (cont'd)

	<u>Penalty</u>
Simco Leather, Johnstown	2,500
Whiteface Inn, Lake Placid	3,750

St. Lawrence, Oneida, Jefferson, Lewis and Herkimer Counties

Singer Transport, Utica	\$6,500
Coca Cola, Massena	3,150
Nevills Bros., Carthage	3,200
Yancey Polaris, Lowville	750
Doyle Hardware, (3 sites) Utica	1,500
West Leyden Garage, W. Leyden	6,500
Town of Warren, Warren	1,500
Edson Martin, Canton	10,000
Matts Service Sta., Brashner	2,500
Pete's Lake Fuels	29,900
Sears Oil Co., Marcy	5,000
Bruzzese Gas Sta., Utica	25,300

Chemung, Monroe, Stueben, Wayne, Ontario and Livingston Counties

	<u>Penalty</u>
Valley Asphalt, Bath	\$1,000
Victor Insulators, Victor	2,500
Buell Oil Geneseo (2 facilities)	9,000
Pal Oil, Palmyra	1,500
United Refining, Rochester	2,000
Alaskan Oil Rochester	20,000
Horseheads Central Schools, Horseheads	1,000
Town of Geneseo, Geneseo	500
Chemung Spring Water Inc., Chemung	2,500
R. Cowles, Wayland	750

Erie, Chautaugua and Cattaraugus Counties

W.J. & R.W. Realty, Tonawanda	\$500
B. Wooschlager (2 facilities), Kennedy and Randolph	500

* This column shows only payable penalties. In many cases, there are suspended penalties as well.

** Environmental Benefit Project

*** Limited space in this article does not permit the listing of additional cases involving late registration violations in the New York City area.



Register Now for Workshop on Underground Tank Regulations

Workshops to discuss state and federal petroleum storage regulations are being scheduled at numerous locations in New York State. All tank owners, contractors and consultants who have questions on state and federal petroleum regulations are invited to the DEC workshop. Pre-registration at no cost can be done by calling the regional office. Topics that are scheduled to be covered include:

- overview of state and federal regulations,
- leak detection requirements,
- upgrading requirements for corrosion protection,
- upgrading requirements for spill and overfill prevention devices, and
- site assessment requirements at tank closure.

In New York State, many petroleum storage facilities are subject to two sets of regulations, the NYS DEC Petroleum Bulk Storage regulations and the US EPA Underground Storage Tank regulations. These regulations cover underground storage tanks that contain motor fuels and other petroleum products. These regulations differ because the state and federal regulations were developed at different times. Therefore, trying to achieve compliance with both sets of regulations can be confusing.

The Petroleum Bulk Storage regulations require owners of underground and aboveground tanks that contain motor fuels, lube oils, and heating oils at a site with a total storage capacity of over 1100 gallons to register their tanks with the DEC and comply with leak detection and inspection requirements. The Underground Storage Tank regulations require that owners/operators of underground tanks with a capacity of 110 gallons or more that store petroleum or hazardous chemicals comply with leak detection requirements and mandatory upgrading requirements.

These workshops will be held during late April and early May. For more information on the exact times and locations, contact your local DEC Regional Office.



TANK BULLETIN

Division of
Spills Management

Issue Number 13
Fall 1994

Regulatory Streamlining: Stipulations

The Department of Environmental Conservation announces the implementation of its Stipulation Agreement (STIP) process. The no-fee STIP was initiated as a result of DEC's desire to streamline the petroleum spill remediation program. As the number of petroleum-contaminated sites requiring cleanup increases in New York State, so does the need for more rapid and cost-effective ways to investigate and remediate these sites. Any means of effectively streamlining the process contributes towards this goal.

The STIP is a short-form consent order which contains a negotiated clean-up plan and schedule. The development of a written clean-up plan and project-specific schedule is expected to prevent many of the potential delays due to misunderstandings of verbal approvals and generic schedules, and to obtain a legal commitment to a timely clean-up of petroleum contaminated sites. Since a STIP is a Departmental order which incorporates appropriate discharge limits, no air or water discharge permits are required.

This is a win-win opportunity for the Potential Responsible Party (PRP) and the DEC, and ultimately, the environment. The PRP and the DEC can accelerate project planning and save time and money associated with acquiring permits. Shorter cleanup times and economical projects will ultimately result in savings for all and a cleaner, healthier environment.

This article and the enclosed *clip 'n save STIP brochure* (see pages 5 & 6) are part of an outreach program designed to educate as much of the regulated community as possible, including attorneys and municipal officials. The Division of Spills Management is available upon request to provide guidance on how to use and implement Stipulation Agreements. DEC views the Stipulation Agreement as a giant-step towards its goal of regulatory workload reduction by streamlining and improving the spill cleanup process.

If you have any questions about STIPs, or are interested in obtaining extra copies of the STIP brochure or having a presentation, please call the Division of Spills Management at (518) 457-3891. □

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Chemical Bulk Storage Regulations Promulgated

Regulations covering the storage and handling of hazardous substances became final on August 11, 1994. The Phase II Chemical Bulk Storage (CBS) Regulations were developed with input from the chemical industry and the business community following several years of study by the Department of Environmental Conservation.

Designed to prevent releases of hazardous substances and to reduce the growing costs associated with the environmental clean-up of spills and leaks, the regulations establish State-wide standards for storing and handling over 1,000 hazard substances.

The CBS regulations contain five parts (6 NYCRR Parts 595, 596, 597, 598 and 599).

Part 595 - Reporting Releases of Hazardous Substances

Amendments to Part 595 expand reporting requirements to cover releases from a variety of sources, not just bulk storage facilities. Part 595 now requires owners, operators, contractors and others to report the following types of releases to the environment:

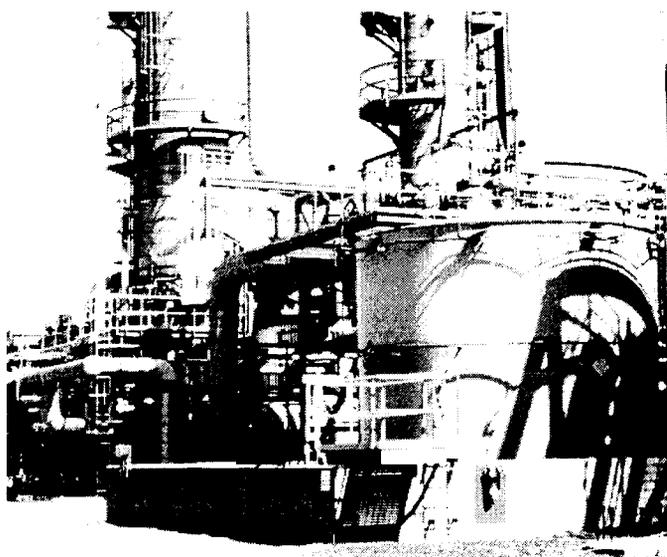
- one-time reporting of continuous and stable releases;
- reporting of releases exceeding the reportable quantities identified in Part 597; and
- reporting of releases even if the release is less than the reportable quantity if the release could result in a fire or explosion, or pose a health risk to adjacent parties.

Going beyond releases from registered storage facilities, this regulation applies to all releases, including releases from chemical process tanks, certain transportation accidents, chemical fires and explosions.

Part 596 - Hazardous Substances Bulk Storage Regulations

Part 596 which has been in effect since 1988, requires the registration of aboveground chemical storage tanks with a capacity of more than 185 gallons or any size underground tank. Since 1988, over 2,000 facilities have been registered with the DEC. Delivery of a chemical to an unregistered tank is prohibited.

A new section has been added to Part 596 which authorizes DEC to request a Best Management Plan



Tank owners must prepare spill prevention plans by August 11, 1996, and provide diking by December 22, 1999.

(BMP) if a series of minor releases or a single release causing an adverse environmental impact occurs at facility. The plan would contain risk assessments and identify preventive maintenance practices and other measures to be followed by the owner or operator to reduce the occurrence of similar releases.

Part 597 - List of Hazardous Substances

Part 597 contains a list of over 1,000 federally identified hazardous substances and the reportable quantities related to each substance. To keep current with the federal lists, forty-three (43) substances (including ethylene glycol) have been added to the list and 37 have been deleted. Modifications in the reportable quantities have been made to 181 substances.



Part 598 - Handling and Storage of Hazardous Substances

Good technology and sound engineering practices can substantially reduce the risk of a hazardous substance release. Part 598 contains standards for storing and handling hazardous chemicals.

The following summarizes major requirements of Part 598:

- Owners of facilities must prepare a Spill Prevention Report (SPR) within two years. The report must include a copy of the registration application and certificate, site map, assessment of past spills, status report on compliance and spill response plan, among other things.
- Owners of underground storage tanks (UST's) must meet the EPA UST requirements.
- Upgrading of underground tanks is required by December 22, 1998. Aboveground tanks must be upgraded by December 22, 1999. Secondary containment is required for aboveground tanks, transfer stations and non-stationary tank storage areas. A program for preventing leaks from pumps and valves must be in-place.
- Aboveground tanks must be structurally inspected every five years.
- A program for maintaining equipment must be in-place.
- Standards for permanently closing a chemical tank, for cleaning the tank and disconnecting all lines are provided.
- Site assessments must be performed at the time of closure of any underground tank or, when directed by the Department, at any facility failing to comply with the regulations.

Part 599 - Standards for New and Substantially Modified Facilities

If you are planning to install a new storage system, you should be aware that uniform State standards must be followed beginning February 11, 1995. Part 599 contains technical standards for new underground storage tanks, aboveground tanks, secondary containment systems, leak detection, installation, transfer stations, piping, overfill prevention equipment, and monitoring of pressure, vacuum and temperature of pressure vessels.

If you would like to obtain a copy of the Chemical Bulk Storage Regulations (Parts 595 - 599), or have questions about them, please call the Bulk Storage Helpline - 1-800-242-4351. We will be glad to work with you in order to help you understand the requirements. □



DEC Hazardous Substances Manual Receives Award of Achievement

DEC's manual entitled *Storing And Handling Hazardous Substances* has received the "Award of Achievement" by the Rochester Chapter of The Society for Technical Publications. Judges of the manual described it as "gripping and readable" with clear purpose and excellent content.

The manual offers guidance on acceptable management practices in storing and handling hazardous substances. It also references standards offered by technical and professional societies.

Copies may be obtained at a cost of \$15 per copy from:

The Health Education Services
P.O. Box 7126
Albany, NY 12224

or by calling (518) 439-7286.

The manual was prepared by the technical staff of O'Brien and Gere Company and the DEC, Division of Spills Management. Project managers were Robert Bellandi of O'Brien and Gere, and Jacqueline Sibblies of DEC. □



Have You Upgraded Your Tank?



Start Planning Now...

You have until December 22, 1998 to upgrade federally regulated tank systems installed before December 22, 1988.

Upgrading simply means that by that date your underground storage tank (UST) system must have:

- Corrosion Protection
- Spill Prevention Device
- Overfill Prevention Device
- Leak Detection Device*

* The deadline for leak detection was December 22, 1993. For USTs over 1,000 gallons, an alternative to installing a leak detection device is more frequent tank testing. For bare steel tanks, annual tank testing is required until 1998 when a leak detection device must be installed. For more information on the 1993 leak detection deadline, see the article in issue #12 of the *Tank Bulletin*.

Owners of existing UST systems (those installed prior to December 22, 1998), must choose one of the following actions prior to the 1998 deadline:

- Add Spill and Overfill Prevention Devices, and Corrosion Protection
- Close the Existing UST System
- Replace the Existing UST System with a New UST System

The Top 6 Reasons to Upgrade Or Replace Early?

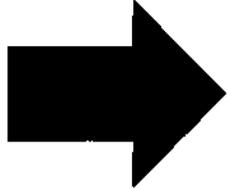
6. Your insurance company may offer financial incentives to upgrade or replace earlier.
5. If you miss the deadline, you can be cited for violations and fined.
4. Failure to be in compliance may reduce or eliminate your insurance coverage.
3. This work can take several months. Difficulty in obtaining local permits, bad weather or contractor delays could cause you to miss deadline if you wait until the last minute.
2. As deadline approaches, increased demand for consultant and contractor services may result in higher costs and delays in scheduling.
1. Prevents leaks that might otherwise occur between now and December 1998. This benefits your business and the environment, eliminating the need for costly mandatory clean-ups or potential damage claims.

For More Information

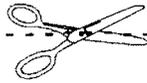
The upgrading requirements of the federal Underground Storage Tank regulations are outlined in Section 40 CFR 280.21 of the regulations entitled *Upgrading Existing UST Systems*, and the EPA publication *Musts for USTs*. To talk with a DEC staff person, please call your nearest DEC regional office. Phone numbers are listed at the end of this newsletter.

You can also call EPA's toll-free Hotline at 800-424-9346 to ask questions about what it takes to upgrade a substandard UST or to request a copy of the publication on upgrading entitled *Don't Wait Until 1998 - Spill, Overfill, and Corrosion Protection for Underground Storage Tanks* (publication number EPA 510-B-94-002). □

*Clip,
Fold, &
Save
This
Valuable
STIP
Brochure.*



*It Could
Save You
Time And
Money If
You Have
A Petroleum
Spill.*



How Does It Work?

Within a short time after a spill has occurred, a PRP will receive a STIP Guidance Package, including a "Letter of Responsibility," a Stipulation Agreement, and discharge limits, from the DEC Regional Director.

The letter informs the PRP that based on an investigation, the DEC believes that the PRP is responsible for a spill. The PRP is asked to sign the STIP, agreeing to be responsible for the cleanup. Work can and usually will begin prior to the STIP being signed. Any milestone already completed will be identified in the schedule. The PRP can discuss a proposed schedule and include the schedule with the signed STIP. As stated above, the schedule need not be totally complete at this time. As more information becomes available, amendments to the schedule can be made with the approval of the Regional Spill Engineer. A copy of the STIP, signed by the PRP and the Regional Director, will be returned to the PRP.

What if a PRP Refuses to Sign a STIP?

DEC is responsible by law to ensure that an appropriate and effective cleanup takes place. Therefore, if a PRP refuses to sign a STIP, the Department will hire its own contractor, conduct the spill cleanup, and bill the PRP. It is critical that appropriate remediation be initiated as soon as possible.

Why Should a PRP Sign a STIP ?

By signing a STIP, PRPs protect themselves by ensuring that there is no misunderstanding over what and when things must be accomplished.

Remediation plans and schedules, which prior to the STIP were informally agreed-upon, will now be specific and protect both parties. It also eliminates the need to acquire air and water discharge permits.

Does a Signed STIP Increase a PRPs Liability?

Signing a STIP does not increase a PRP's liability. A PRP is responsible for the cleanup regardless of whether the STIP is signed. By signing the STIP, the PRP expresses desire to cooperate with DEC to clean up the spill. If the PRP is the discharger and DEC determines that enforcement is necessary, cooperation of the PRP is one of the significant issues considered by DEC when deciding on potential fines and/or penalties.

What if a PRP is Not Responsible for a Spill?

If the DEC believes a party is responsible for a spill and further investigation proves that the PRP was not responsible for the spill, the PRP may seek reimbursement from the New York Environmental Protection and Spill Compensation Fund (the Spill Fund) for appropriate and previously expended cleanup costs.

Where To Get Help

Questions on the STIP program should be directed to the DEC Central Office at (518) 457-9412. Questions regarding a particular STIP should be directed to the appropriate DEC Regional Office. (The phone numbers and Regional Office addresses are listed on the back page of the latest issue of the *Tank Bulletin*.)

Department of Environmental Conservation

Petroleum Cleanup

Stipulation Agreement
Site Cleanup Plan

Stipulation Agreements

New York State
Department of Environmental Conservation

MARIO M. CUOMO, Governor
LANGDON MARSH, Commissioner

A Stipulation Agreement (STIP) is a short-form consent order between the Department and a potential responsible party (PRP) who accepts responsibility for clean-up of a petroleum spill.

What is the Purpose of a STIP?

The STIP serves two primary purposes. First, it serves as a legally binding agreement under which the PRP agrees to clean up an oil spill, in accordance with an agreed-upon remediation plan and schedule. Second, when a PRP enters into a STIP, no discharge or emission permits are needed, as the discharge or emission limits are incorporated into the agreement.

Why is the STIP Program Being Implemented?

The Navigation Law holds a spiller responsible for the cleanup of a petroleum spill and assigns DEC oversight responsibility to ensure the site is returned to its pre-release conditions. In satisfying this responsibility, regional spill investigators review and approve remediation plans and schedules. Until now, this review has been largely an informal process with verbal approvals and generic schedules. While this process worked in some cases, there was potential for misunderstandings, and there were other unwilling parties who were not as diligent in maintaining their schedules. Enforcement actions against those persons is hindered by the absence of formal schedules, work plans and results, without which unacceptable performance can be subject to individual interpretation. The STIP removes the subjectivity from a remediation plan and schedule by having the PRP agree in writing to a negotiated plan and schedule.

Additionally, cleanup projects can be delayed awaiting a discharge permit. If discharge limits are established expeditiously, such as in a STIP, site cleanups can begin as soon as remediation plans are approved, thus benefitting the PRP and the environment.

What is the Difference Between a STIP and a Long-Form Consent Order?

The Stipulation Agreement is a short-form consent order in contrast to a long-form consent order. There are three primary differences between the two forms of consent orders:

1. The STIP will address only the cleanup portion of a spill site, whereas the long-form order may address other aspects of the situation, including possible fines and/or penalties.
2. The terms of the STIP are non-negotiable (except for the corrective action plan and schedule), whereas the long-form order is drafted to address site-specific issues, and its terms are subject to negotiation.
3. The STIP is designed as a fast track procedure with predetermined non-negotiable discharge limits. The long-form order is more complex, and evolves after a lengthy negotiation process.

Who Decides Whether a Site Should Receive a STIP or a Long-Form Order?

DEC may decide that due to the complexity of the remediation plan, or the circumstances under which the spill occurred, that a long-form order is appropriate instead of a STIP. The PRP can also request that they be allowed to negotiate a long-form consent order instead of a STIP.

Will All Spill Cleanups Require a STIP?

Not all spill cleanups will require a STIP. A STIP is intended for any site which will require a moderate to extended period of time to remediate, or which will require a discharge permit (air or water). They are not necessary for quick cleanups where, in the opinion of the Regional Spill Engineer, work will be completed in a relatively short period of time.

Are STIP Conditions Flexible?

The STIP is intended to support a PRP as well as DEC. It does not require a PRP to admit responsibility for the spill; however, it does require the PRP to agree to clean up the spill in accordance with an agreed-upon schedule. The PRP will, in fact, develop the schedule along with DEC. The schedule may identify any or all of the following milestone activities: initiation of the investigation, completion/submittal of the investigation report, submission of the remediation plan, and project start date. DEC recognizes that all this information is typically not available at the beginning of the STIP process. Also, more complex sites require more investigative time, and remediation plans may need to be adjusted to reflect site conditions. Therefore, the schedule is adjustable subject to approval of the Regional Spill Engineer. Having a schedule of required activities will eliminate any confusion between a PRP and the DEC as to what should have taken place and when it should have occurred. It will also save a PRP time and money by not having to apply for air or water discharge permits. A PRP's discharge conditions, which have to be maintained throughout the project, are identified in the STIP. All discharge limits meet existing State and/or federal regulatory requirements.

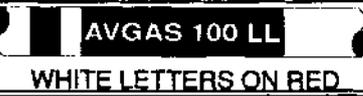
NEW COLOR CODING FOR HIGH AND LOW SULFUR FUELS

The color code in the American Petroleum Institute's (API) Recommended Practice 1637 is being amended as indicated in the table below. It has been redesignated as either "low sulfur" or "high sulfur" fuel. The API Recommended Practice 1637 entitled, "Using the API Color-Symbol System to Mark Equipment and Vehicles For Product Identification at Service Stations and Distribution Terminals", will be available from API in late fall by calling API Publications at 202-682-8227.

PRODUCT	LOW-SULFUR	HIGH-SULFUR
Diesel Fuel	Yellow hexagon	Yellow hexagon with a blue stripe
#1 Fuel Oil	Purple hexagon with a yellow stripe	Purple hexagon with a yellow stripe & a blue stripe
#2 Fuel Oil	Green hexagon	Green hexagon with a blue stripe
Kerosene	Brown hexagon	Brown hexagon with a blue stripe

COLOR CODING FOR AVIATION GASOLINE AND JET FUEL

The API Bulletin 1542, Airport Equipment Marking for Fuel Identification, provides the aviation gasoline (avgas) and jet (turbine) fuel color coding system (see chart below) for airport use. It is not only for airport equipment, but also for all situations where it is desirable to identify avgas and turbine fuels by type and grade.

PRODUCT (AVIATION FUELS)	LOADING VALVE, JOINTS, VALVES & FITTINGS	PUMP, METER, PIPING & FILTERS	BANDING	MARKING
AVIATION GASOLINE GRADES (AVGAS)				
AVGAS 80	RED	WHITE*	1 - RED	 WHITE LETTERS ON RED
AVGAS 100	GREEN	WHITE*	1 - GREEN	 WHITE LETTERS ON RED
AVGAS 100LL	BLUE	WHITE*	1 - BLUE	 WHITE LETTERS ON RED
AVIATION TURBINE FUELS (JET FUELS)				
JET A	BLACK	WHITE*	1 - BLACK	 WHITE LETTERS ON BLACK
JET A -1	GRAY	WHITE*	2 - BLACK	 WHITE LETTERS ON BLACK
JET B	YELLOW	WHITE*	3 - YELLOW	 WHITE LETTERS ON BLACK

* Aluminum is equally suitable - or, if Piping is all the color shown for the Product Loading Valve, Joints and Fittings, then no Banding is necessary.



by Jacqueline Sibbles, Chemical Engineer

Risk and hazard assessments (or analyses) are not new concepts. For decades they have been employed by decision makers in various areas of technology to determine a product's or project's viability. One primary developer and user of risk and hazard assessment techniques is the nuclear industry.

During the last decade, however, several catastrophic incidents worldwide have aroused society's anxiety about the safety of industries which manufacture or handle hazardous materials. Accidents such as those which occurred in Bhopal, India, and Chernobyl in Ukraine, were highly publicized and served to make health, safety and environmental protection major public concerns.

Many government regulatory agencies have addressed this growing concern by requiring operators to "prove" that their facilities are "safe" and that safety, public health and environmental risks have been minimized. Risk and/or hazard assessments are required by the section 112(r) of the Clean Air Act Amendment of 1990, OSHA's Process Safety Management Standards (29 CFR 1910.119) and the Oil Prevention Act of 1990 (OPA '90).

Risk assessment (or analysis) and hazard assessment (or analysis) are often used interchangeably. In fact, they are closely related. The term "**risk assessment**" implies a more comprehensive study than a "**hazard assessment**". A risk assessment or analysis will include a hazard assessment phase (refer to Figure 1). Risk assessment is the

process of evaluating the probability that an event will occur, and comparing the resulting data against acceptability of the risk posed. Mathematically expressed,

Risk = Probability x Consequence.

Hazard assessment identifies the sources and causes of potential accidents and the extent of their damage to property, people and the environment.

Hazard Assessment

Several methodologies for conducting hazard assessments were developed over the years; some are qualitative and some are quantitative. Qualitative methodologies are usually used in hazard identification. Some examples are safety or process review, and checklist analysis.

Quantitative hazard assessment methods are used to numerically rank hazards and their consequences at a facility. Some examples of these are the "What If" analysis, Failure Modes, Effects and Criticality Analysis (FMECA) and the Hazard and Operability (HAZOP) study. There are also two well known logic methods, the Fault Tree Analysis (FTA) and the Even Tree Analysis (ETA).

These assessment methods, while serving a similar purpose, give different kinds of results in varying degrees of specificity (refer to Table 1, pg 10). A checklist analysis gives a general evaluation of a facility's overall safety status, and the information obtained is dependent on the level of detail of the questions or the checklist used.

For a hazardous substance storage facility, questions on a checklist may include: a) is there a material safety data sheet on site?; b) are operating personnel familiar with the information on it?; c) are inventory records kept current?; and d) are routine inspections being carried out according to the appropriate technical guidance document?

A HAZOP study, on the other hand, is a formal structured technique used to assess the safety of a particular piece of equipment or process, by matching guide words with operation parameters to determine the consequence of a specific failure. For example, to find out the effects a pump failure on the operation of a storage unit, the guide words "No", "More" or "Less" would be combined with the operating parameter "Flow". The phrases created are actually the possible deviations from normal pump operation ("no flow", "more or increased flow" and "less or decreased flow"). All consequences or results of the deviations are analyzed and documented. Preventive procedures or design changes are then suggested for each consequence. The result of this study is a table of potential failures and causes.

Risk Assessment

Regardless of the hazard assessment method used, the probability of an accident may be analyzed to determine whether the consequences from that accident are deemed unacceptable to the facility, regulators or the public. Risk assessment is a tool which can be used by the management when



making decisions regarding choices of equipment and operating procedures. For example, the resulting data from a risk assessment study on two types of pressure release devices, used on a piece of equipment which stores a toxic gas, will indicate which device management should install.

The risk associated with a particular operation is calculated by determining the consequence(s) of any possible accident and computing the probabilities of its occurrence or frequency. These values are obtained from: a) equipment and instrument failure rate or repair rate data; and b) human error probabilities and product or operation recovery probabilities. Both sets of data should be facility specific, taken from records maintained on operations at the facility.

For a new facility, generic failure and repair rates may be obtained from trade organizations such as Institute of Electrical and Electronic Engineers (IEEE), since the facility does not yet have a history of these events. For any facility, the evaluation of human error and recovery probabilities are more difficult in many ways. A fair estimate may be derived by dividing the number of errors by the number of opportunities for errors under certain facility conditions.

Data from risk assessment calculations are usually represented graphically. Depending on the goal of the study (whether extent of human injury or damage to the environment or property), values for accident frequency are plotted against accident severity or consequence. Two common

representation methods are risk contours and f/n curves where f indicates the frequency of accident, and n is an index of the extent of damage. Risk contours allow for comparison of average risks to individuals from several activities or events. An f/n curve clearly illustrates the relationship between accident frequency and severity - the higher the frequency, the fewer the fatalities.

In Summary

Depending on the chosen method of study, risk and hazard assessments may require various numbers of professional and/or technical personnel with different kinds and degrees of expertise. A HAZOP study should be done by a multi-

disciplinary team (technicians, plant operators and engineers) using a structured brain storming approach, whereas the checklist analysis may be performed by one experienced analyst. All of these persons usually are employees of their respective companies. Risk assessment calculations, however, are done by expert professionals in that field of study; usually consulting engineers. □

References

Guidelines for Hazard Evaluation Procedures, Center For Chemical Process Safety, AIChE

Recommended Practices for Storing and Handling Hazardous Substances, NYS DEC

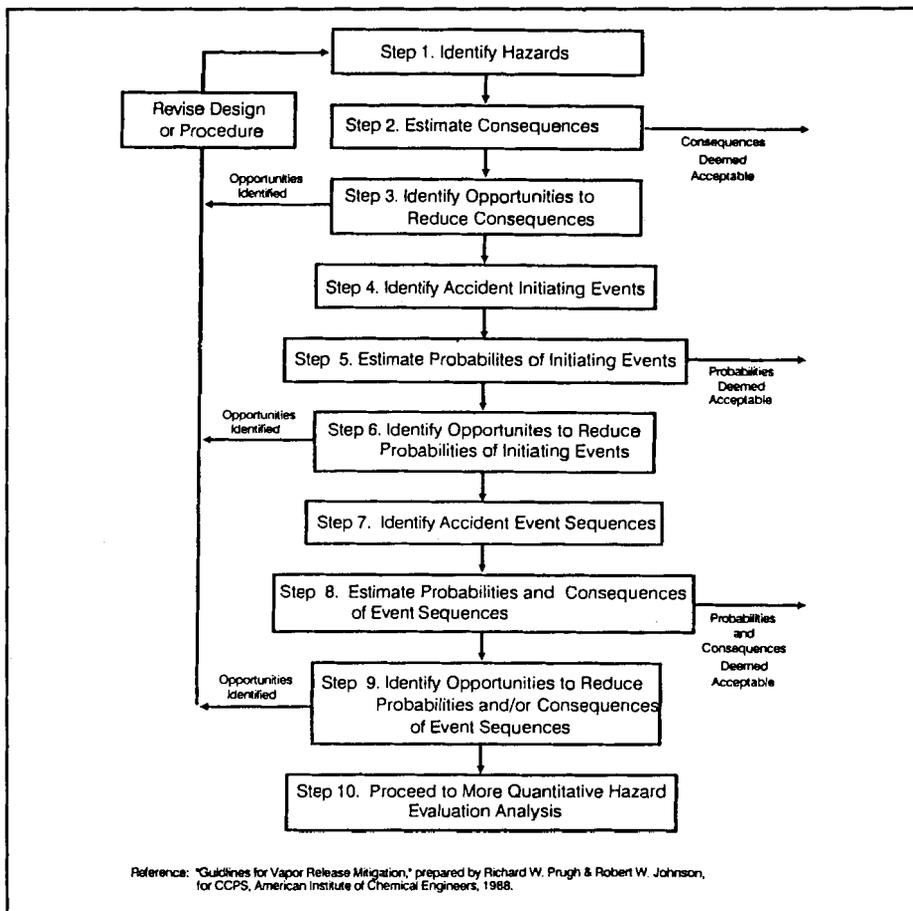


Figure 1 - Risk Assessment Sequence.



Risk and Hazard Evaluation Methodologies

Table 1

Method/Model	Primary Purpose	Professional Expertise Needed	Resulting Data
Hazard and Operability (HAZOP) Study	Identifies process deviations that could lead to undesirable consequences threatening plant safety and the environment.	Multi-disciplinary team using a structured brainstorming approach.	Identification of hazards and operating problems, assessment of their significance and corresponding existing safety measures and corresponding existing safety measures and recommendations for changes, usually tabulated.
Failure Modes, Effects, and Criticality Analysis (FMECA)	Examines specific failure modes (or the extent of malfunction) of process and control equipment and evaluates the effects of these failures on a system or plant.	Can be performed by an individual analyst but a multi-disciplined team approach is preferred in the chemical industry.	A qualitative systematic list of equipment types and extent of failures and the effects they produce, including worst-case estimates, usually tabulated.
Checklist Analysis	Using a prepared questionnaire (checklist) to determine a facility's compliance with standard practices and procedures and thus its overall safety status.	Analysts with extensive background in the systems being analyzed.	Qualitative - series of "yes" and "no" answers with a corresponding list of recommendations which may include suggestions for further detail study.
Fault Tree Analysis (FTA)	Provides a method of graphically modeling the various basic reasons for a particular system failure (top event). They may include equipment malfunction, external factors, and human error.	An individual well trained and experienced in logic modeling.	A logic model for system failures using Boolean logic gates (such as AND, OR) to illustrate how various factors can combine to create a system failure on "top event."



EPA Approves State Fund

On September 13, 1994, Environmental Conservation Commissioner Langdon Marsh announced that New York received EPA approval to use the State's Oil Spill Fund to ensure that owners and operators of small petroleum facilities can meet federal financial responsibility requirements. (For greater detail, see *Tank Bulletin* #12, Spring 1994.)

"Leaks and spills from petroleum underground storage tanks (UST's) can have serious long-term impacts on our State's environment and can be devastating to the economic vitality of New York's small businesses, Commissioner Marsh said. "Governor Cuomo's proposal to use the Oil Spill Fund as an assurance mechanism, New York State shows once again that it can develop solutions

that are good for our businesses and our environment."

By qualifying the State's Oil Spill Fund, category 3 and 4 UST owners (those with less than 100 tanks) are considered to be in compliance with the federal financial responsibility requirements for cleanup costs and property damage claims.

Commissioner Marsh stressed that this use of the Oil Spill Fund is an interim measure designed to give tank owners time to upgrade their facilities and obtain pollution liability insurance in the private market.

UST owners in categories 3 and 4 will be contacted by DEC in the near future to inform them of the coverage afforded to them by the State Oil Spill Fund. In the meantime, questions should be directed to the Bulk Storage Helpline, 1-800-242-4351.

Index to Back Issues of the TANK BULLETIN by Subject

Since its inception in 1988, a number of interesting and informative articles have appeared in the *Tank Bulletin*. This index to back issues has been compiled as a service to our readers. Should you want to obtain a copy of a back issue, a limited number are available by calling the Bulk Storage Helpline - 1-800-242-4351.

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Submission of the State Oil Spill Fund to EPA

- Questions and Answers -

It is important for tank owners and operators to understand what submission of the State Oil Spill Fund as a financial responsibility mechanism means. The following pages are dedicated to the subject of financial assurance and elaborate on the Governor's cover letter.

The Spill Fund

The New York Environmental Protection and Spill Compensation Fund (the "Oil Spill Fund") was established in 1977 by Article 12 of the State Navigation Law. This Fund is a non-lapsing, revolving fund that is financed by a four cent per barrel fee on the first transfer of petroleum to a major petroleum facility in New York State, as well as recoveries and penalties from responsible parties. The Fund is not limited to releases from underground storage tanks, as it covers releases from any source such as vessels, vehicles, pipelines and aboveground tanks, both to surface and ground waters. Currently, the Oil Spill Fund is used to remediate approximately 5% of all reported petroleum discharges, with responsible parties paying the cost of the other 95%.

Following are typical questions asked by tank owners:

What is "financial responsibility" and does it apply to you?

Federal law¹ and the Federal Underground Storage Tank (UST) Regulations (40 CFR 280.90-.112) require that owners and operators of certain underground tanks have the financial means to help pay for the costs of corrective action and third-party damages caused by a release from their underground tank. These costs could include cleaning up leaked petroleum, correcting environmental damage, supplying drinking water, and compensating injured parties for personal injury or property damage.

What kinds of underground tanks are covered by the federal law?

Underground petroleum tanks, including the connecting pipes, which have a capacity of more than 110 gallons are covered. Certain tanks have been exempted from the law including heating oil tanks used for on-premises consumption, farm or residential tanks with a capacity of 1,100 gallons or less which store motor fuel for non-commercial purposes, field constructed tanks and others.²

Which tank owners and operators are covered by the Governor's submission of the Oil Spill Fund as a financial assurance mechanism?

The State Oil Spill Fund has been submitted as a financial responsibility mechanism for tank owners who fall into categories 3 and 4 below.

The EPA regulations categorize tank owners as follows:

1. All petroleum marketing firms owning 1,000 or more UST's, and all other UST owners that report a tangible net worth of \$20 million or more;
2. All petroleum marketing firms owning 100 - 999 UST's;
3. All petroleum marketing firms owning 13 - 99 tanks at more than one facility; and
4. All petroleum UST owners not described in 1 - 3 above, including all local government entities.

"Petroleum marketing firms" are firms owning petroleum marketing facilities.

"Petroleum marketing facilities" are facilities at which petroleum is produced or refined and facilities from which petroleum is sold or transferred to other petroleum marketers or the public.

¹ Subtitle I of the Resource Conservation and Recovery Act.

² See 40 CFR 280.12.



Does the Oil Spill Fund provide insurance to tank owners?

No. The Oil Spill Fund is not an insurance fund. One mechanism allowed under the federal regulations for showing evidence of financial responsibility is inclusion in a state "assurance" fund. In an assurance fund, such as the State Oil Spill Fund, the State assures that monies will be made available, in the State's discretion, to remediate releases from underground storage tanks to protect the public health and the environment should the tank owner or operator not take appropriate action.

If my tank leaks, will the Oil Spill Fund pay clean-up costs?

No. The tank owner is still responsible for the cost of clean-up. The Oil Spill Fund is a fund used by the State to protect the environment and public health when the spiller is unknown, unwilling or unable to clean up a spill in a timely manner. If the Oil Spill Fund pays for the cost of your tank clean-up because you are unwilling or unable to do so, the Fund Administrator will make every attempt to recoup the amount of money spent for you, interest and penalties where warranted, including putting a lien on your property.

With the Governor's submittal of the Oil Spill Fund, does this mean I am now in compliance with federal financial responsibility requirements?

By submitting the State's Spill Fund, category 3 and 4 owners and operators are considered to be immediately in compliance with the federal financial responsibility requirements for corrective action and third-party property damage, pending EPA approval of the Fund.

The Fund is **not** liable for claims for third-party bodily injury. Therefore, owners and operators are still responsible for obtaining coverage for this aspect of the financial responsibility requirements.

What is third-party liability?

EPA requires that owners or operators demonstrate that they are able to compensate other parties for bodily injury and property damage caused by accidental releases resulting from the operation of an underground petroleum storage tank.

If someone suffers health problems because of fumes

from a leaking tank, will the Spill Fund cover damages?

The Spill Fund will not cover such damages. In order to meet this portion of the federal financial responsibility requirements, private insurance must be obtained.

If the Spill Fund won't pay the costs for clean-up, should I purchase insurance to cover the cost of a tank leak?

This is an individual business decision that you must make. Because clean-up can be expensive, many tank owners purchase insurance for financial protection. Keep in mind when making this decision, that the submission of the Spill Fund is viewed by the State as an interim solution designed to give facilities time to come into compliance on their own with the financial responsibility requirements. Contact your local insurance carrier to discuss coverage. In addition, you can contact the State Insurance Department for information about obtaining insurance of this kind. The Insurance Department's number is 1-800-522-4370.

Do I need to do anything in order to be "covered" by the Oil Spill Fund?

No. At this point, owners and operators of 99 or fewer tanks, local governments and non-petroleum marketers with a net worth of less than \$20 million are deemed in compliance with the federal financial responsibility requirements for corrective action and third-party property damage. When EPA approves the Fund, the State is required to send notices to those tank owners/operators who are "covered".

If you have further questions about what coverage the State Oil Spill Fund provides to petroleum UST owners/operators, please call the DEC Bulk Storage Helpline - 1-800-242-4351. □

Important Insurance Phone Numbers

N.Y. State Insurance Dept. Hotline - 1-800-522-4370

Independent Ins. Agents Assoc. of NY - 1-800-962-7950

Professional Insurance Agents - 1-800-742-6369



A Message from the New York State Insurance Department

Spill Clean-up Insurance - *Is Your Company Reliable?*

by Stewart Keir, Assistant Deputy Superintendent,
New York State Insurance Department

Given the thousands of leaks and spills which occur each year, tank owners and operators are beginning to turn to insurance for protection. A question frequently raised by tank owners relates to the solvency and reliability of the insurance company.

Admitted Insurers

Generally, before a company can sell insurance in the State, it must be licensed by the New York Insurance Department. The New York Insurance Law mandates that companies meet stringent requirements before a license may be issued. The Insurance Department has established requirements that not only deal with the amounts of capital and surplus (net worth) that an insurer must possess and maintain, but has also established rules for the investment of funds, the competency and trustworthiness of management, claims settlement practices, the rates that may be charged and the specific conditions included in policies.

Insurance companies that meet all requirements are called "admitted insurers".

Excess Line Insurers

Because some special types of insurance, such as underground tank pollution liability insurance, may not be readily available from insurers licensed in New York, the Insurance Law allows unlicensed companies to issue insurance policies under controlled circumstances. The policy must be

placed by a specially licensed broker, called an excess line broker. If insurance is unavailable from three licensed insurers, the excess line broker may place the policy with an unlicensed insurance company which meets the qualifications of the Insurance Department. The company must meet capital, surplus and trust fund requirements, as well as requirements that deal with the company's claims settlement reputation.

It is the excess line broker's responsibility to make sure that the unlicensed insurer meets these requirements. Failure to do so subjects the broker to disciplinary action by the Insurance Department and in certain instances, the broker may be legally liable to the insured or a claimant if the insurer is unable to meet its obligations. Insurance buyers should be aware that not all unlicensed companies qualify to do business under New York's excess line rules.

What to Consider

There are other factors to review in considering licensed and unlicensed insurance companies. If a licensed company becomes insolvent and cannot fulfill its obligations, claims or refunds of unearned premiums will be made, within certain limits, through New York's Property/Liability Insurance Security Fund. This fund is not available to policyholders of unlicensed insurers.

If an unlicensed company cannot fulfill its obligation, policy holders would access a separate trust fund. This trust fund is generally limited in size and may be more difficult to access than the Property/Liability Insurance Security Fund. Also, while licensed insurers are examined periodically and subject to regulatory requirements by the Insurance Department, unlicensed insurers are neither examined nor otherwise supervised by the Insurance Department.

You should also be aware that unlicensed companies are generally exempt from New York's rules regarding filing of policy form and rates as well as New York's cancellation and non-renewal rules.

In 1989, the legislature created a not-for-profit association to help excess line brokers comply with the State Insurance Law and regulations. The Excess Line Association of New York (ELANY) stamps each document (signifying placement of a policy with an unlicensed insurer) filed with it by excess line brokers if the placement complies with the applicable law and regulations. The excess line broker may not deliver a policy to the insured unless the policy has been stamped by ELANY. The policy must also contain a conspicuous notice indicating the insurer is not licensed, not subject to the supervision of the Insurance Department and that, in event of the insolvency of the insurer, there is no Security Fund protection.

Continued on Page 5, top

by Simon Wu, Chemical Engineer

Leaking underground piping is a major cause of groundwater contamination. According to EPA studies, the four main causes of failure associated with piping are: corrosion, improper installation, spills and overfills, and equipment breakdown.

Corrosion is the most common problem for unprotected steel pipe. Steel, which historically was used for piping material, will rust over time unless effective corrosion protection is provided.

Improper installation is a big problem at many gasoline service stations. Piping should be bedded in compacted sand or pea gravel to protect it from damage that might be caused by settlement, vibration, contraction and expansion. Flexible connectors or swing joints are needed to allow for some movement between the tank and piping system. Joints should be properly tightened. Mishandling of the system as it is laid in the ground or inadequate backfilling can result in cracks in the system that may go undetected until it is too late - the trench has been closed. All piping systems must be tightness tested prior to backfilling.

Spills frequently occur at the fill pipe opening when the delivery



Unearthed section of galvanized steel pipe revealing a leaking union. Pipe connections are a common source of leakage.

truck's hose is disconnected. This is why the federal UST regulations require a spill catchment basin be installed at the fill port of all new underground systems.

Overfills can cause releases through loose fittings at the top of the tank or at the vent pipe. This condition can be ameliorated by installing overfill prevention devices as required by both State and federal regulations.

Equipment breakdown is often caused by excessive surface loads and underground movement related to



Installation of a double-walled underground FRP piping system.

groundwater fluctuations, flooding, vehicular traffic and frost. By following proper installation practices, this problem can be mitigated. For example, piping needs to be buried to a depth of at least 18 inches.

For more than half a century, steel piping was the technological mainstay, and is still used at many facilities today. It is one of the sturdiest materials for holding petroleum. After some state governments and EPA set strict requirements to prevent corrosion of steel piping, other options to bare steel piping such as cathodically protected steel pipes, fiberglass reinforced plastic (FRP) pipes and flexible pipes (hoses) have come into



A section of product hose shown within flexible secondary containment.

greater use. Each of these is also available in a double-walled design.

FRP piping which was first listed by Underwriters' Laboratories (UL) in the mid 1960's, has become increasingly popular. The key advantages to FRP pipes are: corrosion resistance, compatibility with chemical additives in the fuel formula such as methanol or ethanol, lightweight, and ease of installation.

Although FRP solves the problem of corrosion, it has its disadvantages. It does not work well in high temperature applications and can crack when exposed to water that freezes. It is connected with epoxy or adhesive joints, requiring adequate time and proper temperature to cure. Despite this treatment, there are still joints in the system, such as where the fiberglass is connected to steel equipment, that can fail.

Flexible thermoplastic piping (hoses designed for long-term underground use) is the newest concept to come on the market. Since hoses are flexible and come in lengths up to 500 feet, they can fit most field needs. Installers and marketers appear excited about flexible piping. Installation time, costs and problems are reduced because there are fewer connections

Continued on Page 8, Column 1



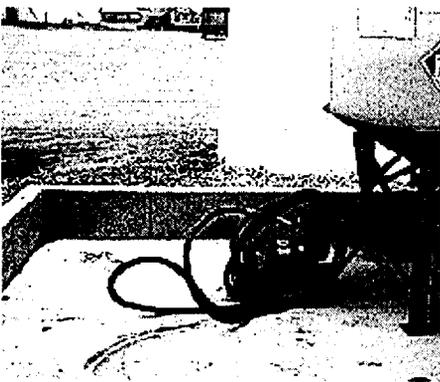
*Piping, Continued
from page 7*

than that of a conventional piping system. They also can be readily installed in a larger secondary containment pipe and replaced if worn out.

There are six manufacturers of flexible piping systems reported in a recent EPA survey. Not all of these systems have been evaluated and listed by UL. Therefore, owners or operators should be prudent in choosing a system and that it meets a recognized industrial standard and has been evaluated by a nationally recognized testing organization. □

**Diking - A Good Investment
for Environmental Protection**

Secondary containment (diking) provides a safety net around storage equipment to contain spills due to overfills. Secondary containment (or remote impounding of spills) is standard industry practice. The containment dike and floor are usually constructed of an impervious material such as concrete or a synthetic liner. It is recognized by technical committees of NFPA, API and others as being one of the most important steps to be taken for preventing groundwater contamination and protecting tanks from damage due to vehicle traffic, fire exposure and spills from nearby tanks which might jeopardize the storage system. □



Chemical tanks and equipment within concrete secondary containment (dike).



**Chemical Plant Takes Steps to
Prevent Sodium Hydroxide Spills**

On April 17, 1993, a shift supervisor for a major industry in Niagara Falls received the dreaded news from a lab worker that a spill of sodium hydroxide from a 1.5 million gallon tank had occurred. Approximately 12,600 gallons had overflowed from the tank and was flowing into the drainage ditch of a nearby road. As if bad things happen in two's, the very next day a second sodium hydroxide spill of 3,750 gallons occurred from another tank. Unfortunately, the smaller tank had no dike and the large tank had a dike that was inadequate to receive the overflow. In both cases immediate action was taken by the personnel to stop the overflow of the tanks and mobilize the Plant's emergency response team to recover the chemical from the diked area and roadway.

Most engineers recognize that hundreds of similar spills which occur across New York State each year and the related cost of cleanup can be avoided. By looking at the causes of these spills, it is possible to take action to prevent reoccurrences.

The company has concluded that the spill from the large tank was due to a leaking three-way valve that failed to prevent sodium hydroxide from being pumped from the loading area from leaking into the large tank which was full. The April 18 spill was caused by a malfunctioning level gauge that erroneously showed that smaller tank had capacity to receive additional product, when in fact the tank was already full.

Actions being taken to prevent future spills involve installing overflow alarms, calibrating level gauges, manually checking product level inside tanks before filling them and

periodic inspection of control valves to ensure such valves are functioning properly.

The impact of these spills and other historical spills which have contaminated the soil and groundwater beneath the Niagara Falls site is now being assessed. Plans to install a recovery well to pump and treat the contaminated groundwater are being considered. □

DEC's proposed Chemical Bulk Storage Regulations will set industry-wide standards for leak and spill prevention. For a copy of the proposed regulations, call Mary Ellen Lentine at 1-800-242-4351.

Sodium Hydroxide, commonly known as caustic soda or lye, is used in solid and solution form in the pulp and paper industry as a neutralizing agent, and in the manufacture of detergent and soap. It has a markedly corrosive action upon all body tissue causing burns and frequently deep ulceration, with ultimate scarring. Mists, vapors, and dusts of this compound cause small burns, and contact with the eyes rapidly causes severe damage to the delicate tissue. Ingestion causes very serious damage to the mucous membranes or other exposed tissues. It can cause perforation and scarring. Inhalation of the dust or concentrated mist can cause damage to the upper respiratory tract and to lung tissue, depending upon the severity of the exposure. Thus, effects of inhalation may vary from mild irritation of the mucous membranes to a severe pneumonitis. Under the proper conditions of temperature, pressure, and state of division, it can react violently with certain acids and other chemicals. It is a dangerous material to handle. □



Tank Testing Company Pleads Guilty to Falsification of Business Records

An investigation began with the technical staff in the Region 8 Division of Spills Management who received incomplete tank system tightness test reports submitted by B & D Pump and Tank, Inc. During the second half of 1992, B & D submitted tightness test results for only the underground petroleum storage tanks at a number of facilities. The piping systems had not been tested. The State Petroleum Bulk Storage (PBS) Regulations require the testing of the entire system - both tank and product lines.

After this was brought to the attention of David Junco, a B & D official, the company claimed to have gone back to the facilities to perform the line tests. Test results were submitted to the Region 8 Office. When Region 8 staff contacted facility owners regarding the line tests, it was discovered that B & D had not actually done the testing as claimed and the reports were fabricated. The case was referred to DEC's Bureau of Environmental Conservation Investigation (BECI) to investigate the filing of false reports.

A criminal investigation began in December 1992, and resulted in a plea agreement reached between the Livingston County District Attorney, B & D Pump and Tank Corporation and David Junco. In regard to this case which involved 20 EZY CHEK 3 line tests at 14 PBS facilities, the following disposition took place on September 7, 1993:

- B & D Pump & Tank Corporation plead guilty to one count of falsifying business records in the first degree, a Class E Felony;
- David Junco plead guilty to one count of offering a false instrument for filing in the second degree, a Class A Misdemeanor;
- B & D Pump & Tank paid an in-kind criminal fine of \$20,000 and hired Reid Petroleum to test the tank systems of the 14 noted tank owners; and
- David Junco was placed on probation for 3 years and will not be allowed to be an officer, director or shareholder of B & D Pump & Tank Corporation, nor will he be allowed to certify any tank or line testing.

TANK OWNERS ARE REMINDED TO:

1. Choose a testing company carefully.
2. Ensure that both tank and associated piping system are tested.
3. Know which test methods are accepted by DEC (See SPOTS #2).
4. Refer any questions to DEC regional staff for assistance. □

New Technical Publications That Are Available

The DEC technical Guidance Memorandum (SPOTS) Memo #17 entitled *Alternatives to Secondary Containment for Small Aboveground Petroleum Tanks* is available for distribution. It contains guidance on alternatives to diking by examining the major causes of spills associate with these tanks. These causes include: 1. overfills from the fill port, vent and/or emergency vent; 2. spills from the delivery hose; 3. leaks from pumps, valves and other connections; 4. flow from valves caused by accident or vandalism; 5. damage from vehicular traffic; 6. flooding; 7. damage from fire; and 8. vandalism with ballistics. A copy can be obtained by calling the Bulk Storage Helpline at 1-800-242-4351.

EPA has just published 2 new leak detection booklets. These booklets are entitled *Doing Inventory Control Right for UST's* and *Manual Tank Gauging for Small UST's*, and are mainly intended for underground storage tank owners and operators. Each booklet explains how to perform the leak detection method

correctly and provides standard reporting forms. Copies may be obtained by calling EPA's RCRA/Superfund Hotline at 800-424-9346 and ask for EPA 510-B-93-004 (inventory control booklet) or 510-B-93-005 (manual tank gauging booklet). A limited number of copies are available from DEC. These may be obtained by calling the Bulk Storage Helpline - 1-800-242-4351.

The Petroleum Equipment Institute (PEI) has released PEI/RP100-94, *Recommended Practices for Installation of Underground Liquid Storage Systems*, superseding the earlier version, PEI/RP100-90. The recommended practice is referenced in the federal UST regulations as one of 3 publications that firms must follow when installing UST systems.

Copies of this 40-page manual may be obtained by writing to: PEI, P.O. Box 2380, Tulsa, OK 74101-2380. The single-copy price is \$15 (\$10 for PEI members) with discount available for large orders.



A CASE STUDY by Joseph McDonald

This article is about H.Reynolds and Son, Inc. and their endeavor to continue a long standing family business. I would like to thank Mr. Reynolds and his staff for providing the information for this article. This case study examines just one of many facilities across the State where the owners have gone beyond the letter of the regulations in order to reduce their exposure to liability and to protect the environment.

In 1935, Mr. Harold G. Reynolds of Central Valley, located in Orange County, started a business delivering fuel oil and kerosene for space and hot water heaters. His business expanded as homeowners converted their heating systems from burning coal to oil. To meet the needs of his customers, several small storage tanks were installed in 1936 and 1950.

In 1955, the small tanks were removed and four used aboveground tanks ranging in size from 8,500 to 20,000 gallons were installed. One former tar tank which was leaking on the bottom was turned over and used until recently. During the 80's, the business passed on to Mr. Reynold's son.

In 1988, Mr. Reynolds estimated that in order to meet the 1990 DEC deadline to upgrade his aboveground tanks with the proper overfill protection devices, secondary containment systems and other regulatory requirements, he would have to dismantle the existing facility and construct a new one at a cost of \$250,000. He realized that this was required since his facility was in "very poor" condition; the tanks could not pass an engineering inspection, and had no secondary containment system. It posed a potential threat to a nearby trout stream.

UPGRADING STRATEGY

Mr. Reynold's decision to upgrade his facility was made only after careful planning and preparation which included:

1. Meeting with engineers, petroleum equipment suppliers and manufacturers to consider the type of equipment available with the goal of staying within budget while fully complying with local, State and federal regulations. *In order to minimize cost, company employees were utilized to supervise and perform certain construction projects.*

MR. REYNOLDS CONSIDERED THE FOLLOWING IN HIS DECISION TO UPGRADE

- Potential releases to the nearby stream, associated cleanup costs and penalties
- Poor condition and operational inefficiency of existing equipment
- Complying with regulatory requirements and avoiding penalties
- Designing a facility which would comply with the latest industry codes and standards
- Aspiration to pass the family business on to his sons
- Maintain job security for 11 full time and 2 seasonal employees
- Preserve good public relations and service to the community
- Increase petroleum bulk storage capacity and product diversity
- Diminish insurance liability and cost

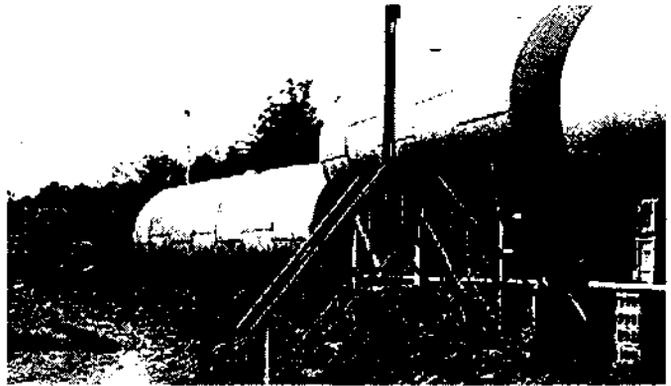
2. Obtaining conceptual approval from DEC. **NOTE:** *The Department will assist with conceptual review of plans and specifications and will inspect for compliance with regulations. Appropriate Regional Office or Bulk Storage Help Line (800) 242-4351 may be contacted for technical assistance. DEC's Region 3 office located in New Paltz was able to provide guidance to Mr. Reynolds to avoid any misinterpretation of the regulations.*
3. Obtaining approval from local zoning/planning boards. *A considerable effort was made to obtain zoning and planning board approvals. The process involved 2 years of meetings and the development of engineering plans for review by local officials.*

Continued on Page 11



Continued from Page 10

4. Dismantling of the old tanks and extensive site preparation. Construction of the new facility was no easy task since the facility is sandwiched between a metal scrap yard and an active rail line. Tectonic Engineering of Highland Mills designed the facility while Reynolds employees did the site preparation. The installation of four large Mohawk and Highland tanks with 20,000 gallon capacities required a special crane to maneuver in a tight area. A concrete secondary containment system was installed to minimize settling and cracking, along with a truck loading rack with a pad designed to collect any spillage and to pump it to a holding tank.



Before Upgrading - Note poor condition of these old riveted tanks, some resting on the ground, partial earthen secondary containment and piping supported by concrete blocks.

The installation was a complete success. During my inspection of the new facility, I found no violations of the State's PBS regulations. In fact, the facility is state-of-the-art, consisting of 4 (20,000) and 2 (8,000) gallon aboveground storage tanks, with concrete secondary containment systems and new truck loading rack. Piping for both filling and product lines were engineered to decrease the potential for overfills and siphoning of the tanks, and to increase the overall efficiency so that loading operations time has been cut dramatically. □



After Upgrading - Note new aboveground tanks on cradles and piping within concrete secondary containment, the piping permanently supported and security fencing.



Enforcement Sweeps Focus on Aboveground Tanks

Recently, DEC staff conducted enforcement sweeps to verify compliance with the New York State's Petroleum Bulk Storage (PBS) regulations (Parts 612-614) and applicable Federal regulations. Our field inspectors targeted facilities with aboveground storage tanks. Facilities with aboveground tanks were inspected for the following primary concerns:

- ☛ Is the registration certificate up-to-date and posted?
- ☛ Are monthly inspections conducted? Are the inspections properly documented and records maintained?
- ☛ For tanks with a capacity of 10,000 gallons or more, are structural inspections conducted?
- ☛ Do tanks have secondary containment, if required?

☛ Do tanks have necessary gauges and valves?

☛ Are fill ports color coded?

At facilities with aboveground tanks near navigable waters, our inspectors also verified general compliance with the federal regulations found in 40 CFR 112 - Spill Prevention Control and Countermeasure (SPCC) Plans by inspecting for up-to-date SPCC Plans and spill containment systems at the truck loading racks.

Under the PBS regulations, aboveground storage tanks are required to have adequate secondary containment systems and overfill prevention devices. The deadline passed, compelling many owners to evaluate their facility for compliance and upgrade as necessary. In a few cases, owners decided to close their facility. □



TANK BULLETIN

Division of Spills Management

Issue Number 16
Fall 1995

Financing Tank Replacement with an SBA* Loan

By Dick Cowan



By December 22, 1998, substandard federally regulated underground storage tanks (USTs) will need to be upgraded, replaced or permanently closed. According to a report by Environmental Information Ltd., a Minneapolis-based market-research firm, the average cost of tank replacement is \$25,000 per tank. For a typical gas station or fleet depot, upgrading along with new pumps and canopy could cost as much as \$100,000.

To pay for these services, many small business owners may need a bank loan. When applying for a loan, its best to go to a bank that you have a good relationship with - one that believes in you. For any loan, the bank will want to know that the loan has a more than reasonable chance of repayment. If you have a proven track record, a conventional commercial loan can usually be secured. Businesses which have had their "ups and downs", may need an SBA guarantee to qualify for a loan. Those which are marginal operations will probably be denied a loan.

Small Business Administration Loans

When small businesses can't get financing on reasonable terms through normal lending channels, the U.S. Small Business Administration (SBA) 7(a) Loan Guaranty Program is available to fund a variety of long term needs. Private lenders, usually banks, make loans which are guaranteed up to 90 percent by the SBA. The borrower makes loan payments to the lender.

While SBA has a variety of loan programs, the "LowDoc" loan program will be of particular interest to many small facility owners because of the reduced paperwork involved in loan requests of \$100,000 or less, and the rapid response from the SBA (sometimes as quickly as 3 to 5 days). Under the Low Documentation Loan Program (LowDoc), the SBA uses a one-page application and relies on the strength of the applicant's character and credit history. Other types of SBA loans are also available for sums up to \$500,000.

Eligibility

To be eligible, the business generally must be operated for profit and fall within size standards set by SBA. SBA determines if the business qualifies as a small business based on the average number of employees for the preceding 12 months or on sales volume averaged over a three-year period.

* Small Business Administration

Continued on Page 2

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New York State Department of Environmental Conservation

George Pataki, Governor
Constance K. Barrella, Deputy Commissioner

Michael D. Zagata, Commissioner
Richard M. Cowan, Editor



SBA Loan *Continued*

Credit Requirements

A loan applicant must:

- have a sufficient cash history (cash flow), be of good character and demonstrate sufficient management ability and the commitment necessary for success. The applicants reputation in the community is important.
- have enough funds (including the loan plus personal cash) to operate the business on a sound financial basis.
- show that the past and future earnings will be sufficient to repay the loan in a timely manner.
- pledge sufficient assets to secure the loan. Personal guarantees are required for all the principal owners and may be required from the chief executive officer of the business. Liens on personal assets of the principals also may be required.

Applying for a Loan

When applying for a loan, you will need to submit six documents to the lending institution:

- 1 a completed lending institution loan application form;
- 2 three years of U.S. income tax returns, schedule C.
- 3 a personal financial statement (individuals) or personal guarantee (corporation). These are usually prepared by your accountant.
- 4 a cost break down of the work to be done.



It is important to have a sound business plan.

- 5 the results of a site assessment (see box below) indicating the site is clean or can be remediated at reasonable cost.
- 6 a list of collateral to be offered as security for the loan along with an estimate of the present market value of each item and the balance of any existing liens.

When SBA is Involved

The bank will perform an initial review of the loan application. If the lender finds the application acceptable, it forwards the application and credit analysis to the nearest SBA office. After SBA approval, the bank closes the loan and disburses the funds. The length of time for repayment depends on the use of the proceeds and the ability of the business to repay. Loans for major renovation of business premises can have maturities up to 25 years when secured by a mortgage on real property.

If your loan application is approved, you will get a commitment letter from the bank. It spells out the terms of the loan.

This includes the amount of the loan, the interest rate, the term, repayment schedule (usually monthly payments of principal and interest), whether the loan is guaranteed by the SBA and the collateral used to secure the loan. If a facility is shut down

while the work is being performed, it may be possible to delay the loan repayment until the facility is back in operation.

Interest rates on the loan are comparable to conventional (i.e., non-guaranteed loans). As with conventional loans, they are negotiated between the borrower and the lender, subject to SBA maximums. Generally, interest rates for SBA guaranteed loans cannot exceed 2.75 percent over the prime rate. The prime was 8.75% as of Sept. 1995. Most commercial loans have variable interest rates.

Act Now

While SBA loan money is presently available to help tank owners upgrade their USTs, those desiring to obtain SBA loans should not delay because future funding sources are not assured. It is now 7



I want you to act now!

years into a 10-year upgrading window. The time to act is now.

It will take time to assess the upgrading needs of your facility, decide on a proper course of action, get bids from contractors and approach your local bank to arrange financing. Those who wait too long could also be faced with a shortage of tanks, scarce or more expensive contractor services, expensive leaks from current tankage, and possible penalties for those not able to meet the deadline.

Cont'd Page 11, Right Column

Self Inspection Checklist*



Using this self inspection checklist, homeowners and others with small fuel oil tanks can easily inspect their tanks for problems. DEC encourages fuel oil suppliers to make copies of this checklist and make them available to customers in an effort to promote secure storage, and help prevent leaks and spills of petroleum. A visual inspection by the tank owner is recommended every three months.

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

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

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

Self Inspection Checklist for Home Heating Oil Underground Storage Tanks (USTs)

If you answer "YES" to any of the following questions, call your oil burner technician for a more detailed inspection and corrective measures. (Of course, the best thing to do is to remove a substandard UST and replace it with corrosion resistant UST or switch to aboveground storage.)

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

* This condition requires notification of the DEC on the spill hotline - 1-800-457-7362.

* This checklist appeared in *LUSTline* Bulletin 20 published by the New England Interstate Water Pollution Control Commission.



What Every Tank Owner Should Know About Overfill Prevention*

By Marcel Moreau**

Despite the importance of overfill prevention, there is little written material discussing the devices available to prevent overfilling of tanks. The purpose of this article is to provide some background on overfill prevention technologies for underground motor fuel storage tanks.

Some Basic Facts about Fuel Deliveries

To better understand how overfilling occurs and how to prevent it, let's review some facts about how deliveries are made into underground motor fuel storage tanks:

- The volume delivered into the tank is metered when it is loaded into the tanker, but it is not metered when the tanker delivers the product into the underground tank. Fuel transports have compartments to enable them to carry different grades of fuel. When a driver hooks up to a tank, he plans to deliver the entire contents of a fuel compartment into the underground tank.
- The driver calculates the amount of ullage (empty space in the tank) by gauging the tank with a stick and referring to a tank chart. He needs to know that the ullage volume is greater than the volume of the truck compartment that will be emptied into the tank.
- Flow from the tank truck to the underground tank is by gravity. There are no pumps involved. Typical flow rates are about 400 gallons per minute (gpm).
- Smaller tanks may have metered deliveries made by pumping the product into the tank. Only a few overfill devices can be used with pumped deliveries.

- A typical delivery hose is four inches in diameter and 20 feet long. It has a volume of about 14 gallons.
- Delivery hoses usually connect to fill pipes with an airtight connection. This is known as a "tight fill." Older, smaller tanks may be filled simply by inserting a length of pipe into the tank fill pipe. This is known as a "loose fill." Only alarms can be used for overfill prevention with loose fills.
- There is only one valve in the tanker-to-tank delivery path. This is the valve located under the belly of the tanker. There are no valves at either end of the delivery hose itself.
- Fire codes require drivers to stand by their vehicle while the delivery is in progress.

How Do We Get into These Messes?

Typically, a spill during delivery occurs through some miscalculation, such as when the driver attempts to drain a compartment of the tanker that contains more product than there is room for in the tank. In the absence of any overfill prevention devices, the driver ends up with a tank chock full of product, vent lines that are full of product up to the level of product in the truck, and a delivery hose full of product. The driver's options are to wait for customers to buy enough product from the tank to empty the vent lines and hose, or to disconnect the hose and drain its contents into the manhole around the fill pipe.

In the days before tank regulation, the fill pipe manhole had no bottom, and the product drained

directly into the environment. Although fill pipe manholes on new tanks are liquid tight, the volume of the hose (14 gallons) is roughly three times the volume of the typical spill containment manhole (5 gallons) around the fill pipe, so draining the hose into the spill bucket is not the answer to the overfill problem.

Although both New York and federal UST rules require overfill prevention systems, the exact method of preventing overfills is left to the discretion of the tank owner.

How Do We Get Out of This Mess?

The goal of overfill prevention is to stop the flow of product into the tank before the tank is fully filled, so that there will be room to drain the contents of the hose into the tank. The ability to drain the contents of the hose quickly and easily is key to successful overfill prevention. Let's look at the technologies, regulatory requirements, operational characteristics, advantages and problems associated with the three common approaches to overfill prevention.

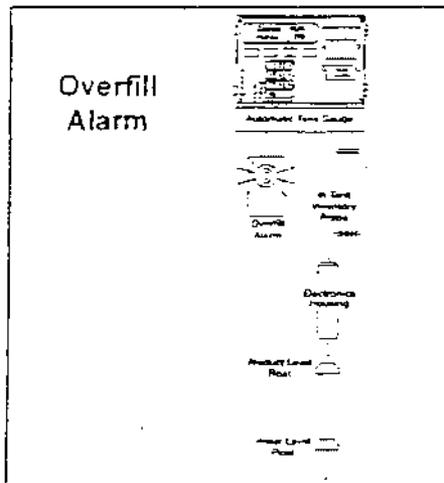
Alarms

Alarms are the least frequently used of the overfill prevention technologies. A typical UST overfill alarm is tied into an automatic tank gauging system. Most automatic tank gauges have the ability to trigger a remote alarm when the liquid level in a tank reaches a programmed level.

Alarm systems may be set to trigger at 90% of the tank capacity or at a level that allows one minute between the time the alarm sounds and the tank overfills. If the delivery rate is 400 gpm, this translates to 400 gallons below tank top.



Overfill Prevention *Continued*



When a alert driver hears an overfill alarm, he has sixty seconds to respond by shutting off the delivery valve(s). If the driver is alert and conscientious and standing close to the valves, closing the valves can easily be done in this time frame. Next, the driver should silence the alarm to restore quiet to the neighborhood. Draining the hose is simply a matter of disconnecting it at the truck. The hose should drain in a few seconds.

Overfill alarms do not slow down the rate of deliveries and provide the most rapid hose draining capability. They can be used with gravity drop or pressurized deliveries and even loose fills.

The most serious deficiency of alarm systems is that most often the alarm itself is remote from the tank fill pipes and bears absolutely no label to identify it as an overfill device. Nor is there any labeling at the tank fill pipes to indicate to the driver that an overfill alarm is installed at the facility. As a result, when the alarm sounds, the driver is more likely to think that a car theft alarm has gone off than to think that his tank is about to overfill.

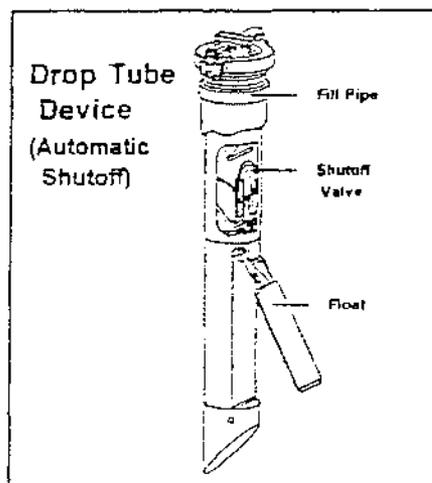
Alarms should be located in the vicinity of the tank fill pipes, clearly visible from where the driver is likely to be standing, and clearly

labeled as an overfill protection device with words like "When alarm sounds STOP DELIVERY IMMEDIATELY." Unless properly located and identified, an overfill alarm is not likely to effectively warn the driver of the impending overfill.

The driver must be present and alert in order for the overfill alarm to be effective.

Drop Tube Devices

These devices replace a section of the drop tube, a thin aluminum tube that is inserted into the tank fill pipe and extends nearly to the tank bottom. There is usually a float activated mechanism on the outside of the tube that releases a valve inside the tube that is forced shut by the flow of product.



Typically, there is a bypass valve that allows a small amount of product to flow (5-10 gallons per minute) after the main valve closes. The bypass valve allows the hose to be drained after the main valve closes. If the delivery is allowed to continue (10 minutes or so after the main valve closes), the bypass valve will also close and the delivery hose can no longer be drained into the tank until the tank liquid level is lowered.

Because these devices completely shut-off the flow of product into the tank, they can be set at a higher level

in the tank (capacity) than other types of overfill prevention devices, as long as the tank top fittings are not exposed to product.

As the primary valve is slammed shut by the force of the product flowing by, it creates a hydraulic shock which typically causes the flexible delivery hose to "jump." The alert delivery driver notices this "jump", closes the delivery valve, and proceeds to drain the delivery hose through the bypass valve. Because flow is restricted initially to the bypass opening, the hose draining should take a minute or so.

Drop tube devices allow the largest percentage of the tank capacity to be used. They are easy to retrofit on existing tanks, as long as the fill pipe goes straight into the tank.

The sudden closing of the valve puts great stress on the delivery system. The hose connections to the tank and truck must be solid or they may pop off, creating a significant surface spill. The drop tube must be firmly attached to the fill pipe, and the shut-off device itself firmly attached to the drop tube, or else the tube will become a spear directed at the bottom of the tank, and may perforate the tank.

If the driver is not near the delivery truck, he may return to a situation where the delivery hose is full of product and the bypass valve has closed. He is now faced with the old dilemma of waiting for customers to buy product and lower the liquid level in the tank, or trying to drain a 14 gallon hose into a 5 gallon spill containment manhole.

Fill pipe devices intended for underground tank use are designed for gravity deliveries only. If a delivery is made under pressure and the device activates, something is likely to break.

Continued on Page 6



Overfill Prevention *Continued*

There must be a tight fill connection between the tank and the delivery hose, or else the fill pipe device will create a surface spill when the valve closes and the product has nowhere to go but up.

The valve mechanism must lift out of the way once the hose is removed so the driver can stick the tank after delivery. Otherwise, the device is likely to be damaged by a frustrated driver trying to insert a gauge stick into the tank.

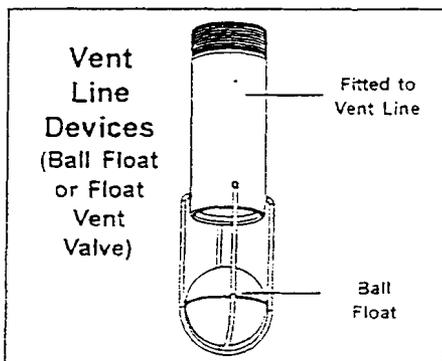
Vent Line Devices

Vent line devices are commonly known as "ball float valves" or "float vent valves." They are perhaps the most commonly used type of overfill prevention.

They consist of a short length of pipe that extends down into the top of the tank from the vent opening. There is typically a wire cage fastened to the lower end of the pipe, blocking the vent opening. There is typically a 1/8 or 1/16 inch vent hole in the pipe to relieve the pressure in the tank. Float vent valves must be installed in extractor fittings to allow maintenance and inspection from grade level.

Float vent valves are classified as "flow restriction devices" for regulatory purposes, and should be set to operate at 90% or the tank capacity of thirty minutes before the tank is overfilled.

The thirty minute criteria is a



little complicated to implement. According to measurements made by one manufacturer, in thirty minutes, a 1/16 inch hole will allow about 120 gallons to flow and a 1/8 inch hole about 420 gallons to flow.

An additional factor to consider is that when the ball first closes the vent, the air occupying the ullage space in the tank is compressed by the weight of the liquid in the tanker truck. The compression factor is about 25% of the ullage. For example, a 1,000 gallon ullage space would be reduced to about 750 gallons before the 1/8 or 1/16 inch hole begins to effectively control the flow into the tank. Careful calculations are required to use the thirty minute standard correctly.

Because of the compression of the ullage that occurs when the float vent valve closes, the delivery flow into the tank reduces slowly, and there is no hydraulic shock. Consequently, there is no hose "jump," and no way for the driver to know that the float vent valve has closed. The driver becomes aware that something is awry because the delivery seems to be taking too long.

There is an observation window in the delivery hose that will indicate that the hose is full of product, and the driver can feel the hose to tell that the product is not flowing. At this point he can close the delivery valve to stop the delivery.

However, in order for the hose to drain, the compressed air in the ullage space must be allowed to vent through the small hole in the float vent line. If the driver attempts to disconnect the hose before the pressure has been relieved, the pressure will push the product up through the drop tube and the delivery hose and into the driver's face.

To avoid such an accident, the

driver must wait a half hour or more for the pressure to be relieved. After the pressure is relieved, it will take several more minutes to completely drain the hose.

Float vent valves must not be used with pressurized deliveries because, should the float vent valve close, the pressure in the tank will rise 10 to 20 times above the tank's design pressure, a situation that has resulted in tank ruptures.

For the float vent valve to operate properly, the top of the tank must be air tight. Tank top tightness is most often compromised these days by the drain mechanisms of spill containment manholes. If the drain mechanism is not airtight, it will become the vent for the tank when the float vent valve closes, releasing potentially explosive vapors at ground level. In fact, some drivers have learned to bypass float vent valves by opening the spill containment manhole drain, thus venting the tank through this opening. This is a dangerous practice.

Float vent valves should not be used with retail suction pumping systems because the increased pressure in the tank can push product out through the air eliminator at the dispenser, causing a spill at the fuel island.

Float vent valves are not compatible with coaxial Stage 1 vapor recovery as the float vent valve does not block the vapor return path around the drop tube, and so after an overfill, the driver ends up with both the delivery hose and the vapor return hose full of product with no place to go. □

* This article appeared in the Nov./Dec. 1994 issue of *Tank Talk* published by the Steel Tank Institute. Used with permission.

** Marcel Moreau is President of Marcel Moreau Associates.

Nearly half of New York's underground tanks owners have beaten EPA's 1998 upgrading deadline. Those who have not yet upgraded, should take steps now, not only to bring facilities into compliance, but to avoid the cost and frustration of a leak. Moreover, as the deadline approaches, qualified contractors are expected to be in short supply, resulting in higher installation costs and upgrading delays.

Federal Underground Storage Tank (UST) regulations require that bare steel tanks 110 gallons or larger (except on-site heating oil tanks) be upgraded by December 22, 1998. For more information on exemptions, see 40 CFR 280.10 or call (518) 457-4351 and ask for a copy of "Musts for USTs."

What Are My Options?

Owners have three options:

- Option #1 - install a new system;
- Option #2 - retrofit the existing system; or
- Option #3 - properly close the old UST system.

Option #1 - The best long-term solution to the underground storage problem is to install a new system. In New York, new systems are designed with at least a 30-year life expectancy and consists of a double-walled tank, piping made of fiberglass, cathodically protected steel or the new flexible piping system, a "spill bucket" at the fill pipe and an overflow alarm or prevention device. (For more guidance on spill prevention, see the companion article in this issue, "What Every Tank Owner Should know About Overflow Prevention" by Marcel Moreau.)

Double-walled tanks not only provide an extra measure of protection against future leaks, but they provide a low cost method of monitoring for leakage. No tightness tests or fancy electronic devices are needed because direct monitoring of the space between the inner and outer wall is possible. Also, ask your insurance carrier for low cost liability insurance associated with double-walled systems. Rates are usually lower when such systems are used.

petroleum systems in New York, the technology for double-walled piping has advanced in the past 10 years. They include flexible piping systems (specially designed hoses) that are replaceable, as well as rigid two-walled pipes with built-in monitoring. Before deciding on piping, see "Piping Troubles and Trends" by Simon Wu, *Tank Bulletin*, Spring 1994, Issue #12.

Hire a competent contractor. Ask for dependable, simple and trouble-free equipment. Some equipment is complicated to operate, expensive to purchase and may require periodic maintenance. Follow the "Kis" principle - "keep it simple."

A good contractor will guarantee that your system is in compliance with all regulations and can advise you on the best equipment for your operation.

Option #2 - retrofitting existing systems - may be desirable if you cannot afford a new tank or are planning to remove the tank from service 5 or 10 years down the road. Under this option, you may either reline the tank, install cathodic protection for both the tank and piping (this usually requires an impressed current system), or do a combination of both, i.e., reline the tank and cathodically protect both the tank and the piping.

Don't attempt to reline your tank or design the cathodic protection system yourself unless you are an expert in these activities. Also, before undertaking these activities, make sure your contractor performs a tank inspection to ensure no corrosion holes exist. If perforations or loose piping joints exist, Option #2 cannot be used. For more information on Option #2 and tank inspection requirements, call your nearest DEC office.

Tank Inspection

EPA requires that tanks considered for retrofitting be assessed for structural soundness. This can be done by internally inspecting the tank, evaluating the age and leak detection data, following EPA protocol, or by following ASTM's Emergency Standard, *Alternative Procedures for the Assessment of Buried Steel Tanks Prior to the Addition of Cathodic Protection, ES40-94.*

While double-walled piping is not required of

Continued on Page 8



Prior Landowners Responsible for Spill Cleanup*

By Paul A. Levine, Esq.**

Option #2 requires that you also add a "spill bucket" and an overflow alarm or prevention device as discussed under Option #1.

Under *Option #3*, closing the old system must take place if the existing tank and pipes are unsuitable for continued service and you do not wish to replace them. Many owners are finding that needs for storage which may have existed 10 or 20 years ago no longer exist or are so minimal that they can be met more cost-effectively by fewer tanks or compartmentalized tanks. When Eastman Kodak completed their tank evaluation, they found that nearly 40% of the 950 existing tanks were not needed. With a modernized storage network, Eastman maintains full production capability with only 600 tanks in operation.

When you close a tank, keep four (4) things in mind:

- Have the tank pumped free of product and cleaned;
- "Pull it" or if left in place, fill it with a solid inert material such as sand or concrete slurry;
- Disconnect all piping, especially the fill pipe. You don't want an accidental delivery after the tank has been removed; and
- Perform a site assessment.

A site assessment is a written report that you keep on file to prove to future buyers, insurance companies and DEC that the site is clean. See "What Is a Site Assessment" by Russ Brauksieck, *Tank Bulletin*, Spring/Summer 1990 and SPOT's #14, "Site Assessment at Bulk Storage Facilities." Call (518) 457-4351 for a copy. □

The New York State Court of Appeals decided in the case of White vs. Long that a current landowner may sue a prior landowner under the Navigation Law to recover cost relating to environmental clean-up. This decision has important implications for tank owners.

By decision dated May 4, 1995, New York's highest court held that under the Navigation Law, a current landowner may sue the previous owner for the cost of cleaning up environmental contamination. In the case of White vs. Long, Mr. Long operated a gas station in Albany for more than twenty years. In 1987, he contracted to sell the site to Mr. White for use as a Kentucky Fried Chicken franchise. The sale was based on a report stating that no contamination was present at six underground storage tanks. Once excavation for the restaurant commenced, a seventh underground tank was found to exist and to be leaking. Clean-up of the site cost in excess of \$100,000.

Mr. White, the new landowner, first applied for reimbursement to the New York State Environmental Protection and Spill Compensation Fund. The courts held that Mr. White, was a "discharger" absolutely liable for clean-up costs and was precluded from recovering from the fund.

Mr. White then commenced an action against the prior landowner, Mr. Long. The lawsuit was initially dismissed. However, the Court of Appeals reinstated the claim against Mr. Long finding that under the Navigation Law a prior landowner may be held liable for clean-up costs by the present landowner. The court found that to rule otherwise would

reduce the incentive for current landowners to promptly remedy environmental problems. Knowing that prior landowners could be held liable for cleaning up historical spills the court reasoned, present landowners would be more likely to address the situation in the first instance. □

* This article was first printed in the newsletter published by the New York State Association of Service Stations and Repair Shops. It is reprinted with their permission.

** Mr. Levine is with the law firm of MacKrell, Rowlands, Premo and Pierro, P.C., Albany, New York

Major Facility

Has Major Spill

In July 1995, a follow-up investigation was requested by Region 8 Division of Spills Management (DSM) of an elevated groundwater monitoring sample analysis (BTEX) at a major oil storage facility (MOSF) in the town of Big Flats, Chemung County. This led to documenting free product approximately 20" thick at one location. Subsequent investigation indicated that there is approximately 5-6 acres of primary groundwater aquifer contaminated with an estimated 100,000+ gallons of free product. The petroleum is composed of about 70% gasoline and 30% diesel fuel, kerosene and #2 fuel oil.

This is the largest groundwater petroleum spill to have occurred in this region since the Hornell Rail Yard spill in the 1980's where 120,000+ gallons of diesel fuel were recovered. □

Spills Management Programs Pay Dividends



by Morris Leno, P.E.

It is appropriate to periodically take a look at the DEC Bulk Storage and Spill Response programs to measure the results. These programs have accomplished much since 1978.

Underground Storage Tanks

Over 71,000 underground petroleum storage tanks containing a storage capacity of 340 million gallons have been registered by DEC under the Petroleum Bulk Storage and Major Oil Storage Facility programs. Over 6,600 of these tanks with a total storage capacity of over 43 million gallons are reported to be state-of-the-art, having achieved the DEC Part 614 construction standards (corrosion resistance, secondary containment and leak detection monitoring). Knowing that as little as five gallons of petroleum can potentially impact a billion gallons of groundwater to contamination levels above drinking water standards, then the upgrade of over 6,600 underground tanks with a storage capacity of 8.6 quadrillion (8.6×10^{15}) gallons prevents the potential contamination of 43 trillion gallons of groundwater!

Tank testing for leaks is a requirement under the Petroleum Bulk Storage regulations. Since 1985, 11,279 underground tanks have failed tank tests for leaks. Those failures triggered the repair, replacement or closure of those tanks. Although their exact capacity is unknown, an average of 4,000 gallons could be used to estimate a combined tank capacity of about 45 million gallons. That would mean an additional 9 quadrillion gallons of groundwater may have been prevented from being contaminated or further contaminated if some

contamination had already taken place. If these 11,279 tanks had leaked to the groundwater, the approximate cost of cleanup (using an average of \$25,000 per spill, which may be low) would be approximately \$282 million. This cleanup cost may very well have been prevented as a result of tank owners testing these tanks.

Aboveground Storage Tanks

Since 1986, 47,820 aboveground tanks with 3.2 billion gallons of storage capacity were registered with the Department. Of these, 45,414 tanks with 3.15 billion gallons of capacity are designed in accordance with the State tank standards. More than 98% of this petroleum is stored in tanks meeting the DEC standards. Preliminary surveys show that nearly 90% of the aboveground tanks also comply with diking requirements while only 40 - 60 % of the tanks comply with color coding, gauges and valving requirements.

Spill Response

Although reliable figures for the quantities of petroleum recovered and thus prevented from damaging the environment or public are not available, DEC staff have supervised the cleanup and closure of over 110,000 spills since 1986. Prior to that time, primary spill response was the responsibility of the Department of Transportation as mandated by Article 12 of the Navigation Law of 1978.

Our success in this program can best be "measured" by our ability to respond quickly and to effectively mitigate, if not prevent, a major incident from becoming a catastrophe.

The Spill program legislation took affect in 1978 and the number of spills on an annual basis has continually increased since that time, reaching 16,991 for the latest state fiscal year ending March 31, 1995. The reason for this continual increase is thought to be caused by the fact that the spill hotline number has been widely publicized and that the failure to report a spill is a violation of Article 12 of the Navigation Law. An additional factor for the large number of spill reports is that the petroleum bulk storage program required tank owners to leak test substandard tanks starting in 1986. Thousands of failed tank tests were reported to the hotline as spills. This practice continues to date.

Spill Calls Down

The first four months of this fiscal year (April - July, 1995) has shown a decrease of 8% in the number of spill reports. This is the first substantial decrease in the number of spill calls coming to the DEC spill hotline since it was initiated in 1978. Time will tell us whether this decrease is permanent, however, we are hopeful that this has occurred at least partially as a result of our preventive programs. □

Morris Leno is chief of the Division of Spills Management's Systems Management Section.



Updating Your Facility Registration

When one or more tanks at a facility are added, closed or replaced, it is a substantial modification to the facility and an updated registration application must be submitted to the regional office. This should be done within 30 days prior to substantially modifying a facility and no fee is required. □



What You Need To Know About Used Oil

Since DEC passed regulations (Part 360-14) covering used oil on January 14, 1995, we have received many questions on the "do's" and "don'ts" of these rules. The common questions include:

What tanks and substances are covered?

When do I have to register tanks storing used oil?

Where do I get the forms? What is the difference between used oil and used oil fuel on the form?

What standards apply to tanks storing used oil? Do underground tanks have to be tested?

Do I have to accept used oil from do-it-yourself oil changers?

The following addresses these commonly asked questions.

Tanks and Substances Covered

Used oil typically means used engine lubricating oil, however these regulations also cover other used oils such as oil-water mixtures, used hydraulic oil, etc. Underground or aboveground tanks as small as 110 gallons are covered, but portable drums are exempt. Oil/water separators are not covered. However, if there is a separate storage tank for oil leaving an oil/water separator, this would be considered a used-oil storage tank. If you have a question on whether a substance or tank you have would be covered by the Used Oil regulations, you can call (518) 457-9696.

Registration of Tanks

Although owners have been registering petroleum tanks since 1985, until now, tanks storing used oil have usually been exempt from registration requirements. As of July 14, 1995, aboveground and underground tanks storing used oil must be registered with DEC. If you have not yet registered your tank, complete the petroleum bulk storage (PBS) registration form and send it to the DEC regional office where the tank is located. You can get a registration form by calling the Bulk Storage Help Line at (518) 457-4351. *No registration fee is presently required and no late penalty is currently being imposed, but you must act promptly to be in compliance.* If you have already registered a petroleum tank, use a copy of your registration application and simply add the information for the used oil storage tanks to the form. Be sure to sign and date the form.

When you register your tank, you will need to indicate

whether the product stored is used oil or used oil fuel. Used oil is where the oil is stored in the tank until it is hauled away for recycling/disposal. Used oil fuel is where the oil is stored in a tank and then used in an on-site space heater. Used oil fuel is considered a product and is covered by the Petroleum Bulk Storage regulations and hence the registration fee is required to be paid.

Standards For Tanks

Tanks storing used oil must be in compliance with both New York's Petroleum Bulk Storage Regulations (6NYCRR 612-614) and federal Underground Tank Regulations (40 CFR 280). Following are major requirements. [For a complete listing of requirements, obtain a copy of both federal and State regulations. Call DEC at (518) 457-4351 and ask for a copy of New York's Petroleum Bulk Storage Regulations (Parts 612-614), Federal Underground Tank Regulations (40 CFR 280), the New York Used Oil Regulations (Part 360-14), and fact sheets covering the requirements.]

For **underground storage systems**, owners must:

- submit to DEC a tightness test on bare steel tanks and pipes. If you have not performed such a test in the past 5 years, you should promptly test your system to bring your facility into compliance;
- have leak detection in accordance with the EPA regulations. This means having the tank tested and/or using manual tank gauging or installing either a monitoring well, an automatic tank gauge or other equipment for leak detection. Although EPA has required leak detection since December 1993, New York DEC will now begin enforcing this requirement;
- replace existing bare steel tanks with new double-walled tanks and new corrosion resistant pipes by December 1998. Relining or retrofitting of existing tanks can be considered in lieu of tank replacement;
- close out-of-service tanks by cleaning them out and either removing them or filling them with a solid inert material; and
- perform a site assessment and maintain the report for tanks which have been permanently closed.

Continued on Page 11



For **aboveground storage systems**, owners must:

- identify the tank and contents and capacity with a label stating "USED OIL" and the volume in gallons or liters;
- conduct monthly visual inspections to ensure that the equipment is in good working condition;
- install a level gauge and dike by January 1997. Diking is required for all tanks which threaten ground or surface water and for large tanks (10,000 gallons or more); and
- conduct a structural inspection by January 1997 of all on-ground, substandard tanks which threaten ground or surface water and larger tanks (10,000 gallons or more).

Acceptance of Used Oil From Do-It-Yourself Oil Changers

Retail and service establishments are required to accept up to five gallons of used engine lubricating oil per person per day at no charge. A retail establishment is any vendor who sells more than 1000 gallons of lubricating oil per year. A service establishment is any automobile service station, including gas only outlets, or any other retail outlet or boat marina selling at least 500 gallons of lubricating oil annually and having an on-premises oil changing operation.

If you have questions on what you are supposed to be doing with your used-oil storage tank, please call the Bulk Storage Help Line at (518) 457-4351. □



EPA's Lender Liability Rule Final

The final UST lender liability rule was published in the *Federal Register* on September 7, 1995.

The ruling should help loosen credit, making it easier for small underground storage tank (UST) owners and operators to borrow money for UST upgrading and replacement. Secured creditors (lenders) have been reluctant to extend loans to these small businesses for fear of incurring UST cleanup liability in situations where the business becomes bankrupt and the lender takes possession of the property through foreclosure. This action will limit the cleanup and third party liability of banks and other lending institutions when they foreclose on a UST property as long as they do not actively participate in the day-to-day affairs of the creditor's business.

For more information, see Lender Liability article (*Tank Bulletin* #14) or call RCRA/Superfund Hotline (1 800 424-9346) for a copy of the *Federal Register* notice. □



A Deciding Factor

The main factor in obtaining a loan is the ability to repay the loan. Your income must be sufficient to repay the loan (principal and interest) according to the repayment schedule.

Additional Information

For more information about an SBA guaranteed loan, consult the loan officer of your bank. You can also contact your nearest SBA office directly by consulting the telephone directory under "U.S. Government" or call the Small Business Answer Desk at 1-800- 8-ASK-SBA. For the hearing impaired, the TDD number is (202) 205-7333. □

Site Assessment

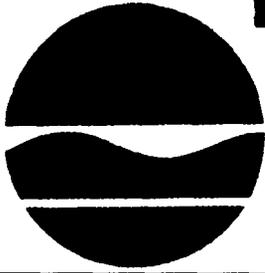
Assuming that there are existing USTs on the property, the bank will usually require a **Phase I Site Assessment** (ASTM Standard E 1527) be performed. This is a preliminary assessment which includes a review of existing data, a walk-through of the property, and completing an inspection in accordance with a checklist. A phase I study usually costs between \$1400 and \$1800. If problems are noted and the loan application is to be pursued, a Phase II Site Assessment must be performed.

A **Phase II Site Assessment** (ASTM Standard E 1528) involves drilling monitoring wells - 3 at a minimum. When the wells are bored, soil samples are taken and analyzed. The parameters to be analyzed depend on the use of the property. Present and previous site owners are interviewed. The cost of a phase II assessment is much more variable, depending on the size of the problem discovered in phase I. Typically the cost is about \$4800.



EPA UST Brochure Available

An informational brochure available from EPA on the federal Underground Storage Tank (UST) program. This brochure contains a listing of general information, regulations, and guidance documents on prevention and leak detection and corrective action. Videos are also listed. To get a copy of this brochure or information on UST publications, call the RCRA/Superfund Hotline at 800-424-9346. □



TANIK BULLETIN

Division of
Spills Management

Issue Number 17
Summer 1996

Customer Service -

What To Expect When You Contact DEC

Although most tank owners recognize the importance of bringing tanks into compliance and the need to avoid costly spills, the path to compliance can be a rocky road. Requirements may be difficult to understand. Deadlines may be forgotten. The cost of leak detection and tank upgrading may come at inopportune times. For DEC's Spills Management staff, assisting you - our customer - is a high priority.

As a DEC customer and an important partner for environmental protection, what kind of assistance and service should you expect?

DEC has nine regional offices and agreements with Nassau, Suffolk, Rockland and Cortland counties to help answer your phoned in questions and to meet with you to discuss specific compliance problems. DSM staff members are trained to answer your questions about the federal underground tank regulations, State chemical and petroleum regulations and major oil storage licensing. We have technical guidance and newsletters that we can mail you, including a list of tank testing methods, contractors and insurance providers.

The phone number and address of each regional office is listed in the back of this newsletter. Office hours are from 8:30 a.m. to 4:45 p.m. If a staff expert is not in the office to answer your question, we will return your call, usually the next day.

Field inspections to determine whether your tanks are in compliance with state and EPA tank regulations are performed by each regional office. If you are interested, call the regional spills management staff for an appointment. Our goal is to visit your facility within two weeks of the date the request was made.

If you would like to register or update the registration for a chemical or petroleum storage tank, this can be done by mail. You do not need to visit the DEC office to complete this transaction. Registration forms for petroleum tanks can be sent to the regional office where the tank is located. For chemical tanks, registration forms should be sent NYSDEC, 50 Wolf Road - Rm 360, Albany, New York 12233-3750. For mail service, DEC's goal is to complete the registration transaction within two weeks.

Let's talk frankly about enforcement. Most people are honest and want to comply with laws and regulations. But a small percent of the tank owners fail to comply and DEC is faced with taking enforcement action. To do otherwise would be unfair to those who voluntarily comply and would violate DEC's responsibility under the State Environmental Conservation Law. Because enforcement can mean

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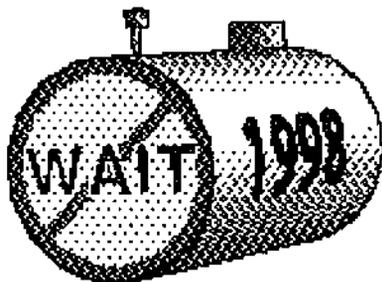
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fines, penalties and hardship, it is not a pleasant task and is the least favored duty of our staff. Enforcement is the last resort, taken only after making a sincere effort to notify you of regulatory requirements.

Ignoring a DEC compliance request places your business on a list for formal enforcement leading to fines and penalties. If you find that DEC has issued you a notice-of-violation or other legal notice, you can expect it to be issued in a polite and professional manner. Violations will be specific and fully explained. You will be counselled on how you may respond and be advised on the process and penalties that might follow.

As a customer and partner in our efforts to prevent future costly spills and leaks, we are dedicated to provide these services to you. We hope that they are consistent with what you expect of us. We welcome your comments at any time and would like to hear from you with any suggestions for improvement. ■



**NOW IS THE TIME TO
UPGRADE YOUR UST**



OSHA's Excavations Standards Must Be Met During Underground Storage Tank Excavation Work

In the springtime, while a young man's fancy may turn to love, a contractor's thoughts are about the construction season ahead. An integral part of this must be job safety, especially the dangerous job of installing, replacing and removing underground storage tanks (USTs).

Each of these activities involves the excavation of soil and working in trenches, which is inherently dangerous and complex. Besides having technical competence, the prudent contractor is fully versed in the applicable OSHA safety standards, making sure that work crews receive period safety training, and have the proper safety equipment. The responsible site supervisor will assure that crews work under safe conditions, violations of safe practices are reported and corrected immediately, and that no corners are cut that would jeopardize worker or site safety.

In this article we will explore the OSHA standards that are applicable to UST work.

After a four-man crew had removed an underground filter tank at a car-wash construction site, they entered the 9-foot deep, 6-foot by 14-foot excavation to hand-grade the bottom. The sides of the excavation were neither shored nor sloped. A wall of the trench collapsed, killing one worker and seriously injuring another. The employer was in clear violation of the OSHA standards that cover excavations (29 CFR Subpart P, section 650-652).



High groundwater can make working in an excavation quite dangerous.

EXCAVATION CAVE-INS ARE REAL hazards that happen all too often, and UST installation and removal operations are no exception. Bureau of Labor Statistics (BLS) for 1993 state that 138 workers were killed by collapsing materials. That figure represents two percent of all work-related fatalities that were caused by injury in that year.

Yet, there is no shortage of stories about employers who go to great lengths to avoid having to comply with these important OSHA requirements, which clearly saves lives. The safety requirements for excavations are not unduly burdensome regulations that have no real life impact on workers; these requirements save lives... everyday.

Are these requirements that tough to meet? Just imagine if you'd been the foreman on the car-wash job described above, and you had to inform the worker's spouse and children that their loved one was crushed to death at work today. And more often than not, the loved one does have dependent children - BLS reports that 66 percent of workers killed on the job are less than 45 years of age. Considering these potentially tragic consequences, compliance with the OSHA requirements seems the smart thing to do.

OSHA Requirements For Excavations

The 29 CFR 1926.651 *General Requirements for excavations* are laid out in paragraph form and include the following subsections:

(a) Surface encumbrances

According to the standard. "All surface encumbrances that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees." When trenches are dug alongside of buildings or fixed objects, the weight of the building on the side of the trench may cause the trench wall to collapse. This type of situation can be especially true in the tight areas associated with remediations.

For example: During a pipe laying
Continued on Page 3



operation, a tree adjacent to the excavation was undercut at the roots, three feet below ground level. The tree fell and when it did, it pinned a worker against the pipe that was being laid at the bottom of the trench.

(b) Underground installations

According to the standard, "The estimated location of utility installations - such as sewer, telephone, fuel electric, or water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work - shall be determined prior to opening an excavation."

Clearly, the potential of striking an underground electrical or fuel line needs to be addressed before an excavation is begun. Usually, utilities companies can be contacted directly and are very responsive to requests for review of a planned excavation. Potential hazard also lurks in a situation where a trench intersects an area of previously disturbed soils. Many fatalities associated with trenching accidents have occurred at the intersection of a trench and a previously filled trench (e.g., a utility conduit).

For example: A trench, 10.5 feet long, had been dug in preparation for laying a sewer pipe. A gas main was located four feet to the east of the trench. As the worker was grading the bottom of the trench, the east wall collapsed. The worker was crushed to death. The section that fell consisted of fill material from the previous installation of the gas main.

(c) Access and egress

This paragraph requires that adequate consideration be given to access and egress into and out of the trench which can be quite hazardous. The very act of scaling a vertical wall can cause it to collapse. Consequently, OSHA requires that either ramps and runways, designed by a "competent person", or stairways or ladders be included in all excavations. A **competent person** is defined by OSHA as an individual who is "capable of identifying existing and predictable hazards or working conditions that are hazardous, unsanitary, or dangerous to employees, and who has authorization to

take prompt corrective measures to eliminate or control these hazards and conditions." (Note: OSHA published an "intent" of its definition of a competent person in the 10/31/89 *Federal Register*. It states that a competent person must have specific training in and be knowledgeable about soil analysis, the use of protective systems, and the requirements of the standards.) A means of egress is also required for all excavations greater than 4 feet deep and must be placed in such a manner so as to require no more than 25 feet of lateral travel distance for employees.

(d) Exposure to vehicular traffic

UST operations often take place at gas stations, where vehicular traffic can be a real hazard. In 1993, 361 workers died as a result of being struck by vehicles - six percent of occupational fatalities for that year. Because trenching operations often take place adjacent to or in roadways, OSHA requires that workers exposed to vehicular traffic be provided with warning vests or other suitable garments marked with or made of reflective or high visibility material.

(e) Exposure to falling loads

There are many examples of workers in trenches being crushed by falling loads. Workers must not be permitted underneath loads that are being handled by lifting or digging equipment. For example, when a tank is being lifted out of an excavation, workers must be restricted from entering the tank excavation or drop zone.

(f) Warning system for mobile equipment

Because construction equipment operators are often unable to see everything that is going on to their rear during operations, a general practice of construction safety is to equip all heavy equipment that is used on site with backup alarms. When working from the surface into an excavation, these operators are also very limited in terms of what they can see in the excavation. Consequently, where mobile equipment is used adjacent to an excavation where the operator does not have a clear and direct view of the edge of the trench, OSHA

requires a warning system, such as barricades, hand or mechanical signals, or stop logs, to be utilized.

For example: A sewer pipe was being laid in an eight-foot deep trench. One end of the trench was being backfilled by a front end loader. A worker, new to the job, entered the area of the trench that was being backfilled and was crushed to death when a load of fill was dropped on him. The other workers in the area did not realize the worker was missing until several minutes had passed. Only after searching did they determine that their coworker must have been buried in the backfilled area. The operator of the front end loader, who's view of the excavation was obscured, had no idea that he had buried his coworker.

(g) Hazardous atmospheres

Hazardous atmospheres can be a problem in trenches. Because of the nature of a trench (i.e., because a trench is a narrow depression in the earth) hazardous gases may accumulate as they are released from the soil or groundwater.

This potential for concentrations of gases is particularly true at hazardous waste sites and may pose a problem at UST remediation sites where the tank has leaked. If there is the potential for a hazardous atmosphere to exist in a trench greater than four feet deep, OSHA requires atmospheric testing of the trench before employees are allowed to enter -- oxygen levels must be greater than 19.5 percent, the atmosphere must not exceed 20 percent of any lower explosion limit (LEL), and toxics below the permissible exposure limit (PEL). Hazardous atmospheres and entry into confined spaces, such as trenches greater than four feet, can be extremely hazardous. For this reason, if an UST removal operation is being performed in contaminated soil where the potential exists for hazardous atmospheres, a competent safety professional should be consulted.

For example: An UST was removed from an excavation approximately 6.5 feet wide and 6 feet deep. There was approximately one foot of water at the

Continued on Page 4



Trenching, Shoring and USTs (Continued)

bottom of the excavation. In preparation for installation of the new tank, two workers entered the excavation to splice two pipes. The entrants did not know that propane gas had leaked from an underwater joint on the pressurized side of the pipe being spliced. Both workers were killed by asphyxiation.

(h) Protection from hazards associated with water accumulation

OSHA requires employers to adequately protect workers from the hazards associated with water accumulation in an excavation. OSHA outlines three strategies for doing so, including shield systems, removal of accumulated water, or use of a safety harness and life line. Heavy rainfall or water accumulation from groundwater seepage is often associated with trench collapse. Particular care should be taken when inspecting trenches with water accumulation.

(i) Stability of adjacent structures

This paragraph of the standard requires that proper precautions be taken when the stability of an adjacent structure is jeopardized by the excavation. Support systems must be designed by a competent person, or a professional engineer must certify that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity. The standard also states that if sidewalks and pavements will be undermined, there must be an appropriate support system to protect employees from the possible collapse of such structures.

(j) Protection of employees from loose rock or soil

OSHA requires that employees be afforded adequate protection from the hazard of loose rock or soil falling or rolling from the face of an excavation. Specifically, OSHA requires that all materials and equipment be kept at least two feet from the edge of an excavation.

(k) Inspections

OSHA requires that daily inspections be performed to identify evidence of situations that could result in possible

cave-ins, indications of failure of protective systems, hazardous atmospheres, and other hazardous conditions. These inspections must be performed by a "competent person."

(l) Fall protection

Where a falling hazard exists, an employer must mitigate the hazard. Because trenches and excavations may pose a fall hazard, employers are required to provide physical barriers to prevent inadvertent entry. The standard requires:

Walkways or bridges with standard guardrails where employees or equipment have to cross over an excavation.

"Adequate barrier physical protection" at all remotely located excavations. Wells, pits, shafts, etc. must be barricaded or covered. Temporary wells, pits, shafts, etc. must be backfilled upon completion of exploration operations.

OSHA Requirements For Sloping And Shoring

The following section, 29 CFR 1926.652, *Requirements for protective systems*, describes how employees who must enter excavations are to be protected. There are essentially two options to ensure the safety of workers who enter excavations: Sloping or shoring.

Proper sloping of trenches is described in paragraph (b) design of sloping and benching systems. Employers have four options for proper compliance:

- **Option 1** - requires a slope of 1 and 1/2 horizontal to 1 vertical for a slope of 34 degrees measured from the horizontal. This requires that the slope be cut back 1 and 1/2 foot from the trench for every foot of depth. A six-foot trench, therefore, would require a slope nine feet out from the base of the slope.

- **Option 2** - allows for steeper slopes, based on the type of soil in which the excavation will be dug. For an in-depth discussion of soil types and requires slopes see 29 CFR 1926.652 Appendix

A, *Soil Classification*, and Appendix B, *Sloping and Benching*. There are essentially four types of soils: Stable rock, type A, type B, and type C. The angle of sloping in Option 1 assumes a type C soil. by definition, UST remediation work cannot possibly be done in type A soil, because type A soil, as defined by the standard, must never have been previously disturbed. Soil around a tank removal operation has obviously been previously disturbed (i.e., when the tank was installed). Type B soil requires a slope of one horizontal unit to one vertical for a slope of 45 degrees. It is probably easiest to simply dispense with the process of classifying soil and to assume it is type C, which requires a slope of 1.5 to 1.

- **Option 3** - requires the use of tabulate data approved by a registered professional engineer.

- **Option 4** - requires sloping systems designed and approved by a registered professional engineer.

The requirements for shoring systems are found in paragraph (c) *Design of support systems, shield systems and other protective systems*. As with sloping, there are several options for using acceptable shoring devices, including systems which meet the requirements of Appendices A, C, and D of the standard: systems which are used in accordance with the specifications, limitations, and recommendations issued or made by the manufacturer: systems based on tabulated data approved by a registered professional engineer; or systems designed by a professional engineer. Protective systems which meet the intent of the standard are discussed in some detail in Appendix C, *Timber Shoring for Trenches*, and Appendix D, *Aluminum Hydraulic Shoring for Trenches*.

Staying Out of Harm's Way

In 1985 OSHA prepared a report entitled, *Selected Occupational Fatalities Related to Trenching and Excavation as Found in OSHA Fatality/Catastrophe Investigations*, which was a review of some 206 trenching and shoring fatalities.

Continued on Page 5



Trenching, Shoring and USTs, (Continued)

The conclusion listed several recurrent problem areas, including:

- Failure to provide adequate support systems(shoring);
- Failure to set excavated material back an adequate distance (required two-foot minimum) from the edge of the excavation;
- Inadequate sloping of trench walls;
- Causing equipment and vehicles to come into contact with sources of electrical current;
- Operating equipment and vehicles too close to the edge of the excavation;
- Failure of workers to communicate in such a way as to prevent coworkers from being struck by equipment; and
- Failure to properly brace standing walls adjacent to trenches.

OSHA went on to list secondary causes of fatal accidents. These included:

- Inexperienced workers or workers new to a particular job;
- Employees taking unnecessary personal risks;
- Dangerous work practices (e.g., shortcuts that increase the likelihood of an accident);

- Failure to coordinate work in small areas; and health problems relating to the physical condition of workers (e.g., alcohol). OSHA concludes the report by listing several sets of measures which can be taken to prevent the complex events that are a function of human, machine, and environmental interactions that too often result in fatal trenching accidents. These preventative measures include:
- Establishing and strictly enforcing trenching and excavation safety measures, such as shoring, sloping, and removal of spoil from the edge of the excavation;
- Increasing training and education for work safety procedures and activities; and
- Improving supervision over required safety measures.

Excavations associated with UST installation and remediation are by their nature dangerous, and no worker should be expected to enter a trench without the proper protection. Yet as hazardous as such work may be, there are some very effective strategies for protecting workers. A good place to start is by complying with the OSHA regulations.



What's wrong with this picture?

References:

OSHA, 29 CFR Part 1926, Occupational Safety and Health Standards-Excavations; Final Rule. *Federal Register*, Tuesday October 31, 1989. OSHA, *Selected Occupational Fatalities Related to Trenching and Excavation as Found in OSHA Fatality/Catastrophe Investigations*. July 1985. OSHA, *Accident Report - Fatal Facts Number 52*. Bureau of Labor Statistics. *National Census of Fatal Occupational Injuries*. August 1994.

Matthew Fitzgerald, DrPH, CIH, Senior Industrial hygienist with SCIENTECH Inc. in Rockville, MD. This article was adapted from Bulletin 22 of Lustline, June, 1995. ©



EPA Policy on Self Discovery and Disclosure

Tank owners should be aware that they are subject to EPA enforcement for failing to comply with the 1993 leak detection deadline, and will be subject to enforcement once the 1998 upgrading deadline has passed.

As a tool to encourage voluntary compliance, EPA has issued a policy of reducing or entirely forgiving civil and criminal penalties when all of the following condition have been met. To qualify, the tank owner must:

- ★ self-discover the violation,
- ★ voluntarily disclose it in writing,
- ★ correct the violation within 60 days,
- ★ remediate imminent danger to health or the environment,
- ★ remediate environmental harm,
- ★ have avoided spills and other recurring violations, and
- ★ cooperate fully with DEC and EPA.

Complete forgiveness of penalty can be granted where the tank owner has not gained a significant economic benefit.

The final EPA policy statement appeared in the Federal Register dated December 22, 1995, pages 66707 - 66712. A copy can be obtained by calling (202) 260-7548 and requesting a copy of the index to the docket #C-94-01, and faxing document request to (202) 260-4400. Additional information can be obtained by calling Robert Fentress or Brain Riedel at (202) 564-4187. ©



Deadline For Chemical Storage Report Approaches

Two years ago, in response to a growing problem of real estate contamination and groundwater pollution, the Department of Environmental Conservation passed regulations requiring owners of storage tanks to develop plans for preventing and responding to chemical spills. The regulations, which are called the Chemical Bulk Storage (CBS) Regulations, gave owners or operators of storage tanks with a capacity of 185 gallons or more until August 11, 1996 to develop a 10-point Spill Prevention Report. A Spill Prevention Report (SPR) must contain the following:

1. a copy of the registration application and certificate issued by DEC;
2. approval of the report by the company's executive officer;
3. an up-to-date site map of sufficient detail to identify tanks, transfer stations and connecting pipes;
4. the signature and license number of the Professional Engineer or other qualified person who prepared the plan;
5. a description of releases for the past five years. This must address the magnitude and impact of such releases;
6. an assessment of causes of historical spills at the facility;
7. a status report on compliance with the standards set forth in DEC's Chemical Bulk Storage Regulations;
8. an appendage or index of supporting records;
9. evidence of financial responsibility (only when required by DEC);
10. a plan for spill response, including a map showing areas impacted by a potentially spill, a list of equipment and materials to contain a spill, name and phone number for emergency contacts and clean-up contractors, spill reporting procedures, plans for annual drills and other information consistent with general accepted spill prevention control and countermeasure practices.

Once prepared, the report must be kept up-to-date and maintained on the premises. It does not need to be filed with the department.

Many major chemical users already have an up-to-date spill prevention report and others are in the final stages of preparing a report. DEC will be inspecting facilities to see that proper reports have been prepared and are on-premises. Owners or operators who fail to develop the report by August 11 are subject to enforcement including fines and penalties.

For details on Spill Prevention Report regulations, see 6NYCRR 598.1(k). If you need a copy of the regulations covering these requirements, please contact Mary Ellen Cowan on our helpline at (518) 457-4351. The report must be prepared by an individual familiar with chemical storage, handling and spill response technology. For technical assistance on preparing a report, you should contact an engineering consultant or other individual with expertise with chemical storage and handling. ☐

Spill Cleanup Program Approved for Homeowners

The New York State Insurance Department has approved an innovative insurance program which covers the costs of clean-up, property damage, and fuel oil tank repair or replacement caused by the accidental release of fuel oil from a homeowner's heating system. The insurance is called the Homeowner's Environmental Loss Protection (HELP) insurance and became operational in the beginning of April 1996.

HELP insurance will also cover clean-up of fuel oil accidentally released onto a neighbor's property, provided the neighbor does not restrict the insurer's access to such property. These types of events are generally excluded from traditional homeowners' insurance policies. The program however, will not provide liability protection.

The program is available to customers of participating fuel oil dealers. The participation of the dealers is necessary since their inspection and maintenance of the fuel system, and monitoring of the insured's fuel consumption through automatic delivery are essential risk management components. Currently, about 60 dealers are participating covering approximately 15,000 homeowners in New York City, Long Island and Westchester. These policies are expected to grow significantly in number and to be available in other areas of the state.

The basic annual cost for \$100,000 of coverage for customers on an "automatic fill" program is \$40 per tank in the five boroughs of New York City, \$60 per tank on Long Island and \$55 per tank elsewhere in New York State. (Customers not on an automatic fill program will pay \$125 per tank statewide.) Surcharges are added to the basic cost of the policy based on the age of the fuel oil system, the tank construction characteristics and any previous claim activity. The basic policy has a \$500 deductible. The program is also available to commercial insureds as long as the maximum capacity of the fuel oil tank does not exceed 2,000 gallons.

To find out more about the HELP program, contact your fuel oil supplier. ☐



Do I have to report small petroleum spills to paved areas?

What is the reporting threshold for petroleum?

When do I have to report a petroleum spill?

These questions are now addressed in DEC's new petroleum spill reporting guidance. For a copy of this guidance, call Kathy Carpenter at 518-457-3891.

Guidance At-A-Glance

Petroleum spill must be reported to DEC unless they meet all of the following criteria:

- The spill is known to be less than five (5) gallons;
- The spill is contained and under the control of the spiller;
- The spill has not and will not reach the State's water or any land; and
- The spill is cleaned up within two (2) hours of discovery.

All reportable petroleum spills and most hazardous materials spill must be reported to the DEC hotline (1-800-457-7362) within New York State, and (1-518-457-7362) from outside New York State. For spill not deemed reportable, it is strongly recommended that the facts concerning the incident be documented by the spilled and a record maintained for one year.

Other federal and local agencies may need to be notified including the National Response Center (1-800-424-8802) and your local fire and emergency response corps. ☉

EPA Approves Continued Use of State Oil Spill Fund



In April 1996, EPA approved the continued use of the State Oil Spill Fund as a financial assurance mechanism for category 3 & 4 tank owners. Category 3 covers petroleum marketers with 13 to 99 underground storage tanks (USTs); and category 4 includes petroleum marketers with 1 to 12 USTs, nonmarketers with net worth of less than \$20 million, and local governments.

The fund covers first-party and third-party cleanup costs and third-party property damage claims. Third-party bodily injury claims are not covered.

DEC will continue to require responsible parties to pay for spill clean up. The fund will only be used when the responsible party is unknown, unable or unwilling to perform the clean up in a timely manner. If fund money is expended to remediate a site, the state will attempt to recoup the costs from the responsible party.

If you have any questions about the use of the State Oil Spill Fund as a financial responsibility mechanism or financial responsibility in general, call Bulk Storage Helpline at (518) 457-4351 and ask to speak with Dick Cowan. ☉

Finding Insurance For Spill Cleanup

The organization Professional Insurance Agents (PIA), provides a service to its members that helps them find a suitable market for hard-to-place risks including pollution liability and underground storage tank insurance. New York insurance agents wanting to find out more about these services and the PIA MarketBase™ computerized system, should call PIA of New York at 1-800-742-6369 or (518) 434-3111. ☉



How to Select a Remediation Firm

by John Patterson*

You've recently settled on a new location for your growing business. "Eureka!" you think. I'll use current property as collateral and rental income, and purchase the new property based on the new business.

Your joy is short-lived, though, when site assessment testing of your current property reveals contamination of both soil and groundwater. The situation is further complicated because the groundwater feeds into an underground stream flowing into the municipality's public water supply. What first seemed the ideal solution to your growing pains has become an instant nightmare. Even worse, you are informed that you need to clean up the problem before the bank will loan additional funds, because the property is now a liability instead of an asset.

Contaminated property is not uncommon. The practical solution is to engage the services of a legitimate remediation company, eliminate the problem and get on with your business plans. Recently, lending institutions have begun to show a willingness to help finance remediation efforts that can be done within a prescribed budget and time frame.

Should you find yourself in this predicament, here are some suggestions for selecting a remediation firm.

Where to Begin

You begin or continue with either an environmental consultant, or go directly to a remediation firm. Which course you choose depends on the nature of your environmental problem and to some extent your knowledge of environmental problems and solutions. A consultant will (1) evaluate the situation, (2) propose a scope of work for the initial evaluation including the steps necessary to fully define the extent of the problem, (3) offer one or more possible solutions, and (4) recommend one or more remediation firms to offer proposals for correcting the problems. If you retain a consultant, ask for several recommendations of remediation solutions, and the names of several different firms that can perform the work. This avoids potential conflicts of interest and provides you with

additional options. The various remediation companies will in turn offer different methods and a program plan to fit your short- and long-term goals and cash flow requirements.

Some individual owners choose remediation firms on the recommendation of other business owners or their bank. Another source available is the group of trade journals that discuss remediation problems. Other reference sources include the local phone book and purchasing guides available at the local library. There is no shortage of companies willing to provide remediation services.

What to Ask?

Once you have secured the names of several remediation firms, you can begin to narrow the process. It is important to remember that technology is constantly changing and being upgraded. As a general rule, it is preferable to recycle, rather than dispose. Ask each remediation firm about recycling options that can be part of the cleanup process.

With contaminated soil, for example, some remediation companies remove the affected soil and truck it to a landfill that accepts such material (there are fewer and fewer landfills available). Others clean the soil and find another use for it. Some technologies combine the contaminated soil with a fixation material and use the recycled material as the paving base for roads and parking lots. The material never needs to leave the site.

Select a firm which has knowledge and hands-on experience of your particular type of environmental situation. If your problem is groundwater contamination, select a firm with experience in that form of remediation. Ask about specific technologies that will be employed, and the company's range of experience. Ask, also, for specific references of finished projects for this type of remediation. Call the references; even consider a visit to the site to view, firsthand, the quality of work done by the remediation firm. Generally, clients who have used the services of a remediation company willingly share their experiences with you.

Ask about specific permitting required for your project and whether the firm you are considering has that in place. Remember, remediation is an emerging technology, and the rules in many cases are still being written. One of your objectives is to move through this process as quickly and effortlessly as possible.

Ask about fee structures upfront. Does the company offer a fixed price guarantee? Some firms provide flat-rate guarantee of their price, regardless of what the project entails. Also inquire about guarantees for work performed, and what after-the-fact consultation or remediation services will be provided should they be required.

Last, arrange to visit the firms facility. Speak with the personnel who will be involved with your case. And don't be afraid to ask questions as the project gets underway.

When choosing a remediation firm, exercise the same caution you would use in selecting a physician or attorney, or any professional in whom you entrust your care. Be armed with as much information as possible in making the choice. With today's technology and the right firm, you will soon be "back on track" in your business venture. ☐

John Patterson is CEO for Continental Remediation systems, Natick, MA. This article is reprinted with permission from the January/February 1996 issue of PETROLEUM MARKETER magazine.

DEC Brownfield Policy

DEC encourages prospective buyers of contaminated property to enquire about the voluntary cleanup policy called the "Brownfield Policy". By entering into an agreement with DEC to undertake a specified level of remedial work, DEC will release the buyer from any further remedial obligation for which the buyer was not responsible. Call (518) 457-4351 to request a copy of Issue #14 of the *Tank Bulletin* which contains a review of this policy.



When to Look for a Remediation Contractor

If a spill occurs at your facility, the one luxury not available to you is time, as pressure to take action will start immediately. The longer you wait on a spill, the more costly it is to cleanup, moreover DEC will ask you to address the spill as soon as possible. The local/state health department may be directly involved if there is a threat to drinking water supplies or public health.

At this point, there is not enough time to investigate contractors, follow up on references and obtain a good price quote. If your risk of having a spill is high, you owe it to yourself to complete these activities beforehand without the pressures and emotions that accompany a spill incident. ☐

Source of Municipal Closure and Remediation Funding

The State Revolving Fund (SRF) administered by the NYS Environmental Facilities Corporation (EFC). EFC has low interest loans for municipalities needing money for tank closure and site remediation. In order to be eligible for a loan, the municipality should apply to EFC to have the project listed on the annual funding plan called the Intended Use Plan.

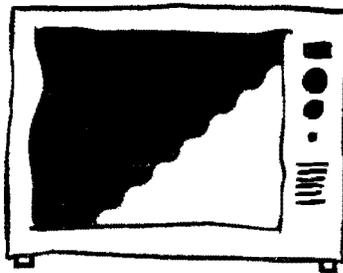
All costs related to a tank closure could be eligible for financing, but low interest loans for new tank or associated equipment such as lines and pumps has been ruled ineligible. Examples of projects that could be financed by a SRF loan include:

- testing of soils and sludges to characterize wastes for proper disposal;
- removal and disposal of the leaking or deteriorated tanks and piping;
- in-place tank closure;
- disposal of sludges and remediation of contaminated soils;

- backfill of excavation with clean soils; and
- pumping and treatment of contaminated groundwater.

For assistance with project listing or for information on the SRF program, please contact Mr. David Morseman at EFC's toll-free information line (800) 882-9721 (within New York State only) or (518) 457-3833. ☐

See Your Way to Compliance...



...All you need to know about meeting the 1998 deadline for upgrading steel underground storage tanks is included in a series of video tapes produced by the U.S. Environmental Protection Agency.

The videos show the important steps you need to take to be in compliance. For information or to order these videos, call the numbers below.

•For videos on installation, piping, spill and overfill equipment, leak detection, contamination, and safe fuel delivery, call

Environmental Media Center *
(800) 522-0362 or
(301) 654-7142

•For videos on safe tank closure, site assessment at closure, and underground storage tank facility compliance inspections, call

**New England Interstate
Environmental Training Center**
(207) 767-2539



Risk Based Corrective Action (RBCA) Update

DEC is one of 40 state agencies developing a Risk Based Corrective Action (RBCA) guidance on the cleanup of petroleum releases. The RBCA which will enable DEC to direct cleanup effort on the basis of risk, will be based upon ASTM Standard E 1739-95.

The RBCA concept was "tested" with 20 demonstration spill projects over the winter and will be reviewed by a "stakeholders group" to gain additional insights starting June 1996. We hope to have a draft guidance document ready for public comment this Fall.

The ASTM is giving a series of generic courses on RBCA. If you are interested, you can call Kristina Falkenstein with ASTM at (610) 832-9686 or visit their WEB SITE at: <http://www.astm.org>. ☐

Getting Out From Under, Underground Storage Tank Alternatives for Small Towns

The National Association of Towns and Townships (NATaT) has prepared a guidebook and video to help municipalities find cost-effective ways of achieving compliance with the federal underground storage tank (UST) upgrading requirements for 1998. It was written for small towns and townships, but it is just as relevant to other or larger governmental entities. Any county, municipal, state, school district, or other official responsible for managing and maintaining underground storage tanks will find the guidebook a useful source of information and ideas. For more information, write or call: NATaT, 1522 K Street, N.W., Suite 600, Washington, D.C. 20005-1202, or (202) 737-5200. ☐



Tank Owners Plagued with Petroleum and Chemical Spills

Dozens of spills are reported to DEC each day. In 1995, almost 17,000 spills were reported on DEC's Spill Hotline.

While many spills occur at storage depots where large amounts of petroleum or chemicals are handled, homeowners and small businesses with heating oil and gasoline tanks are increasingly being troubled with spills and leaks. The following cases are typical of the spills reported throughout the State.

Heating Oil Spills

Winter always brings an increase in residential heating oil spills.

In January, DEC's Region 8 staff were involved with five reportable oil spills from residential tanks. In one case, snow melt flooded a basement of an unoccupied church building causing the fuel oil tank to shift and covering the floor with two inches of oil. Water was pumped into to the basement to keep the oil floating above the floor until it could be pumped out by a remediation contractor hired by the church.

In another incident, over 100 gallons of #2 fuel oil leaked from a 275-gallon residential fuel oil tank, entering the basement. A contractor was hired to remove the free product and install a vapor extraction system in an attempt to lower the level of fuel oil vapors in the residence. The New York State Health Department advised the family to move out until the vapors reach a safe level.

In three other incidents, residential fuel oil tanks were damaged by falling ice and snow resulting from unseasonably warm weather and heavy rains. The spills ranged from 5 to 50 gallons. In each case the contaminated soils were excavated with two of the residences requiring venting to reduce the level of fuel oil vapors.

During the same month, a 300-gallon aboveground gasoline tank outside a private residence sprang a leak where it lay on rotting boards. Gasoline vapors traveled 60 feet under the half of the house with a concrete floor, but surfaced where the earthen floor began. Residing in

the house were a mother, three children and an invalid grandmother. The vapor level was measure at 3 to 4 ppm in the living quarters. Using the State Oil Spill Fund, the Region 8 staff installed of a soil vapor extraction system when the contractor hired by the family failed to show up.

Bill Blain, a spill responder in Region 4 (Albany area), says that a good deal of his time is spent responding to releases from residential fuel oil tanks. In his opinion, with regular tank inspections and a little preventative maintenance, most of these spills could have been prevented. For more information on the inspection of residential fuel oil tanks, see issue #16 of the *Tank Bulletin* for the Self Inspection Checklist for homeowner fuel oil tanks.

Diking Prevents Environmental Damage From Acid Spills

Chemical spills continue to be a concern for tank owners. When a pipe union failed at an asphalt plant in the Town of Tonawanda, diking prevented the spillage of 2,000 gallons of muriatic acid.

The dike successfully contained the spill. Furthermore, the dike was lined with limestone which helped neutralize the acid. The company further neutralized the acid which was finally treated at their wastewater treatment plant.

In August 1995, a chemical storage area at the plant caught fire. Fire fighting runoff was contaminated by the chemicals and had a pH of 1.0. The runoff flowed to the adjacent Niagara River through storm sewers and wastewater treatment plant. A fishkill occurred in the river. The company rapidly responded to contain and cleanup the site. The following steps were taken:

1. sealed all drains from the plant;
2. removed and disposed of a considerable amount of contaminated soil;
3. disposed of contaminated water;
4. removed the remains of the burnt building; and
5. restored the affected area with new sidewalks, lawns, and pavement. ●

One gallon of petroleum can
contaminate one million gallons of
drinking water

The Insurance Emergence



According to EPA, obtaining pollution liability insurance to cover the federal financial responsibility requirements is now affordable for most owners of underground storage tanks (USTs). Policies are being written to cover the full financial responsibility requirements and also for that portion not covered by the New York State Oil Spill Fund - third-party bodily injury. (See *Tank Bulletin* #12, Spring '94 for more information about the use of the State Oil Spill Fund.) DEC has done some checking and found the following insurance companies are writing policies in New York:

Zurich-American Insurance company
1 Liberty Plaza, 53rd Floor
New York, NY 10006
Bill MacElroy
(212) 748-2330

American International Corporation
70 Pine Street, 11th Floor
New York, NY 10270
Joe Valenza
(212) 770-5130

Rates to meet the full financial responsibility requirements vary widely. For new double-walled tanks and piping with leak detection, the cost is \$300 to \$500 per tank, annually. When determining your premium, the factors that are considered by insurance companies are:

- tank construction and age,
- leak detection,
- liability (prior loss), and
- management of the site.

Site management can often be determined intuitively by the savvy insurance underwriter. The better your facility score, the lower will be your insurance premiums.

To get up-to-date information on insurance companies that provide pollution liability insurance for petroleum bulk storage, or to determine if a company is eligible to write such policies in New York, you can call one of the following numbers:

Important Insurance Phone Numbers

N.Y. State Insurance Dept. Hotline - 1-800-522-4370

Independent Ins. Agents Assoc. of NY - 1-800-962-7950

Professional Insurance Agents - 1-800-742-6369

Periodically, DEC gets updated information on companies that are writing policies to satisfy the federal financial responsibility requirements. If you are interested in obtaining this information, please call Dick Cowan at (518) 457-4351. ☉

Spills and Overfills During Deliveries

Some petroleum distributors deliver product with trucks equipped with hoses **without tightfill connectors** which attach to the UST fill pipe. Without a tightfill connector, a routine petroleum delivery can easily result in a disastrous spill of petroleum around the fill pipe requiring immediate cleanup efforts. Recently, gas stations equipped with **ball float prevention valves** on the tanks have had large spill during deliveries without tightfill connectors. When the tank became full, and the ball float prevention valve closed, petroleum rushed out of the fill pipe onto the surface.

Such spills are actually a **violation of state and federal UST regulation** which require that owners and operators ensure the release due to spilling and overfilling do not occur. US EPA is currently taking enforcement action against a company that failed to prevent such releases and is seeking a penalty of \$3,000 for those violations. ☉

Overfill Prevention - Vent Line Ball-Float Valve or Drop Tube Flap Valves?

Some petroleum distributors use trucks which pump product to USTs under pressure. Pumping results in faster delivery times, clearing the truck from the station sooner and increasing the number of deliveries in each day. However, the use of this equipment poses dangers for USTs equipped with ball float valves installed on the tank vent line. When a tank equipped with a ball float becomes full, the valve closes, which stops the venting and flow of product to the tank. This may result in an increase in pressure and damage to the tank.

For faster delivery times, a drop tube flap valve can be used. This valve will stop the flow of product without increasing the pressure in the tank. ☉

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Issue 18

NYS Department
of Environmental
Conservation



TANK BULLETIN

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Acting Commissioner Cahill On Customer Assistance at DEC

Dear Tank Owner:

DEC's primary mission is to protect the quality of New York's environment and natural resources. One way of achieving that goal is to help businesses find better ways to comply with our requirements, either through technical innovation or new management approaches. By working with businesses and municipalities to achieve compliance, we can better protect the environment, minimizing the expenses involved.

There is a lot we are doing to assist businesses, local governments and individuals in their effort to comply. This attitude was highlighted in the lead article in the last issue of the Tank Bulletin entitled "Customer Service — What to Expect When You Contact DEC." Through such vehicles as the Tank Bulletin, the Bulk Storage Helpline and technical assistance bulletins, the DEC is making significant efforts to educate the public on what must be done to comply with state and federal bulk storage requirements and how to achieve compliance. Examples of these efforts are the recent workshops held by DEC and the New York State Chemical Alliance on "How to Comply with New York's Chemical Bulk Storage Regulations."

Private tank owners are collectively in custody of millions of gallons of petroleum and hazardous chemicals, so the importance of effective environmental management for these tanks should not be understated. We think these cooperative efforts are the best way to achieve our mission, but we recognize that some will choose to ignore environmental regulations. When that happens, we will enforce the laws of the state with full vigor.

Should you have any questions about New York's bulk storage programs, please call your regional office listed on the back page, or the Bulk Storage Helpline at (518) 457-4351.

Sincerely,
John P. Cahill

George E. Pataki, Governor
John P. Cahill, Acting Commissioner

Dick Cowan, Editor

ABOVEGROUND TANK INSTALLATION

When we think of hazardous chemicals, we tend to think about the dangers and threats faced by others who are exposed to such substances in the workplace or in an industrial setting. Yet, each of us is exposed to a common hazardous material on a daily basis - petroleum. Gasoline, which fuels the millions of automobiles we all drive each day, is highly flammable and can flash violently when ignited. Breathing gasoline vapors can cause drowsiness, nausea, nerve damage and blood disorders. Gasoline is a potential cause of cancer. Home heating oil, if leaked into the environment can taint drinking waters and cause noxious odors in our homes and businesses. (See Glencliff article in this issue.)

While the casual user should have a healthy respect for the inherent dangers of petroleum products, those who sell or are in custody of large quantities of petroleum have a special responsibility for safe storage and handling. If a storage system fails, it can pose a severe threat to the public health and the environment. - Editor.

As owners and operators of bulk storage facilities become aware of the problems associated with underground tanks, aboveground tanks become an attractive alternative.

In Issue #11 of the *Tank Bulletin*, A.D. Young discussed the pros and cons of aboveground and underground storage. In this article, we will discuss the equipment that you will need for a safe aboveground storage system..

All new aboveground tanks at a site with a combined capacity exceeding 1,100 gallons must be installed in accordance with DEC's Bulk Storage Regulations (6

NYCRR Parts 612 - 614), and must consist of the following:

- Steel tanks
- Corrosion protection for tank bottoms and underground piping
- Secondary containment (diking)
- Leak monitoring system
- Gauges or high level alarms
- Spill prevention valves
- Tank labels
- Painting of tank surfaces

Tank resting on the ground must have an

impermeable barrier under the tank bottom and must be equipped with a leak monitoring system between the tank bottom and the barrier. A diagram of an aboveground tank meeting the requirements of the regulations is shown in Figure 1.

TANKS

In designing and fabricating an aboveground tank, be sure it is constructed in accordance with a national standard such as Underwriters Laboratory (UL), Standard #142 or two standards developed by the American Petroleum Institute (API), Standard #620 or #650. Typically, tanks are constructed in accordance with UL 142.

In New York State, all tanks must be constructed of steel. Fiberglass and plastic tanks are not approved for aboveground petroleum use. Such tanks, if exposed to a fire, would melt, exacerbating the fire with the release and ignition of the tank contents.

Tanks designed for underground use must not be used aboveground without the advice of a structural engineer or tank manufacturer. When used underground, such tanks gain structural support from the surrounding soil and are sometimes designed to a lower standard than an aboveground tank that must be able to support the weight of the stored product. A 2,000 gallon tank filled with gasoline weighs more than seven tons. In addition, an underground tank does not have an emergency vent.

CORROSION PROTECTION

Steel tanks in contact with moist soil may rust and eventually leak. If the bottom is exposed to soil, it must be protected from corrosion using sacrificial anodes or an impressed current system. The system must be designed to provide at least 30 years of corrosion protection. Consult a qualified corrosion engineer to design a suitable protection system. To avoid the need for cathodic protection, it is best to place the tank on a reinforced concrete pad, or on cradles or saddles.

New underground piping must be either made of non-corrodible material such as fiberglass-reinforced plastic or cathodic protected steel which provides protection for at least thirty years

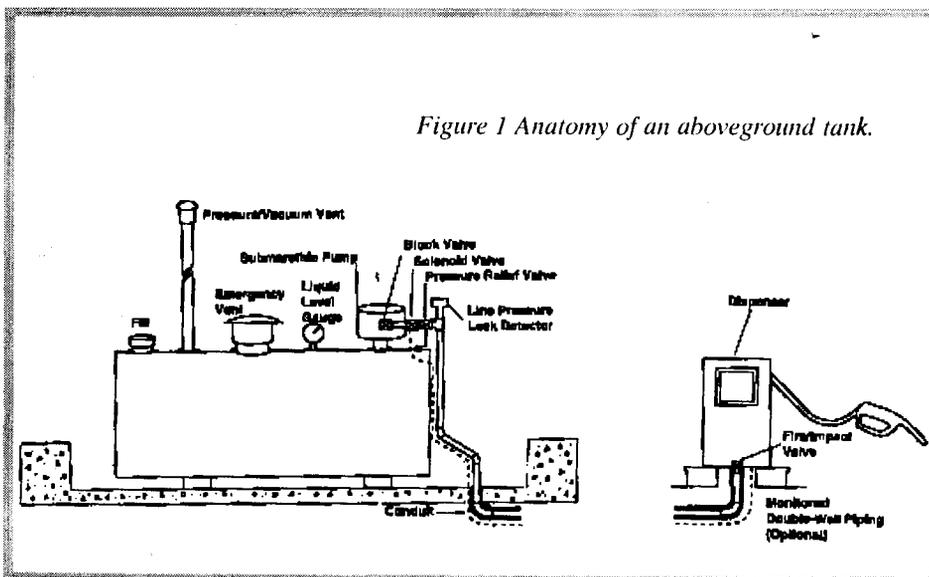


Figure 1 Anatomy of an aboveground tank.

SECONDARY CONTAINMENT (DIKING)

Secondary containment for above-ground tanks usually consists of dikes and impoundments. They were originally installed to act as a fire break and to separate fuel sources from ignition sources. Today they are used to protect the environment and to catch and contain spills from the following sources:

- Overfill spills which usually discharge from the vents;
- Spills at fill ports and from ruptured delivery hoses;
- Leaks from pumps, valves, and connections to the tank;
- Discharges from valves left open by accident; and
- Spills caused by bullets or other vandalous acts.

Dikes also serve as a traffic barrier, preventing vehicular damage to valves, tanks and pipes.

A number of variations to the traditional dike have been used successfully to prevent these leaks from reaching the environment. A system of impervious ditches and a remote impoundment may be an effective method of protection. This system is not only effective in protecting the environment, but lowers the potential of a pool fire within the containment basin at the base of the tank.

To comply with the DEC regulations, a barrier such as a concrete pad, synthetic liner, clay or other impermeable material must be installed under a new above-ground tank which is in contact with the ground. This barrier stops tank leaks from migrating into the environment.

In addition, any tank with a capacity of 10,000 gallons or more must be surrounded by a dike capable of containing the contents of the largest tank. Ten percent (10%) must be added to allow for stormwater and freeboard.

A tank with a capacity of less than 10,000 gallons must also be surrounded by a dike if there is a possibility that a spill would reach ground or surface waters. The DEC regional office should be contacted if



Steel tanks will perform better than fiberglass or plastic tanks when exposed to fire. They are required for storing petroleum products above ground.



Stormwater should drain to a sump where it can be pumped out of the dike.

For ASTs less than 10,000 gallons, alternatives to diking are available. See SPOTS Memo 17, Alternatives to Secondary Containment for Small Aboveground Petroleum Tanks

there is a question on the need for such diking.

For more information on constructing dikes, refer to *Tank Bulletin #6*, Spring/Summer of 1991, "Complying With NYS's Regulations on Secondary Containment" and DEC guidance document, *SPOTS #10*, "Secondary Containment for Aboveground Tanks."

Stormwater which collects within the dike should be drained to a sump where it can be discharged using a siphon, pump or drain extended through the dike. Drains must be valved and kept locked in a closed position. Valves should be located outside the dike where they can be accessed under fire conditions. It is of utmost importance to keep the containment area free of petro-

leum stains and spills, for if stormwater becomes contaminated, it must be treated before being discharged. A SPDES permit is required for such discharges. See the *Tank Bulletin* article entitled, "How to Handle Stormwater at Aboveground Storage Facilities", Issue #7, Fall of 1991 for a discussion on treatment and disposal of contaminated stormwater.

LEAK MONITORING

For new aboveground tanks resting on the ground, DEC requires monitoring of the space between the tank bottom and the impermeable barrier under the tank. Monitoring can be done using petroleum sensors or simply by visually inspecting drainways installed within the monitoring space.

A practical and economical monitoring method is to erect the tank on a concrete foundation pad. The pad performs three important functions: first, it provides an impermeable barrier beneath the tank; second, it serves as a foundation for the tank; and third, the pad can be visually monitored for possible leaks. Vertical tanks are available from the factory constructed with double bottoms which allows for monitoring of the interstitial space.

GAUGES AND HIGH LEVEL ALARMS

Gauges showing the volume of product stored provide valuable information needed by the delivery operator to prevent overfilling. Gauges must be installed on all new aboveground tanks. As an alternative, a shutdown device or high-level warning alarm may be installed to warn of an imminent overflow.

Although DEC's regulations allow either a gauge, automatic shutdown device or high level alarm, tank owners should consider installing at least two of these devices.

Alarms can be designed to provide an audible or visual signal when the tank reaches 90 percent of capacity, while shutdown devices are usually designed to stop the flow of liquid into the tank when 95 percent of capacity is reached.

Because 5 or 10 percent of the tank volume must be saved to allow for expansion and as a factor of safety. Select the tank size based on the working capacity, not total capacity.

Float vent valves which provide overflow prevention by slowing gravity deliveries to underground tanks are not appropriate for use with aboveground tanks.

VALVES

The department requires all dispensers of motor fuels under pressure from a remote pumping system be equipped with a shear valve (impact valve) designed to close automatically if the dispenser is accidentally dislodged from the inlet pipe.

Gravity-drained tanks must be equipped with both an operating valve to control the flow of petroleum and a shutoff valve (such as a solenoid valve) to stop the flow if a piping or dispenser failure occurs.

For pump-filled tanks, the fill pipes must be equipped with an operating valve and a check valve for automatic protection against backflow.

LABELING

To help avoid a mixup which might lead to an overflow or cross product contamination, DEC requires the tank number, design capacity, and working capacity be displayed at the gauge and on the tank. The fill port must be color coded and the tank marked with product name or symbol

For an excellent guide on installing small aboveground storage systems, the reader may wish to obtain a copy of the Petroleum Equipment Institute (PEI) manual entitled "RP 200-96 - Recommended Practices For Installation of Aboveground Storage Systems for Motor Vehicle Fueling." For a copy, call (918) 494-9696. The cost is \$15.

code of the American Petroleum Institute.

PAINTING

New tanks need to be painted to prevent rusting of the shell. DEC requires that the exterior surfaces of new aboveground storage tanks be protected by a primer coat, a bond coat and two or more final coats of paint or have an equivalent surface coating system. Contact the Steel Structures Painting Council, 4400 Fifth Ave., Pittsburgh, PA 15213-2683 for guidance on coating systems and surface preparation.

Most tanks are delivered with only a primer coat. The owner or operator must make provisions for the rest of the coating system.

VAPOR RECOVERY

Gasoline vapors contribute to the formation of smog. Venting of these vapors should be controlled.

Large gasoline tanks such as found at major storage terminals, are usually equipped with floating roofs that minimize the space available for vapor formation. External floating roofs are used for open top tanks; internal floating roofs are used for fixed roof tanks.

At smaller facilities, breathing vents which might allow the escape of vapors, are controlled by pressure-vacuum devices or equipped with atmospheric caps, relying on positive displacement and vacuum connection to the delivery truck to ensure vapor recovery.

To reduce splash and vapors, fill ports can be equipped with a submerged fill pipe with a diffuser extending to within 6" of the tank bottom. A submerged fill not only reduces the amount of vapor lost to the atmosphere but also the vapor returned back to the delivery truck. Vapor losses can translate to substantial product loss and a loss of money for the tank owner.

For information on DEC's vapor recovery regulations, call Don Spencer or Bob Praisner at (518) 457-7688.

VENTS

The buildup of excessive tank pressure or vacuum can occur whenever filling, emptying or a temperature change occurs. Vents are used to minimize this buildup and protect the tank from any excesses.

Two vents are usually installed on ASTs: an operating vent and an emergency vent. The operating vent allows air to enter and vapor to exit at a rate sufficient to prevent the tank from bursting or collapsing.

Emergency venting provides tanks with relief from the pressures resulting from tank overfilling or heating and boiling of the tank contents if the tank is exposed to fire.

One style of emergency vent design is a loose bolt manhole. Often owners/operators see these manholes open during a delivery and mistakenly tighten the bolts. Also, tanks are air tested when installed. At the time of the air test the long bolts are replaced and the manhole is bolted shut to allow testing to be done. If, at the end of the test the manhole is not reopened, the emergency vent is effectively eliminated.

These are dangerous conditions and should be corrected immediately. If a tank is in a fire situation or over pressurized, it could fail catastrophically.

For guidance on the sizing of the vents, you should obtain the latest edition of the API Standard #2000, "Venting Atmospheric and Low-Pressure Storage Tanks [phone (202) 682-8375] and the National Fire Protection Association (NFPA), Standard 30, "Flammable and Combustible Liquids Code (phone 1-800-344-3555).

For an overall discussion of aboveground petroleum storage, obtain a copy of the DEC publication "Aboveground Storage of Petroleum Products," March 1987. A copy of this 170-page manual can be obtained by calling Health Education Services at (518) 439-7286.

Copies of referenced Tank Bulletins and SPOTS memoranda can be obtained by call the Bulk Storage Helpline at 518-457-4351.

New Fire Codes Available

This year, the National Fire Protection Association (NFPA) has revised the following codes: *Flammable and Combustible Liquids Code*; and *Code 30A, Automotive and Marine Service Code*. For more information, call NFPA at 1-800-344-3555, or on the web at <http://www.wpi.edu/fpe/nfpa.html>.

Dangers of Static Electricity

Understanding static electricity can help prevent aboveground storage tank (AST) explosions and fires. The science behind static electricity in storage tanks can be condensed into a few simple rules of thumb that may prevent accidents. These rules which are presented below, are followed with examples to illustrate their use. As with any topic, always refer to the appropriate codes and standards for detailed information on safe work practices (see box).

Rules of thumb are no substitute for a thorough understanding of the dangers associated with hazardous substances. However, rules of thumb and clever sayings are more easily remembered and applied by the average worker than vast amounts of complex information.

Relevant Codes and Standards

- NFPA 77, Recommended Practice on Static Electricity
- API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents
- API Publication 2219, Safe Operation of Vacuum Trucks in Petroleum Service
- API Standard 2015, Safe Entry and Cleaning of Petroleum Tanks

Rule # 1 - The 11th Commandment

Metallic equipment and other electrical conductors must be grounded where flammable atmospheres can exist.

Example: A vacuum truck was removing petroleum tank bottoms. The truck was ungrounded. The flow of petroleum caused a significant static charge to develop on the truck and the hose. The charge arced to the tank, which exploded.

Example: A hose stiffened by a metal

bar (strongback) was being used as a wand to vacuum clean a double wall tank that contained flammable vapors. The bar was not grounded and the accumulated static electricity on the bar arced to the tank. Equipment such as the metal bar should be grounded by connecting the equipment to a grounded object with an electrical conductor. This is called electrical bonding.

Example: A worker was removing naphtha from an open top plastic AST with a suction hose. The end of the hose had an ungrounded metal coupling. The coupling accumulated electrical charges and arced to a nearby metallic object or through the worker's body to ground. An injury resulted.

Because hoses are frequently used for liquid or liquid/vapor transfer, any hose that has a metal coupling should be grounded and verified to be grounded. It is not acceptable to assume the hose is grounded by the internal spiral wiring. These wires are often broken internally or not connected to the couplings, creating an ungrounded conductor in the hose.

Rule #2 - Don't play with live snakes

Do not open, sample, gauge, disturb or stick anything into a tank while it is being filled or emptied.

Liquids or vapors flowing through pipes may generate static electricity by a mechanism known as streaming currents. The greater the velocity of flow, the greater the potential for static charge build up. Streaming currents are not the only source of static electricity. Air particles or water droplets in a liquid, mist, bubbling compressed gases through liquids and agitation can also create electrical charges. The common tank cleaning operation which involves applying steam through nozzles is particularly notorious for generating static electricity.

Another common source of static buildup is splash filling, which causes turbulence and droplet formation. Splash filling is defined as dropping liquid from the top of a tank through an open pipe at

a velocity greater than one meter per second*.

The energy of pumping, flowing or agitating liquids may create static charges regardless of whether the fluid is conductive.

Example: A tank car was being filled with toluene. The operator lowered a sample bottle into the hatch while the tank was filling. A flash fire occurred and burned the operator. This incident demonstrated violations of rule 1 (Equipment which can act as an electrical conductor must be grounded), and rule 2 (Do not sample a tank while it is being filled).

Rule #3 - Less is best

Minimize the delivery rate to reduce static buildup.

Filling tanks, trucks or other containers at a low rate reduces the possibility of generating sufficient static electricity to be an ignition source. The rule for filling is that unless a filling line is submerged, the velocity of the liquid should not exceed 1 meter/second*.

Tanks without submerged fills have ignited when being filled at high velocity. Even when the fill line is submerged, static discharges may occur if velocities are extremely high and there are static electricity enhancers such as filters.

Example: A tank truck normally used for gasoline transport was being filled with lube oil when its flammable vapor space ignited. Although there was no known ignition source, it is believed that the high fluid velocity and the presence of a filter created sufficient static charge to spark the vapors above the liquid.

Consult the American Petroleum Institute (API) Standard No. 2003 for upper limits on filling velocities.

Rule #4 - Don't kick a dead horse until at least 30 minutes after it's dead

Wait at least 30 minutes after filling a tank before opening, sampling or introducing an object into a tank.

Even after filling stops and the generation of static charge has ceased, time is required for the charge to bleed away to ground. This time period can be especially significant when filling a tank with a nonconductive liquid. Experience shows that 30 minutes is sufficient for most cases and is the rule specified by National Fire Protection Association (NFPA) Standard No. 77 and API Standards No. 2000 and 2003.

Example: A large vertical, cylindrical tank exploded when the tank was gauged shortly after being filled. The static charge generated by filling the tank created an electric field inside the tank. When the operator opened the hatch and lowered an ungrounded plumb bob into the tank, it touched the shell and created the spark which ignited the flammable vapors.

Plastic Tank Alert. The generally accepted rules of static electricity ignition prevention may not apply to large plastic tanks (over 1,000 gallons). Many of these tanks contain flammable atmospheres. However, unlike steel tanks, these tanks have an unusually high resistance path to ground. As a result, the typical 30-minute waiting time for the charge to bleed away from the tank may not be sufficient to ensure that the potential for a spark has been eliminated. If a metal object were brought near a tank with a static charge and a flammable atmosphere, a spark could occur. Using a metallic dip tube or grounding wire could decrease the risk of a spark, however, if the metal part were not grounded correctly, the chance of a static spark could be increased. To minimize the possibility of a spark in a plastic tank, consider following these safety precautions:

- Apply the 1 meter per second* rule for filling rates until the filling nozzle is submerged.

- Wait five hours, preferably overnight, before opening the tank, gauging it or introducing an ungrounded conductor on or near the tank.

- Ensure that all metal appurtenances, flanges, etc. are bonded and grounded.

Conclusion. Many static electricity discharges have not resulted in serious inci-

Warning - Fire at Service Stations Caused by Static Electricity

In recent years, there have been a number of fires at service stations caused by static electricity. Most of the fires can be divided into three types of incidents. (1) fires occurring during the fueling of small containers in pickup trucks with bedliners, (2) those occurring during the fueling of vehicles in extremely dry conditions, and (3) fires occurring during the calibration or testing of fuel dispensers.

The bedliner isolates the portable container, allowing a charge to build and the container to hold the charge. When the fuel nozzle, which was grounded through the fuel dispenser, touches the container, a spark occurs and under the proper conditions, a fire started.

Incidents involving plastic containers can be disastrous because once a fire starts, the container itself begins to melt and the fire spreads. (1) Only dispense fuel into an approved metal container and place it on the ground during fueling. (2) Put the fuel nozzle in contact with the container before fueling begins and keep it in contact with the container until fueling is complete.

dents only because the spark occurred in an atmosphere too rich for an explosion. Relying solely on the possibility that the material being handled is not within the flammable limits will not ensure your personal safety or the safety of your personnel. Be on the alert for situations where static buildup can occur and always apply the rules discussed above.

* A flow rate of 1 meter/second is 32 gallons per minute (gpm) through a 2 inch

diameter nozzle, 72 gpm through a 3 inch diameter nozzle and 128 gpm through a 4 inch diameter nozzle.

Philip Myers, P.E., specializes in tank and pressure vessel technology at Chevron Research and Technology in Richmond, Calif. This article was adapted from an article which appeared in the June 1996 issue of the Aboveground Storage Tank Guide published by the Thompson Publishing Group Inc. Used with permission.

Working Safely with Oxidizing Solutions

Although the following near-miss incident occurred several years ago, it is worthwhile reviewing to prevent a tank explosion.

THE SITUATION: In tanks that have stored sour (sulfur bearing) products, workers at a major refinery usually prepare the tank for cleaning by first spraying the tank's interior with a dilute (0.1 percent) aqueous sodium hypochlorite solution.

The hypochlorite is used to reduce the hydrogen sulfide odor and remove the pyrophoric iron deposits on the tank surfaces. The standard procedure at this facility was to spray the 0.1 percent dilute hypochlorite solution through fog nozzles at 20 gallons per minute (gpm) to wet down the interior surfaces prior to opening the tank.

In this instance, the refinery workers attempted to use the procedure on a sour water tank. However, they inadvertently used a 7 percent hypochlorite solution. Because they used a pump that was readily available, the solution was pumped in at a rate of 200 gpm instead of a controlled spray of 20 gpm.

Within a few minutes, the temperature in the tank shot up to 140 degrees Fahrenheit. Workers observed brown smoke coming from the tank vents, and immediately shut down the operation.

The refinery safety specialist checked the composition of the gases in the tank and found that in addition to ammonia, chlorine and hydrogen sulfide, the tank contained some carbon monoxide gas. The gases in the tank were just under the lower explosive limit. The presence of carbon monoxide indicated that combustion was occurring in the tank in an oxygen-deficient atmosphere.

The high temperature causes the light hydrocarbon layer usually present in sour water tanks to evaporate, bringing the vapors into the explosive range. Considering that all three legs of the fire triangle - fuel, oxidizer and ignition source - were probably present, it is fortunate that the tank did not explode.

IMPORTANT LESSONS TO BE LEARNED

✓ Always dilute oxidizers to the proper concentration as specified by written procedures. Use caution when working with

oxidizing substances (hypochlorite, permanganate, hydrogen peroxide).

✓ Never allow a significant amount of unreacted oxidizer to accumulate in the tank. Ensure that the application of the solution does not exceed the low flow rate prescribed by written procedures. A runaway thermal reaction can occur whenever excess oxidizer accumulates in a tank or vessel.

✓ Do not use makeshift equipment or unapproved equipment for these operations. The use of an "available pump" caused a flow rate far exceeding the specified 20 gpm rate.

✓ Do not improvise from pre-approved written instructions for this type of operation.

✓ Be especially careful when working with tanks that are likely to have pyrophoric deposits such as asphalt tanks, sour crude oil tanks, sour water tanks, and tanks that are inert gas blanketed.

This article was adapted from an article by Philip Myers, P.E., a tank and pressure vessel technology specialist with Chevron Research and Technology in Richmond, Calif which appeared in the November 1995 issue of Aboveground Storage Tank Guide published by Thompson Publishing Group, Inc. Used with permission.

Terminology

Oxidation - originally, this term meant a reaction in which oxygen combines chemically with another substance, but its usage has long been broadened to include any reaction in which electrons are transferred. Oxidation and reduction always occur simultaneously.

Oxidizing material - Any compound that spontaneously evolves oxygen either at room temperature or under slight heating. These materials can react vigorously when in contact with reducing materials such as certain organic compounds.

Pyrophoric material - Any liquid or solid that will ignite spontaneously in air at about 130 degrees Fahrenheit.

Sour products - Products that contain chemical impurities of hydrogen sulfide or other sulfur compounds.

Risk Based Corrective Action (RBCA) Update

DEC is one of 43 state agencies nationwide developing Risk Based Corrective Action (RBCA) guidance on the cleanup of petroleum releases. The guidance report which will enable DEC to direct cleanup effort on the basis of risk, is based upon ASTM Standard E 1739-95.

A Site Closure Advisory Workgroup of stakeholders has been formed with the task of reviewing a preliminary draft RBCA document developed by DEC and the NYS Department of Health. The workgroup will also make recommendations on several DEC issues critical to the development and implementation of the final policy.

An announcement on the RBCA process appeared in the October 23, 1996 Environmental Notice Bulletin. Individuals and organizations interested in participating in the development of the RBCA document should call Tammy Sansone at (518) 457-2462. Their names will be placed on a mailing list to receive information and documents produced by the advisory group. At the earliest, DEC anticipates having a document available for public comment by Spring 1997.

Small Heating Oil Tanks Deregulated

The Legislature has amended the State Petroleum Bulk Storage (PBS) Law (Article 17, Title 10), deregulating heating oil tanks with a capacity less than 1,100 gallons. The definition of "facility" has been changed to exclude heating oil tanks used for on-premises consumption which are not interconnected to any other tank and with storage capacity less than one thousand one hundred gallons.

Deregulated are underground and aboveground heating oil tanks less than 1,100 gallons that are not manifolded. Two or more tanks that are interconnected having a combined storage capacity less than 1,100 gallons are exempt; however, if the combined storage capacity of the interconnected tanks exceeds 1,100 gallons, then they are not exempt from regulation.

Question: *Are small tanks (less than 1,100 gallons) which store used oil burned on-site now deregulated similar to small heating oil tanks?*

Answer: No. Used oil tanks are still regulated under Used Oil Regulations (6 NYCRR 360-14) which subjects them to all requirements of the state PBS regulations with one exception. Although these tanks must be registered, no registration fee must be paid.

This means that in some cases, the site will be deregulated. For example, a site that presently has a 1,000 gallon gasoline tank and a 275 gallon heating oil tank would not be regulated since the combined storage capacity would no longer exceed 1,100 gallons. Of course, if the gasoline tank is underground, it would still be regulated under the federal Underground Storage Tank regulations (40 CFR 280).

DEC plans to notify owners with deregulated heating oil when the registration renewal package is mailed out.

This change affects only those portions of the State under the statewide program, not the delegated counties of Nassau, Suffolk, Rockland and Cortland. Each of the delegated counties will have to decide if they will follow suite and deregulate small heating oil tanks.

DEC recommends that owners and operators of deregulated tanks continue to follow the procedures and standards outlined in the State PBS regulations. The reason - lost fuel is expensive and spills are costly to clean up. It makes good sense to protect your home, business, and workplace from spilled or leaked fuel oil.

SIR for ASTs

Recently, a study was sponsored by the Commonwealth of Virginia that shows that Statistical Inventory Reconciliation (SIR) may be useful on aboveground storage tanks (ASTs) to detect product losses.

Need for SIR

With ASTs becoming more and more popular as owners/operators strive to achieve compliance with the Federal UST regulations by removing underground tanks and replacing them with aboveground tanks, there is a need for developing proper management techniques for ASTs. The need for leak detection is of particular importance for the older ASTs that are in direct contact with the ground and not resting on an impermeable barrier. These tanks could leak through the bottom and it might not be detected for quite a long time, resulting in an extensive release and remediation.

Good AST Management

From a management point of view, SIR is useful for all ASTs. SIR has the ability to detect meter miscalibration, under/over deliveries to the tank and unaccounted for product losses. This makes SIR a very good management tool, useful for tracking where product is actually going. In the Virginia study, the vendor was able to detect four under-deliveries totaling 623 gallons, thus providing a substantial cost savings. The vendor was also able to detect meter miscalibration, some in excess of one percent of that recorded by the product meters. Identifying such discrepancies should make using SIR more than pay for itself.

Knowing Product Temperature is Key

In order for SIR to work on aboveground tanks, there is a need to have all product measurements — deliveries, sales, and stick readings — either adjusted to a common temperature or temperature readings provided to the SIR analyst; all individual tank systems must have calibrated meters; and sixty days of data must be provided for analysis.

Leak Detection Capabilities

With this information, it will be possible to detect a leak of 0.2 gallons per hour (gph) in tanks of up to 30,000 gallons, 0.35 gph in tanks up to 100,000 gallons and 0.5 gph in tanks over 100,000 gallons. The information used to identify leaks of this magnitude was obtained manually. If electronic equipment is used, then it should be possible to detect leaks of 0.02 gph in tanks up to 30,000 gallons, 0.035 gph in tanks up to 100,000 gallons and 0.05 gph in tanks over 100,000 gallons.

DEC Perspective

Use of SIR and other leak detection methods is encouraged as a good management practice. The State Petroleum Bulk Storage regulations require a monthly visual inspection and a ten-year inspection for structural soundness and detecting of leaks. The regulations do not require owners/operators of aboveground tanks to maintain inventory records for the purpose of leak detection.

For more information on this study and on using SIR on aboveground tanks, contact Warren Rogers Associates at (401) 846-4747, 1-800-972-7472, or on the web at @http://www.wraenviro.com. A copy of the study can be obtained by calling Donna Golden at Warren Rogers Associates.

District to clean up oil spill at Glenclyff On-site project could cost up to \$300,000

Every day, DEC receives dozens of reports of petroleum spills and leaks on the State Spill Hotline (1-800-457-7362). The following article is typical of the type of calls DEC gets daily, illustrating what can happen when petroleum is stored in old, substandard underground tanks.

By Shirin Parsavand, Gazette Reporter

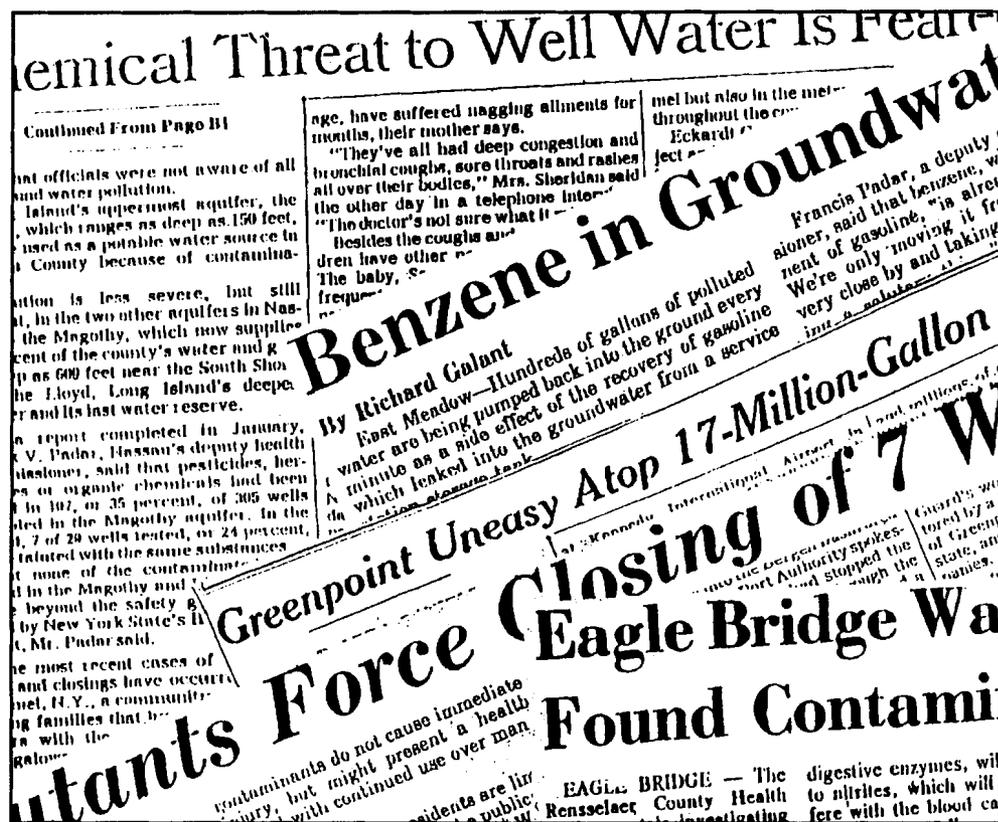
NISKAYUNA - Cleaning up the site of an oil tank leak at Glenclyff School should cost between \$250,000 and \$300,000, Assistant Superintendent for Business Mark Laplante said Monday.

The school district should be able to treat the contaminated soil on site, rather than spending even more money to truck it to an incinerator in Fort Edward, Laplante told the Board of Education.

The state Department of Environmental Conservation recommended cleaning the soil through a process called "soil farming," Laplante said. Plastic would be placed over and under the soil, and pipes would be run through it. The pipes would draw air through the soil to remove the contaminants, he said.

The money probably will come from the \$6.5 million bond issue voters approved for districtwide renovations, he said. So far, the district has borrowed about \$5.9 million for the renovation projects.

Laplante said he expects to hear by the end of the week whether the cleanup will be eligible for state aid,



which would cover 64 percent of the cost.

The tank was buried 12 feet underground at the front of the school, which is located in Rexford.

There were complaints about the smell of fuel oil in May, and tests in June showed soil around the tank was contaminated. But school officials did not realize the scope of the problem until Aug. 19, when contractors removed the 10,000 gallon tank.

Heating oil had leaked from the 40-year-old steel tank and into concrete drainage pipes, which carried it to a small creek near the school.

Students were able to go back to school on time, and outdoor activities have taken place in the back of the school, away from dirt piles and excavated areas.

"In no way is this a health risk for students, staff or the community," Laplante said.

Officials from the DEC and state Education Department came to Glenclyff on Monday, and agreed the district could treat the soil on site, he said.

As part of the cleanup project, the district will install a double-wall fiberglass fuel tank to replace the old one, Laplante said.

This article appeared in *The Daily Gazette* on September 17, 1996. Used with permission.

Reprinting Tank Bulletin Articles

In the spirit of sharing information on the safe storage and handling of petroleum and hazardous chemicals, we would like to encourage other organizations or groups which regularly communicate with their members to reprint articles that appear in the Tank Bulletin. In producing the bulletin, we have reprinted articles from other publications that we feel will benefit our readers with the knowledge and expertise of others. No permission to reprint articles is needed from DEC.

Pesticides/Fertilizer Storage Manual Available

Pesticides and fertilizers are a potential source of contamination for surface water and groundwater. The Midwest Plan Service (MWPS) at Iowa State University has developed a manual entitled "*Designing Facilities for Pesticide and Fertilizer Containment*". It is intended to be a desk reference of accepted engineering principles and practices that will help protect ground and surface water from spills.

Storage, handling and disposal practices enhance worker safety and minimize the risk of environmental contamination. An ideal facility provides:

- secure and dry storage with pesticides separated from fertilizers,
- containment of day-to-day spills resulting from mixing/loading operations,
- containment of large, accidental spills or leaks (separate secondary containment for pesticides and fertilizers),
- facilities for collecting, storing and recycling excess solutions and rinsates,
- a dry, secure, well managed area for storing empty containers and other waste prior to proper disposal,
- office facilities for effective management and communications,
- orderly, accessible storage for personal protective equipment and emergency supplies, and
- first-aid and training areas, rest rooms, showers, and laundry service.

A copy of this manual can be ordered from MWPS Customer Service, 122 Davidson Hall, ISU, Ames, IA 50011-3080. Telephone: (515) 294-4337. Fax: (515) 294-9589. The manual cost \$15 plus \$3.50 for postage and handling.

A STAR is Born

The Department has completed a guidance document on biocell and biopiles, entitled "*STARS Memo #2, Biocell and Biopile Designs for Small-Scale Petroleum-Contaminated Soil Projects*". This guidance reflects a literature search and a 2-year field research project on bioremediation in treatment cell and treatment pile formats. This document does not establish construction and operation standards. It contains generic biocell and biopile designs intended as an overview and guide for spillers on the use of ex-situ bioremediation at small scale (approximately 30-100 yds³) petroleum-contaminated soil sites.

This is the second STARS document. *STARS Memo #1* is entitled, "*Petroleum-Contaminated Soil Guidance Policy*", August 1992.

If you would like a copy of either of these STARS memos, please call Beverly Chabot at (518) 457-9412. Technical questions or comments should be directed to Chris O'Neill or Frank Peduto at the same number. There is no charge for these documents.

API's New RP 1604 - Closure of Petroleum USTs

If you remove or dispose of underground storage tanks (USTs), you should have a copy of the American Petroleum Institute's (API's) nine-page recommended practice entitled "*Closure of Underground Petroleum Storage Tanks*" (API RP 1604, third edition, 1996). As the title implies, the document provides procedures for the closure in place, removal, storage, and the off-site disposal or sale of used underground tanks that have contained flammable or combustible liquids. Although the report specifically addresses UST systems at service stations, the principles outline in API 1604 can be applied to similar systems used at other petroleum storage sites.

Copies of API 1604 can be ordered from the American Petroleum Institute, Order Desk, 1220 L Street, N.W., Washington, D.C. 20005. Telephone: (202) 682-8375. Fax: (202) 962-4776. The Price is \$22.

Pay-For-Performance Cleanups Booklet Available

EPA has published a booklet that encourages underground storage tank (UST) owners to establish agreements to pay contractors a

fixed price as measurable performance goals are met.

The booklet, *Pay-For-Performance Cleanups: Effectively Managing Underground Storage Tank Cleanups*, discourages using time and materials agreements in which contractors are paid regardless of whether goals are met. Instead, pay-for-performance agreements reward contractors for quickly and efficiently reaching cleanup goals.

A copy of this booklet can be obtained by calling the EPA UST/Superfund Hotline at (800) 424-9346.

Homeowner Heating Oil Tank Guide Available

DEC has developed guidance for homeowner's with underground heating oil tanks. This brochure is designed to help homeowners deal with the nagging question of whether their underground tanks are secure. It recommends that underground bare steel tanks be replaced with non-corrodible tanks, aboveground tanks or that they be properly closed. A range of costs is provided for each option. The consequences of doing nothing is also discussed. While the cost of tank replacement or closure may seem expensive, it is rather modest compared to having to cleanup a leaking tank which can cost homeowners tens of thousands of dollars.

Copies of this brochure entitled "*Underground Heating Oil Tanks, A Homeowner's Guide*", can be obtained by calling the Bulk Storage Helpline - (518) 457-4351.

Costs and Options for 1998

If you have a federally regulated underground storage tank (UST), upgrading is required by December 22, 1998. The watchword for the next two years is "Don't Wait Until 1998 - Plan to upgrade, replace or close your tank now." To help UST owners and operators make the best choices, DEC has modified an EPA developed one-page handout entitled "*Costs and Options for 1998*". It outlines the various options available for tanks and piping, leak detection, spill and overflow protection and the relative costs associated with each option.

A copy of this handout can be obtained by calling the Bulk Storage Helpline, (518) 457-4351

IRS Proposal To Help Tank Owners*

A propose rule that clarifies the definition of “structure,” may enable the U.S. Internal Revenue Service (IRS) to expand the circumstances under which removal of underground storage tanks (USTs) could be “deducted” rather than “capitalized.” If finalized, the June 20 proposed revision to Section 280B could lead to advantages for tank owners on this year’s taxes (61 FR 31473).

The issue of capitalization vs. deductibility is complex. According to Section 263 of the Internal Tax Code, a capitalized expense is one that increases the value of a property. A deductible expense is one incurred while maintaining the existing value of the land.

The difficulty is in determining what affect tank removals have on the capital value of a property. If a land owner buys contaminated land and cleans it, that expense represents a capital improvement. If a land owner buys uncontaminated land that subsequently becomes contaminated, the cleanup costs would theoretically be deductible.

In the “*Underground Storage Tank Guide*” by Thompson Publishing Group, Doug Charnas, an attorney with Jackson & Campbell in Washington, said tank owners benefit by deducting all expenses when possible. Charnas said the best case scenario for tank owners is if costs associated with tank removals and replacements are separated. Under this scenario, tank removal,

cleanup and replacement would be treated as separate deductible expenses. Only the cost of purchasing the new tank would be capitalized, Charnas said.

Kelly Altron, with the IRS Assistant Chief Counsel’s office (Income Tax and Accounting), said although Section 280B specifies that structures must be capitalized, it does not mean that all non-structure expenses should be deducted. The clarification to the definition of structure will make it easier for the IRS to offer guidance to taxpayers about specific capitalization rules, which are spelled out in Section 263 of the Internal Revenue Code, she said.

IRS seems inclined to interpret the law in a way favorable to tank owners. Tank owners can deduct costs for USTs that are removed, and even in many cases, where an UST is replaced, Altron said. Altron encouraged tank owners to send letters requesting private rulings when they are unsure whether to capitalize or deduct expenses associated with environmental cleanup costs and removals.

For more information, contact your tax advisor or the IRS’ Office of the Assistant Chief Counsel (Regulations Unit) at (202) 622-7180.

**This information was provided by the Thompson Publishing Group in the October 1996 issue of the “Underground Storage Tank Guide”. Used with permission.*

Insurance Coverage Barred for UST Leak

In a recent case, the New York Supreme Court, Appellate Division (Second Department), analyzed the term “sudden” within the meaning of the pollution exclusion clause of general liability policies to bar coverage for gasoline leaks from underground storage tanks and lines.

Northville Industries, Corp. owns and operates several facilities for the storage and distribution of petroleum products. In October 1986, Northville discovered ground water contamination at its Holtsville, New York, property. Northville investigated the contamination and discovered that approximately 750,000 gallons of gasoline had leaked through an improperly installed portion of the gasoline piping system.

In November 1987, Northville discovered ground water contamination beneath its East Setauket facility. The contamination was traced to a “pin-hole” leak in a pipe. An estimated 1.2 million gallons had escaped from the leak since 1968. However, the loss occurred over a period of time that was undetectable to Northville’s inventory control system.

Several affected property owners in the neighborhoods sued Northville, who, in turn, sued its primary and excess insurance carriers. The issue presented in the insurance litigation was whether the releases were “sudden and accidental” within the meaning of the exceptions to the pollution exclusion clause within Northville’s insurance policies.

Northville, argued that the discharge was unexpected, unintended, and not readily discoverable. The court, however, determined that an expectation element was not the proper inquiry in determining the meaning of “sudden.” Rather, the court said that “the suddenness of a pollution discharge should focus on the temporal aspect of the term sudden.” Because the court found the discharges at issue had occurred over a period of time, it held that coverage was barred.

Northville Industries Corp. v. National Union Fire Insurance Co., decided Dec. 29, 1995, Appellate Division (Second Department).



Winter 1997
Issue 19

Department
of Environmental
Conservation



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George E. Pataki, Governor
John P. Cahill, Commissioner

Dick Cowan, Editor

Dear New York UST Owner/Operator:

I am writing to you and all other owners and operators of underground storage tanks (USTs) to remind you that you have about one year remaining in which to make sure that your USTs comply with regulations aimed at protecting public health and the environment.



Under regulations issued by the U.S. Environmental Protection Agency (EPA) nine years ago, USTs installed before December 22, 1988 must be protected against corrosion, spills and overfills by December 22, 1998.

Unprotected USTs must be upgraded, replaced, or properly closed by that date. If you have already complied with these requirements, I commend you on a significant contribution to public health and environmental protection.

If you have yet to come into compliance, I want you to know that EPA has no intention of extending the deadline and that States do not have the authority to extend it.

Early compliance could save you money. The longer you wait to protect your tanks, the more likely it is that they will have a release that could be costly in terms of cleanup costs and lost operating time. Waiting also means that you probably will encounter delays in getting tanks and other equipment delivered and installed and that you may have to pay higher prices than contractors would charge now.

States and EPA are committed to working with UST owners and operators to achieve compliance with the 1998 requirements. I must emphasize, however, that we also are committed to enforcing those requirements where UST owners and operators ultimately fail or refuse to comply.

The New York State Department of Environmental Conservation (DEC), through an agreement with EPA, administers the UST program in New York. To obtain information about your requirements under this program, please contact bulk storage personnel at the DEC regional office where your UST is located or DEC's toll-free Bulk Storage Helpline, 1-888-457-4351.

Sincerely,

Anna Hopkins Virbick, Director
Office of Underground Storage Tanks

Spills continue in New York State

In New York alone, thousands of spills occur each year, threatening public health and safety, causing environmental damage and costing millions of dollars for cleanup. While some accidents are unavoidable, most can be prevented with a little knowledge, foresight and common sense.

The following chronicle is from DEC's Region 4 staff journals covering a one-month period, September 22, to October 27, 1996. The problems described are typical of the tens of thousands of spills which have been addressed by DEC's 9 regional offices since the oil spill program began 19 years ago.

Sunday, September 22, 1996

I responded to a release of oil into the Shingelkill Creek at Purling. The release was caused by a leaking underground storage tank at a recreational facility. Five hundred (500) gallons have been lost. A contractor was hired, an interceptor trench was dug and a vac truck was used to stabilize the situation. A pump and treatment system will be installed. (Bill Christensen)

Monday, September 23, 1996

Today, a dump truck rolled over and burned in Westerlo, spilling approximately 100 gallons of diesel and 12 yards of stone. Most of the diesel fuel and the front cab burned up. The truck's owner has agreed to clean up the site. (Bill Christensen)

Tuesday, September 24, 1996

A state senator contacted us today concerning contaminated groundwater stemming from

leaking underground petroleum tanks at a former school bus garage in Amsterdam, NY. The site is being remediated by an estate. The local homeowners are concerned over potential impacts to their properties. We have discussed the issues at two public meetings and the estate has prepared a cost analysis of the various alternatives. We are resolving issues with homeowners. (Mark Domagala)

Wednesday, September 25, 1996

A local man is getting out of the gasoline business. Tank removal at his gas station in West Sand Lake revealed contamination from previous spillage. The tanks installed in 1984 had no holes. The spill is in an area of domestic wells. Reports show that long-term remediation will be needed to address widespread groundwater contamination. I am advising the State Health Department. (Bill Blain)

Friday, September 27, 1996

Today I addressed a spill at a new underground storage system installed by a gas station in Schenectady. This spill was initially reported as small in quantity, and was reported to be contained in the tub surrounding the pump. After a few questions, it turned out that the tub was actually leaking, and the losses were substantial. A vac truck was brought to the scene to remove free product. Within the first two hours, 1500 gallons of gasoline were removed. By the next morning, 3500 gallons had been removed.

A vapor recovery system, airstripper and a groundwater

recovery system have been installed. Off-site geoprobing in the street has been completed. Fortunately, monitoring wells remained at the site from previous contamination. (Matt Franklin)

Tuesday, October 1, 1996

County officials called to report petroleum contamination discovered at the fire training center. The most likely source was an old 500 gallon underground tank used to store heating oil. The site was formerly a truck stop. As part of a stipulation agreement, we asked the County to do further investigation. It was during the investigation that another 10,000 gallon underground storage tank was discovered. The tank was filled with a mix of solvents, paints and possibly old gasoline. The county hired a contractor to decommission the newly discovered tank. The County has initiated a site cleanup. Dewatering and disposal of contaminated soil is underway. (Tony Kokocki)

Wednesday, October 2, 1996

The Regional Attorney has advanced the Consent Order for a Rensselaer County town to address a gasoline spill at the highway garage. Wells of several homes have been contaminated.

The Town has agreed to:

- reimburse the DEC for the expense of installing seven filters on affected homes. The Town will also take over maintenance and testing.

- sample all the potentially affected homes in the area.

- evaluate and perhaps upgrade the recovery system.

The most likely solution to the contaminated homeowner wells is the creation of a water district, tapping into a nearby public water transmission line.

(Postscript) I received word that the Town is being sued by one of the homeowners. (Bill Blain)

Tuesday, October 15, 1996

Contamination covering three quarters of an acre has been discovered at a public building in Columbia County. The clay soils are saturated with fuel oil. About a fifth of the area lies under the building. There is no groundwater to speak of. I directed the building owner to:

- quickly pursue a vapor study to determine whether there is a vapor impact on the building's interior; and

- devise a plan to remediate, or at least control the impacts of the contamination.

(Postscript) A multimillion dollar lawsuit has been filed against

the County alleging that exposure to benzene from the spill has caused cancer in a social services worker. (Bill Blain)

Friday, October 25, 1996

Today, a one gallon jar of formaldehyde was spilled by a high school student. The student went to the nurse's office and was then taken to the boys locker room for a shower. This student and another were transported to an area hospital for treatment and were released a short time later. Two other students were treated at the school.

I met with the local fire chief who advised me that the school was evacuated and that it was being vented. At my request, he had two firemen in SCBA enter the building to see if they could read any labels from the jar that spilled. They reported that one unlabeled jar was broken and that a second jar was labeled as containing a 13% solution of formaldehyde.

Over the weekend I monitored cleanup and removal of contaminated items.

Final testing will take place Monday and the school should be reopened on Tuesday, providing the Health Department gives the OK. (Bill Christensen)

Sunday, October 27, 1996

The rash of major releases from underground tanks continues. Over the weekend, a facility in Schenectady reported a 4,000-10,000 gallon loss. Cleanup will be expensive.

On Sunday evening, recovery wells were installed and product recovery initiated. On Monday, 2,000 gallons were recovered. Tanks passed tightness tests last year. The facility was scheduled for upgrade next year.

(Update) Wells have been installed and nearly 10,000 gallons of gasoline have been recovered from the ground. Off-site impacts appear to have been prevented. (Franklin/Goertz)

Revised API Standards

The American Petroleum Institute (API) recently released revisions to two of their standards - API 1615, *Installation of Underground Petroleum Storage Systems* and API 1632, *Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems*.

If you are involved with installing tanks or having a new tank installed, you will want to get a copy of the standard on installation. It provides information on every step of the installation process including the site analysis, removal and disposal of tanks and pipes, and the installation of the new system.

If you are involved with upgrading under-

ground steel tanks and pipes, you may be interested in the standard on cathodic protection. This standard provides information on the corrosion process as well as the two forms of cathodic protection - sacrificial anode and impressed current. This standard does not provide the information to design a cathodic protection system but does provide the background information necessary to understand corrosion and cathodic protection.

You may order either of these standards from API by calling (202) 682-8375. The price is \$75 for the standard on installation and \$40 for the standard on cathodic protection.

Preventing AST Fires Caused by Lightning Strikes

When lightning strikes an aboveground storage tank (AST) storing hundreds of thousands of gallons of flammable liquid, the sight can be spectacular. Pieces of the roof may fly far into the air, and the flames may reach 150-200 feet high. While such incidents are often considered "freak accidents," especially when tanks were grounded against lightning strikes, they are not exactly rare. In data gathered by an American Petroleum Institute (API) work group studying fires in large diameter tanks, lightning strikes were the most frequently reported cause of ignition.

Because of what is known as the Faraday cage effect, a properly functioning lightning protection system conducts the electricity safely through the tank shell to the ground with no spark or heat. This essentially means that a tank with an explosive atmosphere inside can suffer a direct lightning strike without exploding if the charge can bleed to ground without arcing across or heating tank components.

In addition, a properly designed and maintained tank minimizes or eliminates the possibility of an ignition source reaching a flammable atmosphere.

Mounting evidence indicates that additional, simple-to-implementation precautions and preventive maintenance may be the key to reducing the number of tank fires caused by lightning strikes.

Incidents

On June 4, 1996, lightning struck an external floating roof tank at an Amoco Corp. refinery in Texas City, Texas. The tank, which contained methyl tert-butyl ether (MTBE), burned for several hours.

On June 11, lightning struck a tank equipped with an internal floating roof at a Shell Oil storage facility in Woodbridge, N.J. The force of the explosion blew the fixed roof off the tank, which contained approximately 3 million gallons of gasoline. The fire burned for more than 24 hours. No injuries were reported, but 200 local residents were evacuated.

In early July, lightning ignited a fixed roof tank storing weathered crude oil at a Chevron Pipeline Co. facility in East Wind, Texas blowing its roof 40 feet into the air. Fire fighting was complicated when the crude oil frothed over the sides of the tank, filled the secondary containment area and burned for several hours.

Historical Data

These recent incidents are not as unusual as some people would like to believe. A simple search of an on-line news source by *Aboveground Storage Tank Guide* editorial staff uncovered reports of more than 30 lightning-caused AST fires in the past 15 years, with around half taking place since 1990.

Preliminary data gathered in the Spring of 1995 by the API work group identified 42 fires in large diameter tanks that were attributed to lightning, nearly 66 percent of the total incidents in the database. Overfilling the tank was the second largest cause, representing less than 5 percent of the incidents reported.

Industry sources report that one major oil company identified more than 10 AST fires caused by lightning in the past 20 years; another major oil company reported more than 10 tank fires caused by lightning in the past five years.

Regulations and Standards

Two industry documents that contain useful information on lightning protection are National Fire Protection Association (NFPA) Code 780, *Lightning Protection Code*, and API Recommended Practice 2003, *Protection Against Ignitions Arising Out of Static, Lightning and Stray Currents*. NFPA 780 covers structures storing flammable liquids. API RP 2003 specifically addresses lightning protection for fixed roof and floating roof tanks.

A third document, NFPA 11, *Low Expansion Foam*, provides information for installing foam systems on tanks. These systems are important for fighting rim seal fires, the type of fire most commonly caused by lightning strikes.

However, these documents are not frequently referenced in government regulations, the tank sections of the fire codes or other industry standards. For example, the Uniform Fire Code references API standards for tank construction, but does not explicitly mention any form of lightning protection. It is difficult to determine how many tanks are equipped with systems that meet API or NFPA guidelines for lightning protection, but many tank owners may not be aware of these documents.

Furthermore, the recent incidents highlight that installing a lightning protection system that meets these standards is not a guarantee.

Preventive Measures

Although no method or combination of methods is ever completely successful, many of the following items are quick, cost-

effective ways to reduce the chances that a lightning strike on a tank will cause a fire or an explosion.

General

The roof and vents in a properly designed and maintained tank should prevent accumulated vapors from reaching flammable levels. For lightning to start a fire, a flammable atmosphere must be present.

Fixed Roof Tanks

- Fixed roof tanks should be equipped with pressure-vacuum vents whenever possible instead of an open vent with a flame arrester. In use, flame arresters can become plugged, and facility personnel sometimes open the tank hatches to allow the tank to continue to breathe. The opening would allow lightning striking the outside to ignite flammable vapors inside the tank. Use has proven that pressure-vacuum vents do act as flame arresters. If flame arresters are used, they should be frequently inspected and cleaned.

- Avoid storing liquids with boil-over or froth-over potential, like crude oil, in fixed roof tanks. Also, avoid storing flammable liquids within 20°F of the flash point. Although crude oil is generally too rich to burn, it can weather down to become flammable if stored in a fixed roof tank that is not regularly emptied and refilled. After the crude weathers, the entire vapor space above the liquid can be explosive. Generally, it is best to store flammable liquids in floating roof tanks.

- Fire plans should consider scenarios involving lightning striking a tank. Proper response is critical to minimize damage and potential hazards.

External Floating Roof Tanks

- Lightning shunts should be visually inspected regularly. This check is relatively simple with binoculars and does not require actually descending to the floating roof. The shunts should be designed and spaced according to the NFPA code and must be in contact with the tank shell. It is common for shunts to become damaged and lose contact with the shell.

- Ensure that foam dams are installed and are higher than the roof seal. Make sure the drain holes under the dam are not plugged. Test, inspect and maintain fire protection systems in accordance with NFPA 25, *Inspection, Testing and Maintenance of Water-based Fire Protection Systems*.

- Compartment covers need to be kept closed, gasketed and bolted shut. The bolts provide a metal-to-metal flow path to conduct a lightning strike charge from the cover to the roof without arcing. Loose covers may be blown off in the wind, especially during a severe thunderstorm. Open covers could provide a way for ignition to reach any flammable atmospheres that may have collected in the compartments. If the cover does not have adequate bonding to the roof, the lightning charge could arc and explode a compartment filled with flammable vapors if struck by lightning.

- Inspect pontoon compartments to make sure that bulkheads are completely sealed on the sides and top of the compartment. There should be no flammable vapors in roof compartments. Conduct regular inspections several times a year to verify the integrity of the compartments. Roof compartments should be designed to be vapor

and liquid tight. It may be possible to seal compartments on existing roofs with caulking.

- During lightning storms or anticipated bad weather, try to keep external floating roofs at least five feet below the rim of the tank. This reduces the chance of a direct lightning strike on the floating roof.

Internal Floating Roof Tanks

- Internal floating roofs should be visually inspected frequently to verify that the roof is still floating and that there is no liquid on the deck from a hole or crack. Liquid on the deck allows flammable vapors to accumulate in the vapor space. Any openings in buoyancy compartments should be gasketed and tightly closed. Verify that lightning shunts are in connection with the tank walls. Internal floating roofs of the pan type should be monitored much more frequently than other kinds of roofs since they are vulnerable to sinking.

- Ensure that the tank is vented according to the requirements of Appendix H of API 650, *Welded Steel Tanks for Oil Storage*.

This article was adapted from an article by Philip Myers, P.E. which appeared in the August 1996 issue of *Aboveground Storage Tank Guide* published by Thompson Publishing Group, Inc.

Call (800) 677-3789 for information on the *Aboveground Storage Tank Guide*. Used with permission.

Mr. Myers is an engineer with Chevron Research and Technology.

Financing Tank Removals

by Kathryn Kelly Macri,
NYSEFC, Environmental Project Manager

By now, you probably have a good idea whether your underground tanks must be replaced or upgraded to comply with the 1998 deadline. You may even have identified some additional older, heating oil tanks which don't fall under the 1998 deadline but need replacement or upgrading to prevent leaks. The big question is "How are we going to pay for tank removals?" One answer may be low interest loans through the Clean Water State Revolving Fund for municipalities or the Industrial Finance Program for private tank owners.

Since 1990, the New York State Environmental Facilities Corporation (EFC) has managed the Clean Water State Revolving Fund (CWSRF). The CWSRF provides low interest loans to municipalities to construct water quality protection projects. A traditional water quality protection project is a wastewater treatment plant. Nonpoint source projects, such as remediation of underground petroleum tanks, are also eligible through the CWSRF. To date, over \$49 million in loans have been made to municipalities for remediation of storage tanks.

All costs related to closure of a leaking underground storage tank are eligible for CWSRF financing. The eligible costs include the following:

- pumping and disposal of tank contents;
- testing of soils and sludges to characterize wastes for proper disposal;
- removal and disposal of leaking or deteriorated tanks and pipelines;
- in-place tank closure in accordance with regulations;
- disposal of sludges and remediation of contaminated soils;
- backfill of excavation with clean soils;
- pumping and treatment of contaminated groundwater; and
- site restoration (replacement of pavement disturbed by tank closure).

The following costs related to upgrade or rehabilitation of existing tank systems are also eligible for financing:

- corrosion resistance measures such as cathodic protection;
- installation of groundwater monitoring wells;
- replacement of deteriorated connection pipes and appurtenances;
- installation of leak monitoring systems;
- installation of secondary containment systems;

- cleaning of tanks prior to repair or reconditioning;
- reconditioning of tanks by installing an interior liner; and
- leak repair.

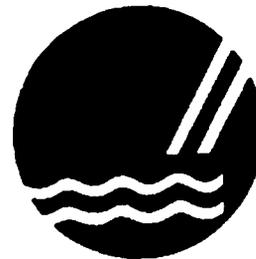
The cost of replacement tanks and certain appurtenant equipment is not eligible for CWSRF financing. However, new tank systems installed as part of the construction of a new or upgraded wastewater treatment works are eligible for financing.

Both short-term and long-term financing are available through the CWSRF. Interest-free short-term loans for tank remediation projects are generally available for up to two years. The administrative fee is equal to 1.1% of the amount of the note.

EFC's low interest long-term loans are available for up to a 20-year maximum loan term. The interest rate charged most communities is one-half the interest rate at which EFC's bonds are sold. There are administrative fees of approximately 3% for long-term loans.

For additional information about the CWSRF, please contact the Division of Program Management, NYS Environmental Facilities Corporation, 50 Wolf Road, Room 502, Albany, NY 12205-2603. EFC's toll-free number is (800) 882-9721 within New York State or call (518) 457-3833.

Taxable and tax-exempt financing for capital costs of environmental improvements is available to private entities through the Industrial Finance Program (IFP). IFP loans are typically greater than \$1.5 million. The eligible costs are somewhat different than the CWSRF and should be reviewed on a case-by-case basis with EFC staff. Eligible costs may include on-site remediation facilities such as in-situ bioremediation cells. Contact the IFP at the same address and toll-free number as above or call (518) 457-4100.



DEC Announces Enforcement Program for Petroleum Tanks

State Department of Environmental Conservation (DEC) Commissioner John P. Cahill has announced an initiative to bolster enforcement of environmental laws regulating petroleum bulk storage facilities.

"This one-time program will give owners of petroleum storage facilities an opportunity to voluntarily register and test their storage tanks for leaks," DEC Commissioner John P. Cahill said. By bringing thousands of tanks into compliance, owners will help prevent spills, avoid costly cleanups and protect New York's environment and natural resources. Those who do not take advantage of this opportunity will face penalties.

The new policy initiative will give owners suspected of non-compliance, 60 days to demonstrate that their facilities are registered and their tanks have been tightness tested. Where appropriate, owners also will have to pay past due registration fees or demonstrate that their facilities and tanks have been properly closed.

The policy would not apply to petroleum bulk storage facilities that are in violation of other environmental laws and regulations or those that are the subject of DEC enforcement actions.

Since 1985, State environmental regulations have required petroleum bulk storage facilities to be registered with DEC and test for tightness. The owner of a facility, even an out-of-service facility, is required to register every five years until that facility is properly and permanently closed. The five-year registration fee is \$50 for facilities with storage capacities of 1,100 to 2,000 gallons, \$150 for facilities with storage capacities of 2,000 to 4,999 gallons and \$250 for those with capacities of 5,000 gallons or more.

Owners who do not have corrosion-resistant underground storage tanks must conduct tightness tests on their tanks every five years. The tests detect leaks as small as one gallon per day. Those with state-of-the-art, corrosion-resistant tanks must routinely monitor the integrity of those tanks.

DEC estimates that about 2,800 facilities are either not registered or are overdue for renewal, and approximately 8,000 tanks are overdue for tightness testing as a result of a backlog of compliance reviews dating back to the late 1980s.

Failure to comply with the policy are violations that could result in fines of up to \$25,000 per day per violation.

The policy is detailed in the enforcement guidance memorandum which was published in the *Environmental Notice Bulletin*. Copies of the policy may be obtained by contacting Elissa Armater, NYSDEC, Room 627, 50 Wolf Road, Albany, NY 12233-5500.

Leak Detection Questions?

Get a copy of the latest edition (September 1997) of the EPA booklet ***Straight Talk on Tanks: Leak Detection Methods for Petroleum Underground Storage Tanks and Piping***. This booklet will provide you with information to help you understand the leak detection requirements as well as the basics of each form of leak detection. If you want to receive a copy of this booklet, please call the EPA Distributor at 1-800-490-9198 or the EPA RCRA/Superfund Hotline at 1-800-424-9346.

DEC Notifies Tank Owners of Federal Deadline

Approximately 10,000 owners have not yet replaced or upgraded their underground tanks to be in compliance with the requirements of the December 22, 1998 federal deadline. All owners are being contacted by DEC and are provided with a compliance status report which indicates whether each tank has corrosion protection, spill and overfill protection, leak detection, and whether product piping has corrosion protection.

Workshops covering requirements for both State and federal regulations are being held in each DEC Region (2-9). More than 1,000 people seeking compliance information have attended these workshops or have contacted DEC for assistance.

The top three questions asked by tank owners are :

Question 1 - Is the deadline going to be extended?

Answer - No. EPA has repeatedly stated that this deadline is not going to be extended. See the letter on the cover of this *Tank Bulletin* Issue.

Question 2 - Do my heating oil tanks have to be upgraded?

Answer - No. The EPA regulations do not apply to

tanks storing heating oil used consumptively on the premises regardless of size.

Question 3 - Is there any funding available to help owners upgrade?

Answer - Government grants for new tanks or for rehabilitating old tanks are not available. If you are a small business, you may qualify for a low-interest loan from the Federal Small Business Administration. Municipalities may be eligible for low interest loans from the NYS Revolving Fund. If you have concerns over your level of compliance, contact your nearest DEC office.

A Word of Caution to All Tank Owners . . . Over the next year, as the December 22, 1998 federal UST deadline approaches, contractors and consultants who are involved in the tank business will be in great demand. Now is the time to make arrangements to bring your facility into compliance. If you want to discuss your compliance options, call the DEC Regional Office in which your facility is located and talk with the bulk storage staff. It is possible to arrange a meeting with DEC or have a compliance inspection performed by DEC.

Tools of the Regulatory Trade

The New York State Department of Environmental Conservation (DEC) has several "tools" that are used to bring petroleum and chemical storage facilities into compliance with environmental statutes and rules. This article explains what these tools are and how they work.

Pre-Enforcement

Life in the '90's can be complicated, especially if you manage a petroleum or chemical storage tank. Unless you happen to be a lawyer, you probably don't understand all the laws and regulations that govern your life. The DEC recognizes this in the way we enforce the State storage tank regulations. We have learned that most people are law abiding and will work in good faith to comply with rules once they are alerted to their legal obligations. Thus, before citations are issued, the DEC notifies owners of regulations, and offers help to owners who may need assistance.

Tools of the trade used in this collaborative phase of pre-enforcement include:

- holding workshops;
- mailing notices or educational information, such as this Tank Bulletin:
- maintaining the toll-free Bulk Storage Helpline (1-888-457-4351);
- doing facility inspections;
- meeting one-on-one with tank owners; and
- negotiating voluntary compliance schedules.

If you are reading this article and are among the 99 in 100 who want to do the right thing, contact the nearest DEC office for assistance.

Enforcement

For some people, firm enforcement is the only way the State can ensure compliance. The enforcement tools are as numerous as those used in the pre-enforcement phase and are described in detail below.

Notice of Violation (NOV) - A "NOV" is a written warning or letter, usually sent out after an inspection. It identifies violations discovered during the inspection and lists actions which must be taken. There are no penalties at this stage, but fines and penalties follow if the Department believes they are appropriate.

Order on Consent - An "Order on Consent" or "Consent Order" is a legally binding agreement between the violator and DEC. The Order is issued by DEC and imposes obligations, such as payment of a penalty and the performance of work to bring a facility into compliance, with an agreed upon plan and schedule. A key aspect of the Consent Order is that there is agreement on the obligations by the person, corporation or governmental entity to which the Order is issued.

The Consent Order is normally used in the following manner. Upon learning of a violation, DEC proposes to the responsible party that a formal agreement be reached (Consent Order) instead of formally litigating the matter. Obviously, if this approach is rejected, then DEC may have no choice but to escalate enforcement action. However, if the conditions of the Consent Order are agreeable to the party, then the execution of the Order accomplishes two major objectives:

- It provides DEC with both an efficient way of settling violations and ensuring that compliance action is taken; and
- It saves the party to which the Order is issued the expense of further legal proceedings and added fines and penalties that may accompany such proceedings.

DEC has found the Consent Order a practical tool and effective for achieving environmental protection goals.

Short Form Consent Order - This is a simple form of a Consent Order. As the name implies, a Short Form Consent Order is usually a standardized "fill in the blanks type" of order used for a specific set of common violations. Violations are usually clear-cut. Fines and/or compliance schedules are standardized.

Enforcement - DEC is authorized by law to enforce violations in a variety of ways. The three major courses that may be pursued are administrative, civil and criminal.

Administrative enforcement - For violations of the State's Petroleum Bulk Storage regulations, the Commissioner is empowered to assess fines and penalties and to order compliance. This power may be exercised by

means of either a Commissioner's Order after DEC has conducted an enforcement hearing or through the issuance of a Consent Order.

Civil Enforcement - Civil enforcement is a form of enforcement pursued through the courts of the State. Civil enforcement is often pursued when administrative remedies need to be supplemented. This is especially true when the terms of the Commissioner's Order or a Consent Order have not been fully complied with or when DEC determines that an injunction or other Court Order is necessary.

Criminal Enforcement - The Environmental Conservation Law also provides criminal sanctions for violations. Criminal enforcement - which may involve payment of fine and/or imprisonment - is possible for violations of most areas covered by the Environmental Conservation Law.

Summary Abatement Order - For those situations that pose an imminent danger to health or welfare or that threaten to cause irreversible or irreparable damage to natural resources, the Commissioner may order that the violation cease immediately, without holding a prior hearing. This Summary Abatement Order is similar to a court-ordered injunction. It is designed to assist DEC in confronting environmental emergencies.

**Got an UST
Question?
Want to talk
directly to EPA?**

**RCRA/Superfund
Hotline -**

Tools of the trade continued

Stipulation Agreement (STIP)-A STIP is a Short Form Consent Order between DEC and a potential responsible party who accepts responsibility for cleanup of a petroleum spill. (See *Tank Bulletin*, Issue #13, Fall, 1994). The STIP only settles the remediation issues. Fines and other administrative remedies are reserved by DEC. No discharge or emission permits are needed with a STIP since they are incorporated into the agreement.

Administrative Hearing - Tank owners who fail to bring their facility into compliance or reach an agreement through a Consent Order may be called to a DEC administrative hearing at which all facts are presented and a final Department ruling is rendered. If the

defendant is found to be in violation, a Commissioner's Order is issued which may include fines, penalties and compliance requirements.

Commissioner's Order - A Commissioner's Order may follow an administrative hearing. Violations of a Commissioner's Order are referred to the State Attorney General for further court actions.

Appearance Ticket - This is a citation for a violation and is usually issued by a DEC Conservation Officer (CO). Sometimes referred to as an Environmental Conservation Appearance Ticket (ECAT), the appearance ticket is similar to a traffic ticket. Appearance tickets are handled through civil enforcement venues; i.e., local municipal courts, town justice courts or district courts.

Administrative Notice - Sometimes referred to as an Administrative Conservation Appearance Ticket (ACAT), is similar to a ticket except that it is usually not issued by a Conservation Officer. Enforcement is handled administratively by DEC, not through local courts.

Stipulated Penalty - Stipulated penalties are sometimes used in a Consent Order to impose fines when the violator fails to comply with the terms of the order. Stipulated penalties frequently are imposed on a unit basis for each day a compliance schedule is breached.

Suspended Penalty - Penalties are sometimes suspended or waived if the violator takes timely action to comply with laws and regulations.

1998 UST Deadline—Tank Upgrading Options

by Russ Brauksieck, P.E.

The Federal UST regulations (40 CFR Part 280) require that owners/operators of underground storage tanks upgrade or replace their tanks and pipes by December 22, 1998. Most tank owners choose to install new double-walled tanks and pipes. A double-walled system is simple to install, simple to monitor and is the most reliable, trouble-free long term solution to the upgrading requirement. However, the EPA does allow other upgrading options.

The article, *Beating the 1998 Deadline - Upgrading Alternatives*, which appeared in the Fall 1995 issue of the *Tank Bulletin*, provided information on all of these options. This article provides more detailed information on the upgrading option.

The starting point is your decision whether to upgrade the existing tank system or to replace it. Your choice depends on many factors. Some of these include:

1. Do you really need a tank or is there another way to get fuel? Obviously, if you own a gas station, you need tanks. However, if you have a fleet of vehicles, it may be best to buy fuel at the local gas station.

2. How long do you plan on operating your storage tanks? If you are moving to a new location or simply planning to phase out petroleum storage, upgrading may be preferable to tank replacement.

3. How much work is needed to bring your tank systems into compliance? How old is your system? If lots of work must be performed, it may not be that much more expensive to replace than it is to upgrade. Tank owners should seriously consider replacing unprotected single-walled tanks that are more than 15 years old.

4. If you upgrade, do you want the added responsibility of the follow-up monitoring that is required? There are more inspection and monitoring requirements for an upgraded system than a new state-of-the-art tank system.

If, after considering these questions, you decide to upgrade the existing system instead of replacing it, the next step is to select a method of upgrading and hire a good contractor to perform the work. For more information on hiring a good contractor, see the article in the Spring 1995 issue of the *Tank Bulletin*. A list of companies

involved with tank upgrading work can also be obtained from the toll-free Bulk Storage Helpline at 1-888-457-4351.

The following discusses the upgrading options:

- cathodic protection;
- tank lining; or
- both of the above.

There are certain advantages to each of these options.

Remember that the 1998 upgrading deadline requires not only that tanks be corrosion resistant, but that:

- all product piping be corrosion resistant,
- a spill prevention device (a catchment basin) be in place,
- overflow prevention devices (a float vent valve, high level alarm or automatic shut off device) be installed, and
- a leak detection system [automatic tank gauging system, vapor or groundwater monitoring well, interstitial monitoring or Statistical Inventory Reconciliation (SIR)] be in use within ten years of the tank becoming corrosion resistant.

What is cathodic protection?
Cathodic protection is a technique that can be used to stop corrosion of underground steel tanks and pipes. Corrosion results when steel, soil and moisture conditions combine to produce an electric current that destroys the metal. Cathodic protection reverses the flow of this current which protects the metal.

There are two systems that can be used for cathodic protection - a sacrificial anode system and an impressed current system. A sacrificial anode system involves connecting zinc or magnesium to the tank to reverse the current. The zinc or magnesium actually corrodes instead of the tank.

An impressed current system uses electricity supplied by your power company. A rectifier is used to convert the alternating current arriving at your facility to direct current. This current is then used to reverse the flow of electrical current created by the interaction of the steel tank, soil and moisture. Impressed current systems are more feasible than sacrificial anode systems for protecting existing tanks and pipes.

Upgrading With Cathodic Protection

If you have decided to retrofit cathodic protection to your tank, the first step is an assessment of the structural integrity of the tank. This is done by an internal inspection or having one of three alternative assessment methods described in Standard ES-40 developed by ASTM. (For information on the internal inspection, see the discussion below on upgrading a tank with an interior lining.)

Information on ASTM Standard ES-40, *Alternative Procedure for the Assessment of Buried Steel Tank Prior to the Addition of Cathodic Protection* can be obtained by calling the American Society of Testing and Materials at (610) 832-9500

The three alternative methods described in ASTM Standard ES-40 involve:

- using proprietary mathematical models for predicting the level of corrosion that the tank has experienced;
- using a remote-controlled video camera to inspect the interior of the tank for holes, rust, streaks, discoloration, pitting, scaling, weld decay, and cracks;
- using a robot with ultrasonic equipment to travel along the internal walls of the tank and measure wall thickness. At least 15% of the interior wall surface must be examined. The robot must also free the surface of rust, scale, paint, and other deposits to ensure a clean surface for the inspection.

For each of the alternatives, the consultant must analyze samples taken at the site to determine if a leak has already occurred. Once the tank is found to be a good candidate for cathodic protection, then a corrosion engineer must design a system for that tank based on the data collected from the soil samples.

Cathodic protection will probably be accomplished with an impressed current system which is able to protect both the tank and piping network. This system requires a constant source of electricity to ensure corrosion protection. You must also inspect the system every 60 days to be sure that it is operational and monitor the adequacy at least annually. Be sure to keep records of the inspections that you perform.

If one of the alternative assessment methods listed above has been used, then it is mandatory that a leak detection system (automatic tank gauge, vapor or groundwater monitoring well, or SIR) be used. If an internal inspection has been done, then a leak detection system

is not required until ten years after the upgrade. During the ten-year period, you can continue to use inventory monitoring in conjunction with a tightness test every five years. It is recommended that the leak detection system be included at the time of cathodic protection.

Upgrading by Tank Lining

What is tank lining? Lining involves plugging small holes which may exist inside a tank and coating the interior with a fiberglass or epoxy-based resin (or other non-corrodible material). A lining prevents internal corrosion and product releases.

If you have decided to upgrade your tank with liner, the first step is to internally inspect the tank for structural integrity. To do the inspection, the tank is emptied, cleaned and rendered free of vapors. Once cleaned, the tank is inspected for visual evidence of corrosion and for any perforation. The tank can be tested by sounding with a ball peen hammer or other nondestructive testing methods. If the tank appears to be in good shape, then the tank is abrasive blasted to a white metal finish so that it is completely free of scale, rust, and foreign matter. The tank is then inspected again to check areas around any perforations to ensure that the metal at least 1/8 inch in thickness.

Structural Requirements - A steel tank may be lined only if it meets structural conditions specified by Part 614.6 of the State Petroleum Bulk Storage (PBS) regulations. The tank must have:

- (1) a design shell thickness of seven gauge or more. (This typically means that a tank has to be larger than 1,100 gallons);
- (2) a metal thickness of one-eighth inch at holes after reaming;
- (3) no open seam or split;
- (4) less than ten holes with none larger than one-half inch in diameter; and
- (5) structural soundness meeting the standard of the lining manufacturer.

The industry standard for tank lining is NPLA 631. This standard additionally requires that for the tank to be lined, it have less than

five holes (none larger than one-half inch in diameter) in any one square foot area and it may not have a major flat spot or dent.

All holes must be plugged using

A copy of NLPAs Standard 631, *Entry, Cleaning, Interior Inspection and Lining of Underground Storage Tanks* can be obtained by calling the National Leak Prevention Association at (208) 389-2074

boiler plugs or screws made of non-corrodible plastic. The plugs or screws must be covered over with a laminate prior to the lining of the tank. **Caution:** If there are holes in the tank, especially prior to abrasive blasting, the tank has probably been leaking, and there

is a need for remediation. This must be reported to the Spill Hotline at 1-800-457-7362.

The final step is the application of the liner to a minimum thickness of 100 mils and inspection for air pockets, blisters, pinholes, hardness and thickness. Before the job can be considered complete, the tank has to be tightness tested. Remember, leak detection must be installed within ten years. In the interim, you are allowed to use inventory monitoring in conjunction with tank tightness testing every five years. In addition, the tank must be emptied, cleaned and internally inspected after ten years and every five years thereafter to ensure that the lining is

still performing as designed and installed.

Upgrading by Tank Lining and Cathodic Protection

While either tank lining or cathodic protection can be used to meet the 1998 requirements, some owners are choosing to install both. This not only improves system reliability, but EPA regulations state that periodic internal inspection of the lining (after 10 years and every five years thereafter) is not required. When both lining and cathodic protection are installed, monitoring of the cathodic protection system is the only maintenance requirement.

Questions and Answers

Question Can an automatic flow shut-off valve be used in lieu of a gauge or high level alarm on an aboveground tank as required by section 613.3(c)(3) of the State Petroleum Bulk Storage regulations?

Answer Yes. It may be used as an equivalent device in lieu of a gauge or high level alarm. There are several types of valves designed for underground or aboveground applications. If the valve is to be used on aboveground tanks, then it must be designed to handle the pressures associated with aboveground deliveries.

There is one concern though. If the tank is overfilled, the delivery hose will be pressurized and must be disconnected without a spill. The delivery person must have access to the flapper valve so that pressure in the hose can be relieved.

Question Can cathodic protection be retrofitted on existing galvanized steel piping in accordance with the standard in Petroleum Equipment Institute, Recommended Practice # 100 (*Recommended Practices for Installation of Underground Liquid Storage Systems*)?

Answer No. The standard found in PEI RP 100 applies only to a well-coated piping system. (See section 10.9 of RP#100) Pipe that has been galvanized is not regarded as a "well-coated system." If an owner or operator wanted to upgrade galvanized piping, a corrosion expert will need to design a site specific cathodic protection system.

The better option may be to install a new state-of-the-art system.

Technical Assistance Bulletin

Storm Protection for Aboveground Tanks

PROBLEM: Flooding this Spring caused problems for some tank owners in the Midwest. Local news reports indicate that a potentially serious incident was averted when firefighters were able to stabilize an aboveground storage tank (AST) holding 250,000 gallons of caustic soda that threatened to float away.

Disastrous storms and flooding are not limited to the Midwest or coastal Florida. New York periodically experiences severe storm disasters. Late summer and fall are times for tornadoes and hurricanes. Although tanks are generally designed and constructed to withstand wind loading without buckling, many ASTs may not be designed for hurricane strength winds. Even if a tank does withstand high winds, flying debris can puncture the shell and cause substantial damage.

Although natural disasters often are called "acts of God," - meaning they are beyond human control - tank owners would be wise to take action to minimize the damage to their tanks and costly spills.

SOLUTION: Tank owners should design their facility to prevent damage from natural disaster. Owners will also need to focus on operational controls to prevent damage.

The following list is not exhaustive, but it provides a starting point for tank owners trying to prevent storm damage.

General Items

- Turn off electrical power to the tank system, including pumps and cathodic protection systems, before the storm begins.
- Close and secure all valves. Piping is especially susceptible to impact damage. An anti-siphon valve as near to the tank as possible will minimize the amount of product released if the piping fails.
- Communicate your prevention and response plans to nearby communities and local emergency responders.

Flooding

- Fill tanks with enough product to prevent flotation based on expected flood levels. Remember that the level of product in the tank must be substantially higher than the flood level to compensate for the lower specific gravity of most petroleum products. Allow a safety factor when possible, in case flood waters rise higher than expected. The National Fire Protection Association Flammable and Combustible Liquids Code (NFPA 30) requires vertical tanks to have at least 30 percent of the tank's storage capacity above the maximum flood stage.
- Anchor small tanks. Tank vents and other openings that are not liquid tight should extend above the maximum flood level. Large tanks are too buoyant for anchorage to be feasible in high flood waters.

- Open manways or door sheets in clean, out-of-service tanks to prevent flotation. This is not an option for tanks that have not been cleaned.

High Winds

- Secure or place indoors any loose items that could become airborne, including items such as drums and even picnic tables.
- Check tank supports and anchorings to be sure they are present and in good condition. Additional anchors may be added, if necessary.
- Decide how full the tank should be. Tanks that are full are somewhat more resistant to wind damage; however, the risk of a large release is greater if a full tank is punctured. An optimum level is probably one-half to two-thirds full.
- Consider installing a chain link fence around the tank to provide the lower portion of the tank shell with protection from airborne items. Tall secondary containment diking also will protect the lower portion of the tank shell and will help contain releases. In coastal areas that may be subject to high waves, extra tall and strong secondary containment will provide added protection.

Afterwards

- Check tank foundations, piping supports and secondary containment diking for erosion or damage.
- Sample water in the containment area for presence of product. Significant amounts of product in the water may indicate a leak in the tank system that should be investigated before returning to normal operations.
- Remove all water before restoring electrical power.

This article was adapted from an article that appeared in the September 1996 issue of the *Aboveground Storage Tank Guide* published by Thompson Publishing Group, Inc. Call (800) 677-3789 for subscription information. Used with permission.

Seventeen Receive Compliance Awards in Region 9

Seventeen facilities in western New York have been awarded certificates for being in full compliance with the State Petroleum Bulk Storage (PBS) Regulations. DEC's Region 9 Office has issued awards to recognize facility owners and operator who have done an outstanding job. Robert Leary, Regional Spill Engineer, reports, "These businesses have not only made a sincere and substantial effort to comply with State regulations, but have upgraded tanks well in advance of the federal 1998 deadline as well. Moreover, their actions demonstrate their concern for the environment, neighbors and community."

The following companies have been awarded certificates.

Uni-Mart #0524	3256 West State St.	Olean, NY
N. Tonawanda Co-generation Facility 1	1070 Erie Ave.	North Tonawanda, NY
Jamestown Service Center	1384 Peck Settlement Rd.	Jamestown, NY
Bells Market	121 North Center St.	Perry, NY
Lake County Dairy	500 East Main St.	Fredonia, NY
Chet's Service	527 Washington St.	Jamestown, NY
United Refining	Chautauqua County Airport	Jamestown, NY
Highway Oil Company	846 East 2 nd St.	Jamestown, NY
Yellow Goose Store	406 West 3 rd St.	Jamestown, NY
Suit Kote Company	57 Lister St.	Jamestown, NY
MRC Bearings	402 Chandler Street	Jamestown, NY
M-20 Kwik-Fill	700 Fairmount Ave.	Jamestown, NY
M-23 Kwik-Fill	161 Fluvanna Ave.	Jamestown, NY
Waste Management of SWNY	60 Harmon Ave.	Falconer, NY
Indeck-Silver Springs Energy Center	1 Indeck Ave.	Silver Springs, NY

DEC congratulates these companies for going the extra mile in meeting the goals of the Petroleum Bulk Storage Program - protection of public health and the environment.

DEC's Bulk Storage Helpline Toll-free Service

If you have a question on practices for storage and handling of petroleum or hazardous substances, call toll-free DEC's Bulk Storage Helpline. Anyone can find out more about DEC's bulk storage programs, or obtain technical information, forms or publications by dialing 1-888-457-4351. The programs covered by the helpline are:

- State Petroleum Bulk Storage Program
- State Chemical Bulk Storage Program
- Federal Underground Storage Tank Program
- Major Oil Storage Facility Program

The helpline is in operation Monday through Friday from 8:30 a.m. to 4:45 p.m. EST. It can be reached from anywhere in the country.

"Tank Time" Video Available

Are you planning a workshop with your storage tank managers on the EPA underground tank requirements? If you are, this new video uses a fictional TV show, "Tank Time," to present an amusing discussion of the federal 1998 requirements for corrosion protection, spill and

overflow prevention, and compliance options available to UST owners and operators. It was developed by the Tennessee DEC, in collaboration with EPA's Office of Underground Storage Tanks.

If you would like to obtain a copy of *Tank Time*, it is available for sale from Scene Three, Inc., 1813 8th Avenue South, Nashville, TN 37203, Attention: "Tank Time." Send a written request and a check for \$24.00 (includes shipping and handling).

Newfangled UST Systems Can Have Old-fashioned Problems

Double-walled tanks and piping with leak detection provide a very high level of security for petroleum storage, but they are not foolproof. Leaks and spills can still occur. We recently received a report that five thousand (5,000) gallons of petroleum leaked from a new double-walled system in Schenectady, New York. The source was a cracked fitting in the dispenser.

While double-walled systems are normally trouble-free and reliable, owners and operators of bulk storage systems must still maintain their equipment and visually inspect everything to make sure that they don't have a problem.

On the Lighter Side

Businesswoman Harassed by Empty Oil Tank

Thanks to computers, a businesswoman in Massachusetts can now be harassed over the phone by an empty oil tank hundreds of miles away.

A True Story. A businesswoman in Billerica, Massachusetts, had a toll-free phone number on which she received a mysterious call every 90 minutes, day and night, for six months. She'd answer the phone, but there was never anybody there, only silence.

Finally she contacted the authorities, who tracked down the source of the calls - an unused oil tank in the basement of a home in Potomac, Maryland. This tank was equipped with a computerized device programmed to call a fuel company when the tank was empty, but the fuel company had shut down, and its phone number was reassigned to this Massachusetts woman's business.

Vapor Recovery Manual Revised

The Petroleum Equipment Institute (PEI) has released PEI RP300-97 "Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Fueling Sites." The 21-page manual is now available to those interested in the preferred practices for installation and testing of Stage I and Stage II vapor recovery systems. It revises the first document published by PEI in 1993.

To obtain a copy, call PEI at 918-494-9696 or send a check for \$25.00 with your order to PEI, Publications Department, P.O. Box 2380, Tulsa, OK 74101-2380.

Evaluation of Leak Detection Methods

Study results of more than 250 methods for detecting leaks are now available in the April 18, 1997 report entitled *List of Leak Detection Evaluations for Underground Storage Tank (UST) Systems*. Each of the methods listed has been evaluated by an independent third-party for accuracy and applicability. The *List* can be used to compare and select methods, and determine their compliance or acceptability. Although maintained by a work group consisting of State and EPA members, the *List* is not a list of "approved" leak detection systems.

If you would like a copy of the *List*, call EPA's National Center for Environmental Publications and Information at 1-800-490-9198. To obtain from the Internet, call Hal White at 703 603-7177, or visit <http://www.epa.gov/oust/pub/index.htm>.

The list of accepted UST tank tightness test methods for use in New York is contained in SPOTS #2, *Tightness Testing Underground Petroleum Storage Tanks*. To obtain a copy of SPOTS #2, call the Bulk Storage Helpline at 1-888-457-4351.

**Ten UST
Contractors
Certified
by IFCI**

Since 1995, underground storage tank (UST) contractors in New York have access to voluntary UST certification exams prepared by the International Fire Code Institute (IFCI). These exams cover the various aspects of pump and tank contracting including UST installation/retrofitting, decommissioning (closure), tank tightness testing, and cathodic protection. If you are interested in finding out more about the IFCI contractor certification exam, DEC's Tank Installer's Training Course, or want to obtain a list of contractors, please call the Bulk Storage Helpline - 1-888-457-4351.

Internet Provides Worldwide Access to NY Tank Program

DEC IS NOW ON THE INTERNET

Our address is:

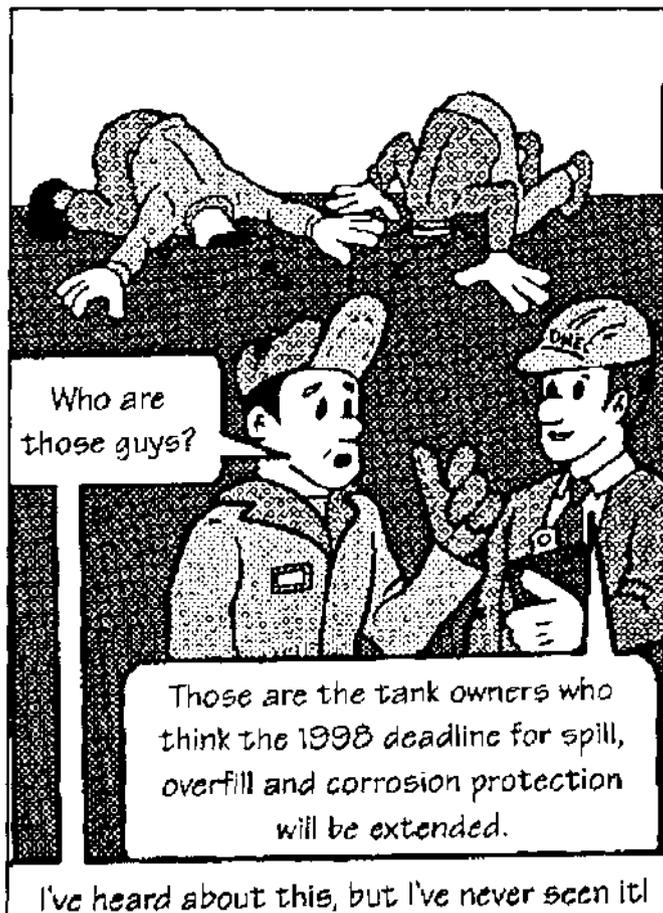
<http://www.dec.state.ny.us>

Once you are on the DEC's home page, all you have to do is visit the index and click an appropriate link of interest to you.

Other organizations have Internet addresses where you can obtain information on storage and handling practices. The organizations and their Internet addresses are listed below.

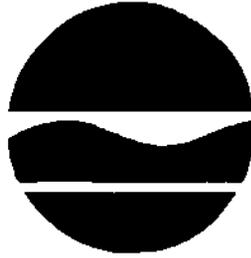
- US EPA's Office of Underground Storage Tanks (UST) <http://www.epa.gov/OUST>
- American Petroleum Institute (API) <http://www.api.org>
- National Fire Protection Association (NFPA) <http://www.nfpa.org>

- Underwriters Laboratories Inc. (UL) <http://www.ul.com>
- American Society of Testing and Materials (ASTM) <http://www.astm.org>
- National Association of Corrosion Engineers (NACE) <http://www.nace.org>
- Steel Tank Institute (STI) <http://www.steeltank.com>
- Petroleum Equipment Institute (PEI) <http://www.peinet.org>
- Association of State & Territorial Solid Waste Management Officials (ASTSWMO) <http://www.astswmo.org/tanks.htm>
- Center for Chemical Process Safety <http://www.ccps.aiche.org>



Fall 1998
Issue 20

Department
of Environmental
Conservation



TANK BULLETIN

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John P. Cahill, Commissioner

Dick Cowan, Editor

Federal UST Deadline Almost Here

Each year hundreds of underground storage tanks leak into New York's groundwater resources. These leaks not only take their toll on the environment but drain economic vitality from businesses facing unbudgeted cleanup expenses. Timely action to replace rusted underground tanks and periodic checks for leakage can prevent environmental damages and save businesses' millions of dollars annually.

State and federal laws are in place to protect the environment from leaking storage tanks. Under New York State regulations, new tanks must meet strict standards and unneeded tanks must be closed in an environmentally safe manner.

Under Federal regulations, tanks must be upgraded to meet corrosion protection, overfill prevention and leak detection standards set by USEPA. December 22, 1998 marks the Federal deadline for upgrading the nation's underground tanks to meet these standards. Owners must bring their tanks into compliance or face enforcement that could result in fines and penalties.

If you have a substandard underground storage facility, you are urged to take action now.

Upgrading should be among your highest priorities for 1998. Please contact your nearest Department of Environmental Conservation office (numbers below) for assistance on upgrading requirements.

Region 1, Stony Brook (516) 444-0320
Region 2, New York City (718) 482-4933, ext.. 7149
Region 3, New Paltz (914) 256-3121
Region 4, Schenectady (518) 357-2045
Region 5, Ray Brook (518) 897-1243
Region 6, Utica (315) 793-2554
Region 7, Syracuse (315) 426-7519
Region 8, Avon (716) 226-2466
Region 9, Buffalo (716) 851-7220
or call the Bulk Storage Helpline
at 1-888-457-4351

EPA Requires Risk Management Reports

In June 1996 the U.S. Environmental Protection Agency (EPA) published regulations titled "Risk Management Programs for Chemical Accident Release Prevention" (40 CFR Part 68) which require businesses storing certain hazardous chemicals to prepare reports discussing how accidental chemical releases can be eliminated or minimized. The reports are due to be submitted to EPA on or before June 21, 1999.

More than 100 chemicals are covered by the regulations (including chlorine, propane and ammonia) that many small businesses commonly store.

The Clean Air Act Section 112(r) required the EPA to publish regulations focusing on chemical

accident risks. Congress and EPA's Chemical Emergency Preparedness and Prevention Office intended this regulation to build upon the chemical safety work begun under the Emergency Planning and Community Right-to-Know Act which requires businesses to properly plan for and respond to chemical accidents.

Information is available from EPA on: the chemicals covered, the threshold quantities regulated, scope of report, reporting methods and model risk management plans.

For more information, contact the EPA confidential hotline, 1-800-424-9346 or John Ulshoefer, EPA Region II coordinator at 1-908-321-6620. Information is also available on the Internet at <http://www.epa.gov/swercepp/>.

Grace period for Upgrading UST's Ends December 22, 1998

A decade ago, Congress and EPA enacted laws and regulations intended to curb the cost of cleaning up the mess left by leaking underground storage tanks and pipes. In passing the federal regulations (40 CFR Part 280), the EPA provided tank owners with a 10-year period for upgrading or discontinuing use of substandard underground tanks. That 10-year period ends this year on December 22, 1998.

Applicability of the Federal Regulations

EPA's regulations are applicable to tanks storing petroleum and hazardous substances that have 10 percent or more of its volume underground and are larger than 110 gallons. There are two major exceptions to this:

1. Any tank storing heating oil (such as #2 fuel oil and kerosene) that is used consumptively on the premises is exempt. This is true regardless of the size of the tank as long as the heating oil is used on site.

2. Any tank less than 1100 gallons storing motor fuel at a resi-

dence or on a farm is exempt. The location has to be a residence where people live or a farm where crops or livestock are raised. A cemetery is not a residence and a golf course is not a farm.

For example, if a person owns a

Although some tanks are exempt from the federal UST regulations, they may not be exempt from the State's Petroleum Bulk Storage Regulations. Call 1-888-457-4351 for a copy of the State regulations and to discuss State requirements.

2000-gallon tank that stores heating oil used consumptively on the premises, and a 2000-gallon gasoline tank for automotive use, the heating oil tank is exempt from the federal UST regulations while the gasoline tank is not. Or another example, if a farmer owned a 3000-gallon tank storing lube oil and a 1000 gallon tank storing diesel for his farm equipment, the lube oil tank is covered by the federal UST regulations while the

motor fuel tank is not covered. One last example would be a person who owned a tank storing diesel fuel for an emergency power generator and a tank storing heating oil used in a generator. The tank storing diesel is covered by the regulations while the tank storing heating oil is not covered.

Options

There are basically four options for complying with the federal UST regulations:

Option #1. Replace the tank and piping system;

Option #2. Upgrade the tank and piping system;

Option #3. Permanently close the tank and piping system; or

Option #4. Temporarily close the tank.

For each of these options, the federal standards (and the State DEC standards where applicable) must be followed. It is important to review the DEC standards for new construction, especially if a new AST is being installed.

(continued next page)

Tank owners should remember that pipe upgrading is also required. If a tank owner has a piping system that is bare steel, galvanized steel or other piping system not protected from corrosion, it is best to replace the piping system. If the tank owner wants to upgrade the piping system with cathodic protection, a site specific design is needed by a corrosion expert.

For more information on option #1 and #3, see the article *Beating the 1998 Deadline-Upgrading Alternatives* in *Tank Bulletin*, Issue Number 16, Fall of 1995. For more information on option #2, see article *1998 UST Deadline - Tank Upgrading Options* and the Question and Answer section in *Tank Bulletin*, Issue Number 19, Winter of 1997.

Tank Closure

EPA has notified owners who decide not to upgrade their tanks that they must close their USTs by December 22, 1998. To permanently close a tank, owners should empty and clean the system and remove all fill lines, pipes and the tank. Once properly cleaned, a tank can be brought to a salvage yard where it will be recycled along with other scrap metal. If removal is physically not possible, a tank may be closed in place by filling it with a solid inert material such as sand.

To temporarily close a tank, the tank must be emptied and the fill line capped and locked so that no product can be delivered to the tank. The tank and piping system must either be upgraded or permanently closed with 12 months.

When permanently closing a tank, owners need to assess the site for contamination and maintain a written report containing the findings of the assessment. Once work is scheduled for closure, the tank owner should notify

the DEC on the tank registration form that the tank is being closed. If the tank is temporarily closed, the owner will need to keep the tank registered with the DEC.

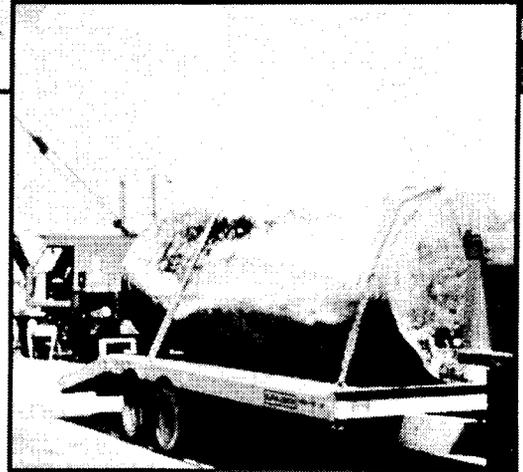
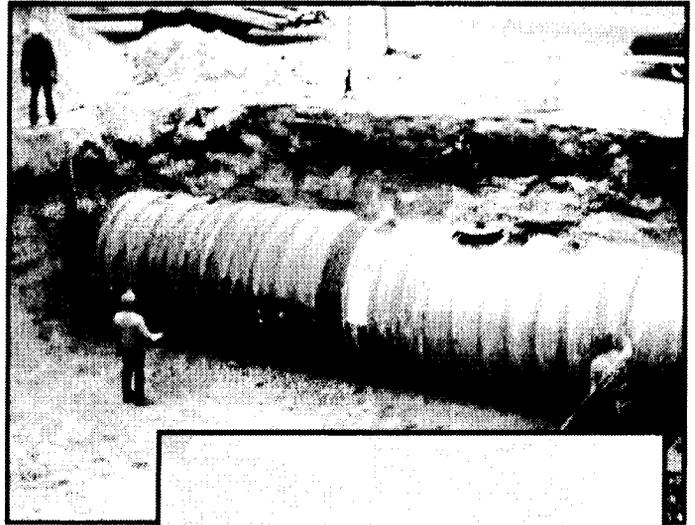
If you are uncertain if your tank is covered by the EPA regulations and needs to be upgraded by December 22, 1998, call the EPA helpline at 1-800-424-9346 or visit their web site at <http://www.epa.gov/epaoswer/hotline>.

The temporary closure option helps owners that have not been able to get their tanks upgraded prior to the deadline. The owner will not be able to operate the tank after the deadline but is given up to 12 months to either get the tank/piping system upgraded or permanently closed.

Update Tank Registration Information with DEC

Owners are reminded that they must notify the DEC and update their tank registration when any of the following work is done:

- permanent tank closure (in-place or by removal)
- temporary tank closure
- new tank installation
- new piping installation
- retrofit of cathodic protection to the tank or piping
- tank re-lining
- installation of spill prevention devices, overfill prevention devices or leak detection devices



(top) New UST installation
(inset) Removal of a substandard tank

By December 22, 1998, operating underground storage systems must have:

- *corrosion resistant tanks and pipes;*
- *a catchment basin installed around the fill port; and*
- *an overfill prevention device such as a high level alarm or automatic shut off valve*

Tanks cannot be in service after December 22 without meeting all of the upgrade requirements.

Spill Prevention Strategy at Kodak Park

By James M. Gerek,
Eastman Kodak Company

Three steps are key to Kodak's strategy.

Step 1 - Study processes for potential problems

Step 2 - Upgrade storage equipment and handling procedures

Step 3 - Analyze accidents to prevent recurrence

Editors Note: Eastman Kodak has a significant number of tanks regulated by DEC's Chemical Bulk Storage Program. DEC invited Eastman Kodak to share its expertise and strategy for spill prevention in this issue of *Tank Bulletin*.

Eastman Kodak strives to be a good steward of the environment, and to protect the health and safety of its workers, customers and the communities in which it operates. In doing so it sets targets and tracks environmental performance in many areas, such as spills and releases that have the potential to impact the environment. Over the past decade Kodak has been successful in reducing these incidents at its Kodak Park facility in Rochester, New York through a process of continual improvement.

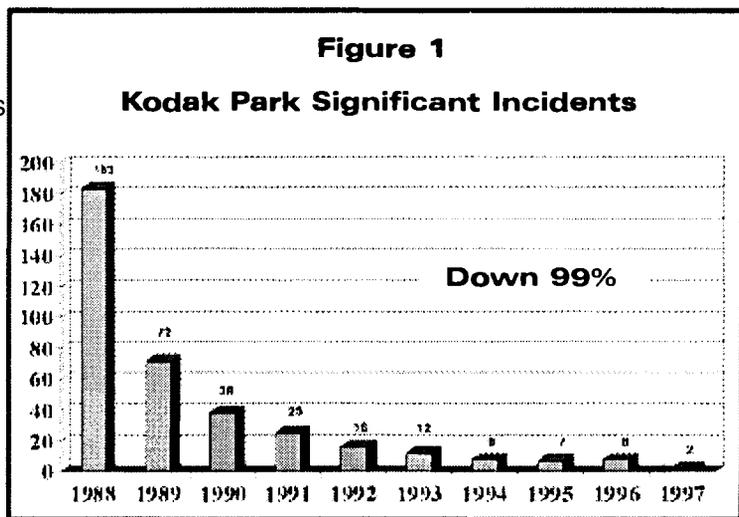
Kodak Park is the largest photographic production facility in the world, and the largest industrial complex in the northeast United States. The manufacturing park is located

on more than 1,300 acres, and stretches for nearly four miles through the City of Rochester and the Town of Greece. Kodak Park has often been called "A city within a city." It has some 200 major manufacturing buildings producing photographic films, papers and chemicals for a wide variety of applications.

Kodak uses hundreds of different chemicals, in quantities ranging from lab-size containers to full tanker truckloads. Each week, hundreds of truckloads and railcars of raw materials arrive at the park. On a daily basis, thousands of gallons of chemicals are transported through many miles of pipelines to operations all over the site.

All incidents at Kodak are given severity ratings of "high," "medi-

um," or "low" based on their potential to cause an impact on the environment. High and medium-severity incidents are labeled as "significant" because of their potential to impact the environment or the quality of life of neighbors. Low-severity incidents typically involve a spill of a very small quantity of material to an area from which it can be cleaned up without any impact on the environment. In 1997, Kodak recorded just two "significant" incidents, compared to seven to



eight per year during 1994-1996. Since 1988, Kodak has achieved a 99 percent reduction in "significant" incidents at its Rochester plant. See Figure 1.

These successes are due to a multifaceted release prevention program developed by Kodak. First, modifications being considered to chemical or manufacturing processes are extensively analyzed through a process safety review before they are implemented. Kodak's reviews identify potential hazards, assess the risks they present and evaluate control methods. Changes are then made to minimize hazards. Reviews are conducted prior to the start-up of new or modified processes, or at intervals of not greater than five years for ongoing processes.

They generally involve several members of the affected operations and engineering staff along with internal experts on health, safety and environmental issues. Information generated from the reviews enables management to make informed decisions about process improvements and to ensure compliance with all applicable regulations and requirements.

Second, a considerable effort has been made over the past several years to upgrade tank systems and transfer stations to meet current technical and regulatory standards. More than \$100 million has been invested in Kodak's storage tank improvement program. This program to upgrade, replace or eliminate every bulk chemical storage tank by the end of 1998 will result in a 65% net reduction of tanks at Kodak Park. By the end of the year it is anticipated that 893 tanks will have been removed. New and upgraded tanks have secondary containment and advanced leak detection systems. (Note: A more complete description of the Kodak program is discussed in the Spring/Summer 1990 edition of *Tank Bulletin*.)

In conjunction with the tank improvement program, Kodak has begun upgrading transfer stations. This work is ongoing to meet the 1999 upgrade requirements established by the Department of Environmental Conservation in the State's Chemical Bulk Storage Regulations. In general, they are designed to contain, at a minimum, the volume of the spill most likely to occur. In a number of areas, remote catch tanks are used to enhance spill containment where space is limited. See Figure 2. for a photograph of an upgraded transfer station.

Finally, after a spill or release has occurred, every effort is made to minimize its impact. Data from accidents is analyzed to learn what

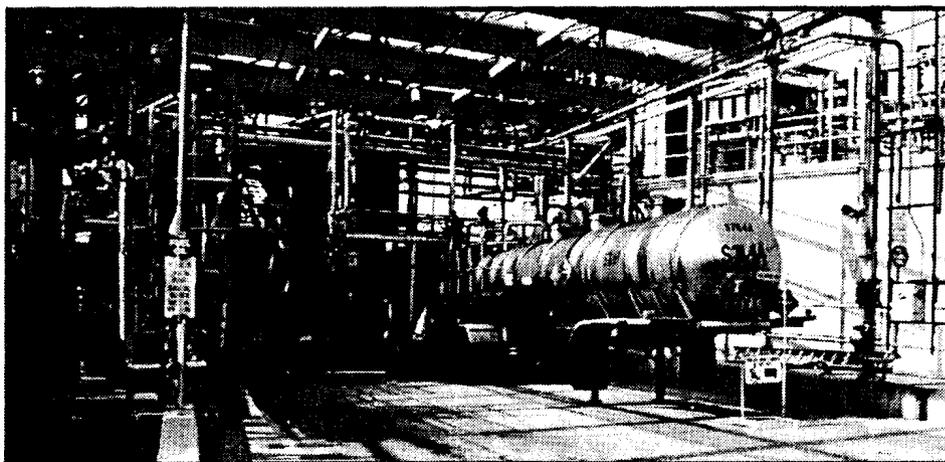


Figure 2—Kodak's upgraded transfer station

steps are needed to prevent recurrence. To provide prompt spill response and to initiate the appropriate follow-up activities, Kodak uses an internal 911 phone system.

Employees are trained to use this number to report every spill, as well as any fires and injuries. Experienced personnel respond to these incidents and initiate necessary regulatory reporting. The Kodak Fire Department maintains a highly trained HazMat unit that can be brought to the scene with the necessary equipment to deal with most types of incidents, and to keep them from growing larger. Once a spill has been contained and cleaned up, the attention turns to determining how to keep such an incident from happening again. Root-cause analysis techniques are used to identify the factors that led to the incident. These are then used both to modify the specific process involved, and to focus the direction of the release prevention program for the entire site.

Using the above approaches, Kodak has been successful in preventing problems which are inherent with the handling of large quantities of hazardous substances.

The result? A 99% reduction in "significant" incidents over the past nine years.

Kodak believes that it is best to focus on preventive measures today, not remedial measures tomorrow.

Tank Owners Please Note:

If you have a substandard federally regulated UST, you will not be able to use it after December 22, 1998. Only UST systems that are upgraded or replaced can be used after that date. Hiring a contractor before December 22, 1998 to perform required work does not qualify you to use your tank.

WWW Gives You the World

In the Winter 1997 Issue of the Bulletin we listed useful web site addresses (URLs - Universal Resource Locators) such as those of the American Petroleum Institute (API), National Fire Protection Association (NFPA), National Association of Corrosion Engineers (NACE), and others. Of course, we have discovered some more which are listed below:

<http://www.Albany.net/~gra>—Homepage for the NYS Association of Service Stations and Repair

<http://www.epa.gov/swerust1/ustfacts>—Environmental Protection Agency (EPA) homepage for USTs

<http://www.frtr.gov>—Federal remediation technologies roundtable homepage

<http://www.assembly.state.ny.us/ALIS>—URL for

New York State Laws. (Note: type ALIS in capitals).

<http://www.access.gpo.gov/nara/CFR>—Homepage for the National Archives and Records administration containing the U.S. Code Of Federal Regulations

<http://www.epa.gov/swerust1/mtbe>—URL for MTBE fact sheets, or call 800-490-9148

Homepage for SPCC Planning

If you are preparing a spill prevention control and countermeasure (SPCC) plan as required by EPA under 40 CFR 112, then you should visit EPA's Oil Spill Program homepage at <http://www.epa.gov/oilspill>.

Westchester County Delegated

Effective June 23, 1998, aboveground and underground petroleum bulk storage tanks located in Westchester County, formerly regulated by the NYS Department of Environmental Conservation (DEC), will be regulated by the Westchester County Health Department (WCHD). Westchester County now joins Nassau, Suffolk, Rockland and Cortland counties which have been delegated the Petroleum Bulk Storage (PBS) Program.

In accordance with the Order on Consent executed by DEC Commissioner John P. Cahill and WCHD Commissioner Harold N. Adel, M.D., the Health Department is empowered to administer and enforce Article XXV (entitled Petroleum Bulk Storage Code) of the Westchester County Sanitary Code. Article XXV now governs the bulk storage of petroleum in Westchester County in lieu of 6 NYCRR Parts 612-614.

The County is now responsible for registering tanks, for enforcing the testing, inspecting and closure requirements at existing storage facilities and for ensuring that owners and operators install state-of-the-art equipment at all new facilities.

For further information on the rules and regulations of the WCHD, contact Carlos Torres, Chief of the Westchester County program at 914-637-4890. The address of the WCHD is: Westchester County Health Department, 145 Huguenot Street, New Rochelle, NY 10801.

Spill Cleanup Program Available Again for Homeowners

With the demise of the HELP (Homeowners Environmental Loss Protection) Program two

years ago, many homeowners with residential fuel oil tanks have wondered if there is insurance available to cover the cost of cleaning up a tank leak. Well, a new program that serves this need has just come on line. It's called the CLEAR Program. CLEAR stands for Cleanup of Environmental Accidental Releases.

CLEAR is an insurance program that has been approved by the New York State Insurance Department on an excess and surplus lines basis. It can cover the costs of cleanup, property damage, and tank repair or replacement. The cleanup of fuel oil accidentally released onto a neighbor's property is also covered, provided the neighbor does not restrict the insurer's access to such property. Not all homeowner tanks are expected to qualify for coverage because of the inspection and tightness testing requirements. Insurance policies cover USTs up to 4,000 gallons capacity.

CLEAR insurance is only available through participating fuel oil dealers. Annual premiums are reported to range from approximately \$65 to \$225 depending on tank location, whether it is tightness tested prior to insuring and area of the State that the tank is located.

For more information on CLEAR insurance, contact your fuel oil dealer or the New York State Insurance Department Hotline at 1-800-522-4370.

DEC IS NOW ON THE INTERNET

Our address is:

<http://www.dec.state.ny.us>

Know-how Important for Removing/Installing Storage Tanks

Experienced contractors have learned that removing a storage tank is dangerous work and installing a new system correctly requires patience and know how. Study courses and on-the-job training is essential if you are providing tank removal or installation services.

API Training Course-Operation Underground

Operation Underground is a training program developed by the American Petroleum Institute (API) that teaches the proper procedures for installing and removing underground storage tanks. Installation and removal procedures are addressed in two separate training modules. Each module includes an instructional video and an associated workbook. Trainees view a segment of the video and answer questions in the related workbook, reviewing or moving forward at their own paces.

If you are interested in obtaining a copy of one or both of these modules, contact API at (202) 682-8227.

Ask for:

Underground Storage Tank Installation Training Module—Publication 1663, or;

Underground Storage Tank Removal Training Module—Publication 1663D.

API also offers a contractor certificate program. The Program is designed to provide tangible evidence that one or both of the modules have been completed. To take the exam(s) an individual must fill out a certificate application form and return it to API headquarters for processing.

PEI Manuals Offer Guidelines

The Petroleum Equipment Institute (PEI) offers two separate manuals on tank installation. The first is *Recommended Practices for the Installation of Underground Liquid Storage Systems* and the other is *Recommended Practices for Installation of Above-ground Storage Systems for Motor Vehicle Fueling*. The purpose of these manuals is to identify practices and procedures for the proper installation of tank systems. These manuals are available from PEI by calling (918) 494-9696.

NYS Educational Seminars

The DEC works with Phil Pimentel, PIM Enterprises, to offer educational courses on underground tank installation, underground tank closure and an introduction to aboveground tank installation. Each

course is about a day in length. These courses, which are very practical in nature and designed for the contractor involved in tank work, are usually offered during the winter time (January/February) in various locations around the State. If you would like more information on this course or to sign up to receive a course brochure for when the seminars are offered, please call PIM Enterprises at 1-800-841-8827.

There is a voluntary certification program that is in use in New York State. The exam is offered by the International Fire Code Institute (IFCI). You can call the Bulk Storage Helpline (1-888-457-4351) to get a brochure on the exam.

New Construction Standard for Steel Tanks

A recent change in UL 58, the construction standard for steel underground storage tanks, which went into effect on September 30, 1997, is worth noting. The thickness of steel plate used in building a tank is one of the factors that determines if the tank has the strength to withstand pressure from the soil above it. In the old version of UL 58, the thickness of the steel plate for each tank size was specified in the standard. In the latest edition, the thickness of the plate is left largely to the discretion of the manufacturer, with the caveat that each tank must bear a label indicating the maximum allowable burial depth. All tanks must also be able to withstand at least a 5-foot burial depth.

In other words, it is now possible for a manufacturer to produce an 8,000 gallon tank with a specified maximum burial depth of 5 feet, and an 8,000 gallon tank with a specified maximum burial depth of 8 feet. Because the tank with the deeper burial depth must be able to support a larger amount of soil above it, the tank will need to be constructed of thicker steel. Because steel is sold by the ton, the tank with a maximum burial depth of 8 feet will weigh more and cost more than the tank with a maximum burial depth of 5 feet. Thus, owners and installers need to verify that the planned burial depth is less than the maximum permissible burial depth indicated on the tank label.

Tank Owners

It is very important that you hire contractors that are qualified to do work on tanks. Because there are no certification requirements in most areas of the state, it is very important that you check out the qualifications of the contractor very carefully. If the contractor has attended these courses and uses these manuals, it is a sign that they are interested in doing the job correctly. You should also check out references to be sure that they have a history of doing this kind of work.

Questions and Answer Section

Question: Can I deduct my expenses for tank removal, replacement and cleanup on my federal income tax return?

Answer: Yes. The costs to remove and replace storage equipment are considered capital expenditures and can be deducted over a depreciation period established by the Internal Revenue Service under Section 168 of the Internal Revenue Code. Typically for an underground tank, this would be 10 years. You will need to consult the modified cost recovery system (MACRS) table in IRS Publication 3946 for actual deductions each year.

As for cost to a cleanup contaminated soil or the cost to remove but not replace a tank, these are considered business expenses and can be deducted as normal operating expenses in the year that they occur.

Because deductions are unique to your situation, it is advisable to consult with a tax consultant or obtain a written interpretation from the IRS on all planned deductions.

New Publications from OUST

A new EPA publication entitled *Getting the Most Out of Your Automatic Tank Gauging System* (EPA-510-F-98-011) was released in March. The audience is UST owners and operators using automatic tank gauging systems to comply with federal leak detection requirements. This leaflet provides UST owners and operators with a basic checklist they can use to make sure their automatic tank gauging systems work effectively. The leaflet focuses on what actions the UST owner and operator must take to comply with leak detection requirements and prevent significant cleanup problems. For a copy of this publication, call 1-888-457-4351.

Tank Upgrading with Cathodic Protection

If a tank owner wants to upgrade a tank with cathodic protection only, the first step is an assessment of the tank to ensure the tank is in good enough shape to be upgraded. The regulations require either an internal inspection or some other inspection which is allow by EPA. ASTM came out with an emergency standard in 1994 that allowed tanks to be inspected without putting a person inside the tank. While this standard had a limited life of just two years, EPA allowed the use of this standard until March 1998. After March 1998, either a new ASTM standard had to be used, or each of the inspection methods had to have their

capabilities third-party certified. The new ASTM standard is expected out shortly. In the meantime, three of the vendors of inspection methods have had their methods third-party certified. The methods that have been evaluated and acceptable for use are:

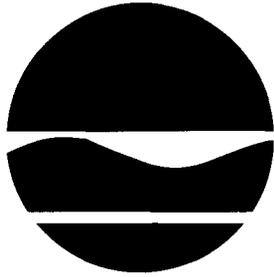
- *Mean Time to Corrosion Failure (MTCF)* by Warren Rogers Associates/CorrPro Companies
- *Tank Environmental Profile (TEP)* by International Lubrication and Fuel Consultants, Inc. (ILEC)
- *Petroscope* by Tanknology - NDE, Inc.

NYSDEC
Bulk Storage Program
50 Wolf Road, Room 360
Albany, New York, 12233-3750



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TAINIK BULLETIN

DEC's Enforcement Initiatives Yield Results Efforts prevent pollution and encourage compliance

In a recent news release, DEC Commissioner John P. Cahill announced the success of a series of wide-ranging initiatives that last year resulted in significant increases in environmental compliance and DEC enforcement actions.

Commissioner Cahill stated that "Under Governor Pataki's leadership, New York State has become a national leader in environmental protection and conservation. The Commissioner further stated that "Governor Pataki asked me to build upon the environmental enforcement successes when I started the job in 1997 and, with his continued support, DEC has successfully implemented programs that are protecting New York's environment and natural resources by cleaning up contamination, reducing pollution and increasing environmental compliance by businesses and individuals."

DEC issued 2,455 consent orders to polluters in 1999 and imposed \$7.25 million in civil penalties, up significantly from the 800 consent orders and nearly \$4 million in penalties imposed in 1998. Under a consent order with DEC, an individual or company agrees to come into compliance with state and federal environmental laws and regulations, clean up pollution, and pay a penalty for its environmental violations.

In separate actions last year, Commissioner Cahill required polluters who refused to sign consent orders to pay \$388,750 in penalties. Last year violators also agreed to provide \$2.9 million in environmental benefit projects, which mitigate penalties and provide environmental and public health protection or improvements in the areas where environmental insults occurred.

"Protecting New York's air, land and water is an immense responsibility, and Governor Pataki has given DEC the tools and opportunities needed to do this important work in new

and innovative ways, benefitting the environment and New Yorkers of today and the future," Commissioner Cahill said. "Enforcement, when applied fairly and consistently, is an effective tool for ensuring environmental compliance and deterring future violations."

Commissioner Cahill attributed much of last year's environmental enforcement success to several recent program initiatives and a good working relationship with Attorney General Eliot Spitzer.

"The State Department of Environmental Conservation will continue to work in cooperation with Attorney General Spitzer to protect the natural resources of New York State and hold polluters accountable," Commissioner Cahill said. "I commend DEC staff for their dedication to the environment and the principle of firm but fair enforcement, which contributes every day to our environmental success."

DEC launched an enforcement initiative in December 1997 designed to bolster compliance with regulations requiring registration and tightness testing of petroleum bulk storage tanks. After providing tank operators with a 60-day grace period and an additional 60 days to voluntarily comply after receiving notices of violation for noncompliance, the program in 1999 issued 605 orders on consent which include \$548,250 in penalties. The initiative has also resulted in the permanent closure of 3,232 petroleum bulk storage tanks over the last two years.

This initiative, combined with DEC's petroleum bulk storage tank inspection program, helps prevent petroleum spills or minimize their size, including those involving the gasoline additive methyl tertiary butyl ether (MTBE). In related efforts, DEC referred 223 oil spill cases to the attorney general for legal action, helping to minimize spills and encourage prompt site cleanups.

Facility Inspections: What are They Telling Us?

Since the inception of the state petroleum bulk storage (PBS) program almost fifteen years ago, DEC and delegated counties have conducted thousands of PBS facility inspections. In the beginning, inspectors checked for basics, such as facility registration, posting of the registration certificate, inventory records and secondary containment for aboveground storage tanks.

With the maturing of the PBS program and after the federal deadline (December 22, 1998) to upgrade, replace or close substandard federally regulated USTs (underground storage tanks), the state's inspection of PBS facilities has entered a new era. DEC is now performing uniform PBS facility inspections statewide that are tracked by DEC regional and central offices. Collecting these data on a statewide basis allows us to evaluate the rate of compliance of PBS facilities in New York State.

Last year, DEC performed about 2,600 PBS facility inspections in Regions Two through Nine.* Examining the data, three areas of facility operation stand out with a noncompliance rate of 25 percent or more. These three requirements, found in Part 613 of the State PBS regulations, are:

- keeping proper tank inventory records,
- monitoring cathodic protection, and
- leak monitoring of tanks and piping systems.

One-quarter to one-third of the PBS facilities inspected by DEC have serious compliance problems. Release detection is key to ensuring storage system integrity. Without proper monitoring, facility owners and operators are blind to whether their UST systems are tight or leaking. It is important to have the necessary hardware in place that is required by state and federal law and regulations. On the other hand, if this equipment is inoperable, or the owner or operator ignores it or doesn't know how to use it for release detection, it might as well not be installed. It only gives the facility owner or operator a false sense of security. In other words, we think that all is right with the world, because we have all the necessary "bells and whistles."

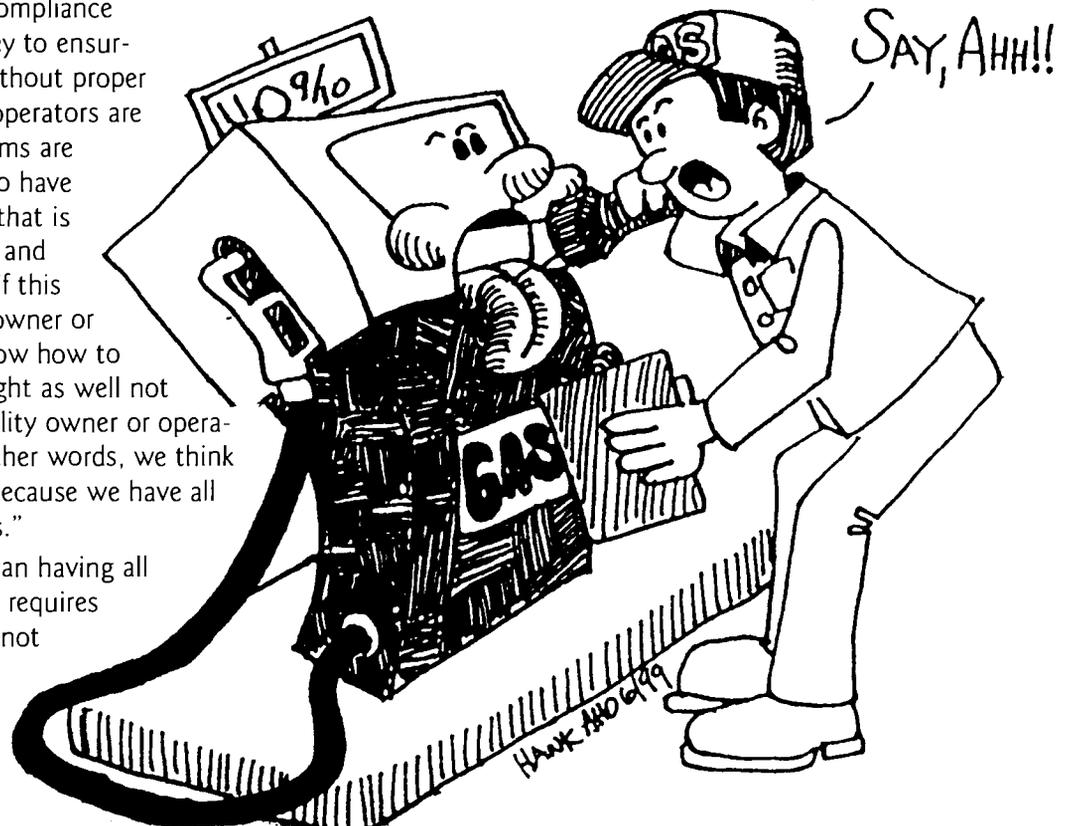
Full compliance means more than having all the required hardware in place. It requires sound facility management. This not only means the facility's construction is up to snuff, but that, operationally, the facility is in full compliance. Operational compliance means

that not only is the physical hardware present, but that it's in working order, the operator knows how to use it and is using it, and all necessary facility records are being kept. This shows that the system is working and could detect a leak.

DEC's facility inspection efforts will continue. This year, some 3,000 facilities are scheduled to be inspected in Regions Two through Nine. We look forward to finding more facilities in full compliance. Realistically, we will probably find a significant number with compliance problems. When we find violations, the DEC inspector will direct the facility owner or operator to bring the facility into compliance, thereby protecting the lands and waters of the state.

Noncompliance increases the risk that leaks and spills will occur thereby exposing the environment to harmful contamination and the owner/operator to liability for cleanup costs. Our experience from dealing with many cleanups has been that the cost and effort of dealing with a storage tank leak or spill greatly exceeds the cost of operating a well-run facility that meets regulatory standards. When a DEC inspector discovers a violation, not only is the owner or operator notified, but there is a penalty based on the seriousness of the violation, the environmental threat and the economic advantage that might have been gained by noncompliance.

* The PBS program in DEC Region One has been delegated to Nassau and Suffolk Counties.



Petroleum Facilities in Compliance

In March 1998, DEC contacted approximately 8,000 owners of petroleum bulk storage facilities* suspected of being out of compliance with state regulations. These facilities were given sixty days to complete a valid registration and demonstrate that their storage tanks had been tested for tightness. The intent of the program was to bring facilities into compliance and to reduce the risk of leaks and spills to the environment. As a result, DEC confirmed the following violations:

- 3,500 bulk storage facilities were either not registered or overdue for renewal,
- 3,200 bulk storage facilities contained tanks that were overdue for tightness testing,
- 800 facilities needed to be both registered and tightness tested.

Nearly all of these petroleum bulk storage facilities have since been brought into compliance by having their tanks registered and tightness tested or in some cases, both. Some have removed tanks or closed them properly.

As a result of enforcement efforts over the last twelve months, more than 3,600 petroleum bulk storage facilities that had unregistered or untested tanks now comply with state regulations.

For more information on recent DEC enforcement initiatives, see the article in this issue entitled "DEC's Enforcement Initiatives Yield Results."

*There are some 43,000 petroleum bulk storage facilities in New York State, with approximately 90,000 registered storage tanks. By definition, a petroleum bulk storage facility stores more than 1,100 and less than 400,000 gallons of petroleum products.

So, How Come We Still Have Spills and Overfills?

Well, we've made it right up to the deadline and with the relatively high rate of compliance, spills and overfills are a thing of the past, right? — WRONG!

Last week, we were notified of a spill that occurred during product delivery that had the owner, operator and delivery truck driver trying to corral about 300 gallons of maverick product. AND, this occurred at a facility where the tank systems had all been upgraded with spill and overfill prevention equipment. It seems the delivery driver walked away from the hose for just a moment (the moment, the hose detached from the tight-fill fitting). Before the driver could turn off the valve, over 300 gallons had escaped!

A reminder of the exact wording from the State Petroleum Bulk Storage regulations may be in order here. According to Subsection 613.3(a), Responsibility for Transfer, *"The operator, when on the premises or when in control of a petroleum transfer, shall be responsible for transfer activities. If the operator is not on the premises or not in control of a petroleum transfer, the carrier will be responsible for transfer activities. The operator or carrier must employ practices for preventing transfer spills and accidental discharges. Prior to the transfer, the operator or carrier must determine that the receiving tank has available capacity to receive the volume of petroleum to be transferred. The operator or carrier must monitor every aspect of the delivery and must take immediate action to stop the flow of petroleum when the working capacity of the tank has been reached or should an equipment failure or emergency occur."*

To ensure a safe transfer of product, either the operator or the carrier must take responsibility. Having the latest devices is a good start, but taking positive steps to make sure operations at your facility meet the standards is the only way to remain in compliance.

TANK BULLETIN NOW ONLINE

We are pleased to announce that you can access the *Tank Bulletin* online. To access current or past issues of the bulletin, check out our website at www.dec.state.ny.us/website/der/pr4data.html. Click on DER Newsletter—*Tank Bulletin*. This will give you access to current or past *Tank Bulletin* articles.

Bulk Storage Programs Shift Emphasis

For over fifteen years, DEC staff have worked with tank owners and operators to help them comply with state and federal requirements for the storage and handling of petroleum and hazardous substances. Our goal has been to achieve compliance by educating the regulated community in the prevention of leaks and spills in order to protect the lands and waters of the state. We have supplemented these efforts with thousands of facility inspections statewide and special enforcement drives, such as the Petroleum Bulk Storage (PBS) Enforcement Guidance Memorandum (EGM). The PBS EGM, which expired February 10, 2000, allowed thousands of facilities known to be in violation of registration and/or tank testing requirements to come into compliance within a specified period without penalty.

In the past, DEC's bulk storage compliance strategy has relied heavily on voluntary compliance through education. Now, there has been a significant change in direction of which tank owners and operators should be aware. To achieve compliance, the Department's emphasis is shifting to enforcement. DEC is working in conjunction with EPA Region Two to bring those who have been unwilling or unable to comply with the bulk storage regulations into compliance. This goal will be accomplished through a process of identification, notification and enforcement.

What does full compliance mean?

Full compliance means that the facility is in compliance with all applicable sections of state bulk storage (petroleum

and chemical) and federal UST regulations. Besides being registered and performing the necessary tests and inspection, it means that:

- necessary equipment (e.g., leak detection) is installed and functional,
- facility personnel are trained in equipment use,
- equipment is used properly,
- appropriate records are maintained

Deadlines

Significant federal and state bulk storage deadlines include:

December 22, 1998

- upgrading, replacing or closing federally regulated underground storage tanks (USTs).

December 22, 1999

- upgrading, replacing or permanently closing federally regulated USTs that were temporarily closed.
- upgrading of aboveground storage tanks and transfer stations at state-regulated chemical bulk storage (CBS) facilities.

to demonstrate compliance, and

- the operator knows how to respond, should there be a release of stored substances.

New York's PBS Strategy

With the arrival of the year 2000, New York's petroleum bulk storage (PBS) program is approaching its fifteenth year. New York has 35,904 registered facilities with 75,073 tanks. There are also 7,086 facilities and 14,611 tanks in the delegated counties of

Nassau, Suffolk, Rockland, Westchester and Cortland. To ensure compliance, DEC plans to inspect over 3,000 facilities in Regions Two through Nine this year. The inspections will be facilitated by a uniform inspection form and hand-held computers.

Under state regulations, inspectors will be checking for facility registration, tank testing and inspection, inventory recordkeeping, leak detection and cathodic protection, secondary containment systems, proper tank closure, spills, and releases.

Under the federal regulations, inspectors check whether tanks and piping systems have cathodic protection and leak detection, spill and overfill prevention devices, and whether a site assessment has been performed when a federally regulated UST is closed. When a federal UST is noted, a copy of the inspection report is forwarded to EPA Region Two for enforcement action.

New York's CBS Strategy

The December 22, 1999, chemical bulk storage (CBS) deadline includes requirements for upgrading aboveground storage tanks (ASTs) and transfer stations. (See the related article in this issue on secondary containment for transfer stations.) DEC previously solicited copies of portions of the Spill Prevention Report (SPR) from all CBS facilities. DEC requires submission of the report cover, the table of contents and the signature page signed by an authorized representative of the company.

continued next page

At present, the rate of total compliance with Section 598.1(k) of the CBS regulations is 40 percent. Guidance on preparing the SPR can be obtained from DEC by calling the Bulk Storage Helpline and requesting a copy of the brochure, *Preparing a Spill Prevention Report*.

EPA UST Enforcement Strategy

Many owners and operators with federally regulated USTs seemed to think nothing much would happen after the December 22, 1998, deadline. Some have viewed EPA as a "paper tiger" in regard to enforcing regulations, but EPA now has inspec-

tors working full time on state inspection sweeps. Some of those who thought nothing much would come of missed deadlines are having second thoughts as their violations are discovered and they receive stiff fines and penalties. With a phase-in period of ten years, ignorance of the federal UST requirements is not an acceptable excuse.

A Word to the Wise

Hopefully, a word to the wise will be sufficient to increase compliance and cut down the contamination of land and water from releases of petroleum and hazardous substances. No

system is foolproof, but taking prudent measures to contain and control the storage and handling of petroleum and hazardous substances makes sense and is sound business practice.

Where Can Information be Obtained?

Information on the state PBS and CBS regulations can be found on DEC's website at www.dec.state.ny.us or by calling the Bulk Storage Helpline at 518-457-9412. Information on federal UST requirements can be found on EPA's website at www.epa.gov/OUST or by calling the RCRA Superfund Hotline 1-800-424-9346.

Secondary Containment at Transfer Stations

Throughout 1999, secondary containment at transfer stations was an item in the chemical bulk storage (CBS) program that drew the most attention and represented a significant compliance challenge for industry.

Part of the upgrade requirements having a regulatory deadline of December 22, 1999, related to transfer stations. These requirements are set forth in §598.5(d) and §599.17(c) and require the transfer of hazardous substances to take place within a transfer station equipped with a permanently installed secondary containment system for the delivery vehicle and transfer hose. Because the design of a suitable transfer station must address day-to-day site operations, precipitation, etc., the responsibility to design a reasonable containment volume and to achieve compliance with the CBS regulations rests with the owner/operator. The design must satisfy Parts 598-599, particularly the performance standards found under §599.17(c).

The relative size of the pad and associated containment volume is a function of many site-based factors, not the least of which include the frequency of deliveries, volume transferred per delivery, rate of transfer, degree of difficulty in handling the hazardous substance, etc. Based upon all relevant factors, the owner/operator must conduct a risk analysis for the chemical delivery operations that occur at the facility. The size of the containment volume should be increased as the relative risk from various factors increases. The relative risk of forecasting the frequency and volume of spills is site specific and dependent upon the nature and size of the chemical operations at that facility. Thus, while the CBS regulations allow for flexibility in design on a site-by-site basis, it becomes the responsibility of the owner/operator to construct a transfer station that is scaled to provide effective containment in the event of a spill. Properly designed transfer stations prevent injuries to personnel and reduce costs associated with spill clean up, hopefully avoiding the need for site remediation and the high costs associated with clean up.

Because many transfer stations are located outdoors, they are subject to precipitation and maintenance problems. To address precipita-

tion that accumulates, the facility owner may construct a 'shed roof' structure to divert rain and snow away from the pad. Another option is to install a valved drain into the pad or sump to permit the discharge of uncontaminated water. A facility's transfer protocol must require the drain be closed during receipt of a delivery. Once the delivery is complete, the tank truck has left the site, and the transfer pad is clean, the valve could be opened. The discharge of accumulated surface water is regulated by the Department's Division of Water. The Division of Water has released guidance on this topic entitled Chemical Bulk Storage (CBS) Secondary Containment Area Stormwater Management, dated April 4, 2000. Owners/operators also need to understand that certain county programs, such as those on Long Island, prohibit the use of a sump drain to a dry well, whether the drain is valved or not.

For many facilities, the biggest challenge under §599.17(c) is the requirement for the installation of permanent secondary containment systems for transfer stations. For facilities where curbside deliveries are the only option, this requirement is particularly difficult. Such facilities may submit a variance request for consideration to the DEC. Based upon conditions unique to the applicant, a request for variance must demonstrate how the specific regulatory requirement would impose a substantial economic, technological or safety burden upon the applicant. The applicant must also demonstrate that its proposed activity will have no significant adverse impact on public health, safety, welfare or the environment, and will be consistent with the Environmental Conservation Law and the performance expected from the application of 6 NYCRR Part 598.

A letter was mailed to all registered facilities on November 4, 1999, advising those facilities which intend to seek a variance from any of the section 598.5 upgrade requirements that such requests must be submitted before expiration of the deadline, but in no event later than the close of business on December 21, 1999. If the DEC receives a variance request after that date and the required upgrades have not been completed, the facility will be deemed to be in violation of the CBS regulations.

Release Detection for USTs

Release detection is a key to assuring the integrity of underground storage tanks (USTs). The continuous nature of many of these systems allows the tank owner or operator to check for leaks from the UST system at almost anytime. This feature goes a long way to secure UST systems, and the early detection of leaks protects the land and waters of the state from petroleum contamination.

Leak detection monitoring for underground storage tanks is a requirement of both the state petroleum bulk storage (PBS) regulations and federal underground storage tank (UST) regulations. New York State's regulations require weekly monitoring of leak detection systems, while the federal regulations require monthly monitoring. Both regulations require the testing or monitoring of underground product piping associated with USTs.

State PBS regulations require that petroleum USTs installed after 1986 have secondary containment. The overwhelming majority of underground storage tanks installed today are corrosion resistant double-walled tanks. In accordance with state PBS regulations, double-walled USTs must have the interstitial space monitored. Interstitial monitoring is the release detection method most often used in New York.

State PBS regulations allow in-tank monitoring devices, automatic tank gauges (ATGs) or monitoring wells, when a single-walled UST is used with other types of secondary containment. Federal UST regulations allow statistical inventory reconciliation (SIR) systems and manual tank gauging for small USTs, but SIR and manual tank gauging are not recognized by the state.

If an unprotected UST were upgraded with corrosion protection (cathodic protection or a tank lining) and a leak detection system was added (ATG, SIR or monitoring wells) to meet the EPA upgrading requirements, the tank must still be tightness tested once every 5 years and the owner or operator must still keep inventory monitoring records. The addition of a leak monitoring system to a tank that was upgraded with cathodic protection or a tank lining does not exempt the tank from periodic tightness testing in conjunction with inventory monitoring.

The monitoring of release detection devices presents problems associated with each device in determining if an actual release has occurred. The person conducting the release detection test must determine if the conditions for a proper test have been met and if the equipment is operating properly. Only when this is accomplished, can the results of a release detection test be accepted with confidence. In this article, the proper operation of various release detection methods will be discussed so that confidence in the results can be obtained.

Automatic Tank Gauging (ATG)

For automatic tank gauging (ATG) devices, no product can be dispensed from or filled into the tank during the test unless the ATG is using a continuous in-tank leak detection system. The tests normally run for one to three hours. The operator of the tank must make sure that adequate down time is available for the weekly release detection test. Each ATG test also requires a minimum amount of product in the tank for a proper test. The operator is responsible for making sure that the tank contains enough product for a valid test each week.

Statistical Inventory Reconciliation (SIR)

For statistical inventory reconciliation systems, proper inventory readings must be taken each day the tank is used. If the inventory readings are not taken consistently and to the nearest one-eighth inch, fluctuations may occur that will result in the release detection analysis being either a failure or inconclusive. Each failure or consecutive inconclusive result would require a tank tightness test to be performed. False indications of tank failure or inconclusive results would make SIR impractical.

Owners and operators using SIR should take special care to read the SIR reports they get. While the front page may indicate a passing result, problems with the site or with how the data were obtained may be inside.

When your UST system fails a SIR monthly analysis, you need to investigate the cause of the failed test. The SIR vendor may, on the basis of the analysis of the data, be able to provide you with areas to examine, such as a miscalibrated totalizer. You must repair or replace any defective equipment immediately.

If within 48 hours the FAIL cannot be linked to a cause not related to leakage, you must report the failure to the DEC on Spill Hotline, 1-800-457-7362.

If SIR is used in lieu of inventory monitoring, reports must be generated every ten days.

It should be noted that New York State does not accept SIR as a stand-alone method of leak detection. SIR can be used to meet the EPA UST requirements on single-walled tanks that have been upgraded with corrosion protection. These tanks would also have to have a tightness test once every 5 years in conjunction with inventory monitoring. All double-walled state-of-the-art tanks must have the interstitial space monitored. The advantage of using SIR in conjunction with your other leak detection methods is that SIR can detect leaks from the entire system - tanks and piping.

Product or Vapor Sensors

Release detection methods that use continuous or automatic probes or sensors must be checked monthly to determine if the

system is operating. Once a year, the probes or sensors must be evaluated according to the manufacturer's requirements to verify the system is operating properly. It is important that the weekly checks, along with the annual test, are recorded in the release detection records.

It must be documented that vapor and groundwater monitoring wells have been properly constructed. It is crucial to demonstrate that vapors or spills can migrate into the well for detection. For groundwater monitoring wells, it must be documented that the water level is within the slotted portion of the well. This is necessary to show that any discharge would be able to move into the well. For vapor monitoring, the ability of the vapor detector to detect a new release above the background level is critical. Under the federal UST regulations, monitoring wells can be used as a method of release detection only when the depth to groundwater is 20 feet or less.

Manual Tank Gauging (MTG)

The federal UST regulations [40 CFR 280.43(b)], allow manual tank gauging (MTG) to be used as a sole method of release detection for tanks of 1,000 gallons or less. This method may also be used for tanks between 1,000 and 2,000 gallons, in place of the manual inventory control found in Section 280.43(a). New York State accepts MTG as meeting the inventory monitoring requirements for unmetred tanks (tanks storing heating oil or used oil), as required in Section 613.4(a)(2) of the State PBS regulations. To be able to use manual tank gauging as release detection, a minimum 36-hour down period is required each week. Product levels are taken at the start and end of the down period and any difference is compared to the allowable amount found in the Table MTG of the federal regulations. If this down period is not available each week, then release detection is not being performed for that month.

MTG is similar to New York's annual standpipe analysis. A standpipe test can be used in lieu of inventory monitoring for tanks that are solely regulated by the state, when the tank is unmetred or if the tank stores petroleum for consumptive use on the premises. To find out more about this test and the variables that can affect its accuracy, call the toll-free Bulk Storage Helpline, 518-457-9412 for the publication Standpipe Testing of Underground Storage Tanks.

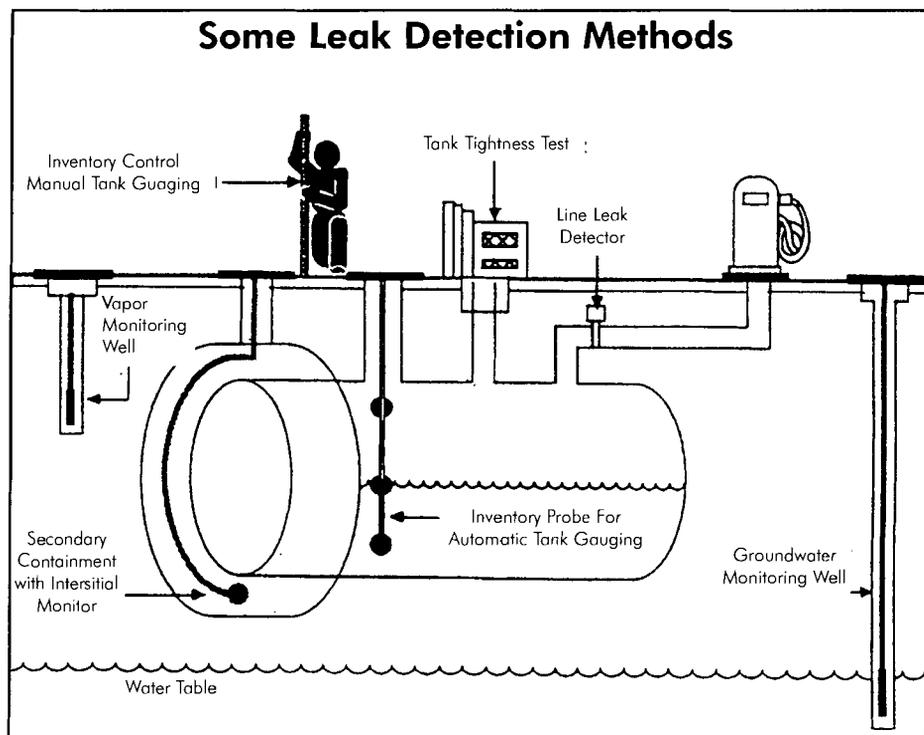
Precision Tank Tightness Testing

Tightness tests acceptable to DEC are listed in the National Work Group List of Leak Detection Evaluations. An acceptable

test or set of tests must test the entire tank system. For some methods (e.g., volumetric underfill tests), this means that not only one test, but three tests must be performed: a product test, an ullage test and a line test. If a volumetric overfill test is used, then only a product and line test need to be performed, on the tank and piping system. Non-volumetric tests, which utilize vacuum or tracer compounds, can also be used. Depending on the tank system, a tank test may need to be supplemented with a line test to provide a full system test.

The final necessity for proper release detection is for the operator to be totally familiar with the sampling devices. Equipment must be operated, maintained and calibrated in accordance with the manufacturer's requirements. Logs must be kept, as part of the facility's records, showing that proper leak detection has been accomplished. When these tasks are completed, more reliable release detection will be provided.

A wealth of information on leak detection can be obtained by getting a copy of The List of Leak Detection Evaluations for Underground Storage Tank Systems - Seventh Edition which was published in April 2000. This 390-page document was prepared by the National Work Group on Leak Detection Evaluations, consisting of state and EPA UST program staff. The List contains information on UST and piping leak detection system evaluations that have met certain criteria. The most recent version of the List is available in electronic form for free viewing, printing, and downloading at www.epa.gov/swerst1/pubs/ldlist.htm.



Insurance Provider Booklet Available from EPA

The U.S. Environmental Protection Agency (EPA) has developed financial responsibility regulations to ensure that federally regulated underground storage tank (UST) owners and operators can pay the costs of cleaning up leaks from USTs and compensate third parties for bodily injury or property damage resulting from leaks.

The financial responsibility regulations (40 CFR, Part 280, Subpart H) allow UST owners and operators to choose from a variety of financial mechanisms to comply with the regulations. One of these mechanisms is insurance.

To facilitate access to UST insurance, EPA developed a booklet entitled *List of Known Insurance Providers for Underground Storage Tanks*, (EPA 510-B-99-003, July 1999). The booklet is based on information EPA received from companies, agents and brokers. The listed companies, agents, and brokers may be able to help you, as a federally regulated UST owner or operator, find the UST insurance to fulfill your responsibility obligation.

Copies of this booklet are available at no cost by calling NSCEP at 1-800-490-9198 or EPA's RCRA Hotline at 1-800-424-9346. A copy of the most up-to-date version can be read or downloaded from the Internet at <http://www.epa.gov/swerust1/pubs/index.htm#inslist>.

For additional information on financial responsibility for federally regulated UST, call the EPA Hotline at 1-800-424-9346 or 703-412-9810 and request a free copy of *Dollars and Sense: Financial Responsibility Requirements for Underground Storage Tanks* (EPA 510-K-95-004). This booklet clearly and concisely summarizes the financial responsibility requirements.

For financial mechanisms specific to New York, call the toll-free Bulk Storage Helpline at 1-888-457-4351.

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Winter/Spring
2005



New York State
Department of Environmental Conservation

TANK Bulletin

Check Out DER's Web Site . . . You'll Be Glad You Did!

First posted in 1997, the Division of Environmental Remediation's (DER) web site has been expanded and upgraded. It is user-friendly and chock full of information about DER's programs:

- Brownfield Cleanup Program (successor to the Voluntary Cleanup Program)
- Environmental Restoration Program
- Brownfield Opportunity Area Program
- State Superfund Program
- Spill Response Program
- Petroleum and Chemical Bulk Storage Programs

The address is www.dec.state.ny.us/website/der/ for the DER web site. DER's web site can also be accessed through DEC's web site. Go to DEC's web site at www.dec.state.ny.us to do this. From DEC's home page, click on *Programs*, scroll down to the Office of Air and Waste Management, and click on *Division of Environmental Remediation*.

DER's web page covers the following five major areas:

- **What's New** - includes information and links about upcoming meetings and events, projects or documents with public comment periods, highlighted DER documents and highlighted DER links.
- **Our Programs Work** - includes information about each of DER's program areas.
- **Division Information** - includes links to search DER's spill incident database and inactive hazardous waste disposal sites database, DER's organization chart, and important phone numbers.
- **Other Helpful Information** - covers Manufactured Gas Plants, the Toxic Release Inventory, regulations and guidance, tips to the public, DER publications, and acronyms and abbreviations.
- **Other Site Remediation Resources** - includes links to web sites for the United States Environmental Protection Agency (EPA), the Interstate Technology Regulatory Council (ITRC), and EPA's Technology Innovation Program (TIP).

Bulk Storage Registration Reminders

Don't wait until registration renewal time to notify DEC of important information changes.

DEC maintains files on 38,000 active Petroleum Bulk Storage (PBS) and 1,600 Chemical Bulk Storage (CBS) facilities statewide that require periodic registration with DEC. It is important to keep your registration information current and accurate by completing a PBS or CBS Application form whenever changes occur. Several common situations require notice to DEC.

Change of Correspondence Address

DEC cannot contact you if the correspondence address and contact name you provided is no longer accurate. Please make sure to inform DEC of address changes as soon as possible. If

your mailing address or contact person's name is out-of-date, correspondence (like registration renewals, tank tightness test notifications, guidance documents, etc.) that DEC sends out to the facility owner may be misdirected or returned. The owner, however, would still be legally obligated to comply with all applicable laws and regulations. Delayed compliance could result in penalties or other enforcement actions against the facility owner. As you can see, it is in everyone's best interest to keep correspondence information current.

Change of Facility Ownership

Many facilities, especially apartment buildings, are periodically sold or otherwise change ownership. The prior owner's PBS or CBS registration is not transferrable to the new owner. The new owner is required to re-register the facility in the new owner's name within 30 days of the transfer of ownership. Should the new owner decide that the bulk storage tanks are not needed and desire to permanently close the tanks within 30 days after the sale, the new owner must notify DEC before closing the tanks, must submit a completed application form when the tanks are closed, and must indicate on the form that the tanks have been substantially modified. Tank closure is one kind of substantial tank modification.

Closing a Facility

When a bulk storage facility is no longer needed, many owners mistakenly assume their responsibilities under PBS and CBS regulations have ended. In truth, however, their responsibility ends only when these facilities are permanently and properly

closed in accordance with state (and in some cases, federal) requirements. If the facility is not permanently and properly closed and reported to DEC, it is still considered to be operating, and it is still subject to all the requirements of state/federal regulations.

A good example of a federal requirement is the requirement that a site assessment be performed when an underground motor fuel storage tank is closed.

Fortunately, it is quite easy to report tank closures to DEC. You can request a Bulk Storage Application form that is pre-printed with the facility information that DEC has on file and then cross out the incorrect information and write in the new information. You can also use a blank Bulk Storage Application

form to report the facility closure to DEC.

To report a facility closure, check box "#3-Substantial Tank Modification," under "Transaction Type" in the left-hand margin of Section A of the application form (facility information). In Section B of the application (tank information), the first column asks you to indicate the "Action" being reported about a given tank. For example, the "Action" might be "#1-Initial Listing" for a newly discovered tank; or the "Action" might be "#3-Close/Remove Tank" to indicate that a tank

is being permanently closed and removed. You should also verify/correct information in the fourth column, "Status," for each affected tank, indicating whether the tank is: "#1-In Service," "#2-Temporarily Out-of-Service," "#3-Closed and Removed," "#4-Closed In Place," or "#5-Tank Converted to Non-Regulated Use." In the fifth column, entitled "Installation or Permanent Closure Date," cross out the tank installation date and enter the tank closure date.

Remember that DEC cannot act on the information changes unless they are *official*. This means that the certification in Section A of the application form must be signed by the facility owner or an authorized representative, and the form must be returned to DEC. Bulk Storage Application forms that have not been signed by the facility owner or an authorized representative, or that do not contain an original signature, cannot be processed.

Forms and instructions are available on DEC's website at: www.dec.state.ny.us/website/der/bulkstor/forms/ or can be mailed, faxed, or e-mailed to you. If you have any questions or need forms, please contact your DEC regional office, or call the Bulk Storage Help Line at (518) 402-9543.

"It is important to keep your registration information current and accurate."

Management, Monitoring and Maintenance Support Leak Detection Systems



So, you've installed a leak detection system and your tank system has been upgraded to meet the federal 1998 compliance deadline. You're feeling pretty good? Well, you should feel good, but don't get too comfortable. Although more than one million unprotected steel tanks have been permanently retired and half of the nation's discovered petroleum releases have been cleaned up, state and federal regulators are far from convinced that the new generation of underground storage tanks (USTs) will be problem-free.

Fully upgraded tanks are not immune to environmental problems; they can and do leak. Leak detection serves as the front line of defense against petroleum releases, but slow leaks can elude the scrutiny of some leak detection devices. Undetected leaks can be a concern if they go unnoticed for long periods of time.

There is concern that tank owners may feel their upgraded UST systems do not require routine maintenance and monitoring. This attitude could result in another generation of leaking tanks.

Owners who take a proactive approach to tank management both remotely monitor and physically inspect their systems to ensure that releases are promptly detected and rectified. In essence, they are "troubleshooters" because they look for problems. They routinely canvass their site and inspect all accessible areas of their tank systems for telltale signs of problems. Dispenser covers and access lids for the tank fill and submersible pumps are removed so the equipment can be thoroughly inspected for signs of leakage.

Quick recognition of and response to operational problems enables proactive tank owners to protect both the environment and their "bottom line." They can minimize cleanup costs resulting from a petroleum spill, avoid negative publicity, and reduce the chances of neighbors seeking compensatory damages for unwanted product on their properties. Not only is troubleshooting an effective loss-prevention and loss-reduction practice, it's good business.

What to Look For and Where

The specific locations where problems are most likely to occur are well known. Reports from environmental contractors and EPA show that overfills are the tank owner's predominant nemesis. The dispenser area ranks second, followed by the submersible pump area, the piping system, and the storage tanks. These are the areas that owners should concentrate on when they visually inspect for signs of problems. The following information will help those who would like to become troubleshooters but are not sure what to look for.

Keep in mind that the following information is intended to point out some typical site exposures, and is not all-inclusive.

Environmental Factors

Some obvious problems include failed tank and/or line tightness tests, free product in monitoring wells, fuel and/or vapors of unknown origin, discrepancies/anomalies in inventory records, and visible indications of spills and/or overfills. Another sign is complaint from neighbors about gasoline odors coming from their basements or drinking water.

While observing the periphery of the property, look for the following warning signs of a release:

- Discolored water or a petroleum sheen on the surface of water in nearby drainage or irrigation ditches, ponds, streams, rivers, wetlands, or lakes.
- Excessive soil discoloration - the absence of vegetation, or dead or dying (distressed) vegetation (we know what happens when a lawnmower's gas tank is overfilled on grass).
- Petroleum product or vapors in underground structures such as basements, utility or sewer lines, and wells. Sometimes these odors are more evident after a rainfall.

Dispenser Problems

The dispenser area is the most overlooked source of releases, and it also has the highest incidence of leaks. When dispenser covers are removed, the inspector's nose should provide the first hint of a problem. In addition to checking for vapors, all observable fittings and valves should be examined carefully to ensure integrity. Any signs of erratic behavior in product dispensing systems should be investigated immediately.

Continued next page

In terms of risk, a leak in a pressurized piping system can inflict far more damage to the environment than a leak from a suction piping system. Suction systems function with negligible operating pressure. Pressurized systems operating at 25 to 30 pounds of pressure per square inch can deliver product as much as 10 times faster than suction systems.

If product flow from the dispenser is noticeably slower than normal or if the meter spins without product delivery, there may be a leak in the piping. With pressurized systems, line leak detectors restrict the flow of the product to the pump whenever a loss of line pressure is detected.

Keep in mind that thermal contractions (the cooling and contraction of product within the piping) caused by outside temperature changes can result in loss of pressure and trigger a false alarm. Attempting to dispense product immediately after pump startup also may prompt a false alarm. The system may not be able to fully pressurize itself when the nozzle is opened too early.

Rattling sounds or erratic pump and/or fuel flow with suction systems indicate that air is in the system and mixing with the product. This could be caused by a loose fitting, a breach in the piping, or a faulty check valve. The same diagnosis may apply to suction systems that either lose their prime and/or are slow to prime. A sucking sound may occur when product drains back into the tank. Product hesitation may be a sign of valve or piping leakage or, in warm weather, it could mean a vapor lock.

Dispensers should be equipped with shear valves, and dispenser hoses should have break-away devices that are designed to immediately stop the flow of product and vapors if a motorist drives off without removing the nozzle from a vehicle's fill spout. The hose, nozzle and break-away device can be replaced for about \$200, whereas the bill for a damaged or destroyed dispenser could be about \$15,000.

Inventory Problems

Some common inventory problems and their probable causes include:

- **Shortages:** i.e., less product in a tank than the records show, could be attributable to a leaking tank or lines, bookkeeping problems, problems in the metering of the product, large decreases in product temperature, short deliveries, or cross-pumping to another tank.
- **Overages:** i.e., more product in a tank than records show, could be attributable to bookkeeping problems, problems in the metering of the product, large increases in the product temperature, over-deliveries, cross-pumping from another tank, or water leaking into the tank.

- Continuing differences between the recorded amount of product received and product dispensed may be a sign of a leak in the tank or piping, an inaccurate meter, theft, use of the wrong tank conversion chart, or a recurring delivery error.
- Large differences which only appear regularly between the delivered amount of fuel noted on the invoice and the measured amount in the tank after delivery may be a sign of a leak in the fill pipe, a delivery error, or a dipstick reading error.
- It is not unusual to have a small amount of water in a tank. An increasing amount over a period of days or weeks, however, may indicate that water is leaking into the tank and that product is leaking out.

Spill or Overfill Problems

The pad around the fill and dispenser areas should be checked for cracks or holes that may serve as a conduit to subsurface soils and groundwater.

Most retrofitted spill containment manholes (buckets) are clamped to the fill pipe and sealed with rubber gaskets. The gaskets should be checked regularly to ensure that they are not deteriorating. The clamps and seals also require attention to ensure their tightness. If they are not tight, they are in violation of the federal UST requirements.

Drain mechanisms should be checked to ensure that they are working properly and not stuck in the "open" position. If the drain mechanism is in the "open" position during petroleum transfer and the float vent valve closes because of an overfill, the drain mechanism will vent excess product and highly explosive vapors at ground level.

Tank overfills are a significant source of releases. Both state and federal tank regulations require tanks to have overfill prevention devices. The presence and functioning of overfill prevention devices in the delivery drop tube or float vent valve should be checked at least annually. Overfill warning devices such as alarms and lights should be checked monthly to make sure that they are operational. In order to function properly, the facility operator must be aware that overfill devices exist and pay attention to them, especially during product delivery.

Monitoring Well Problems

Cover caps on monitoring wells should display a black triangle and the label "Monitoring/Observation Well - Do Not Fill." Unmarked and unlocked monitoring wells are an invitation to disaster. They should be closed to unauthorized access so they are not inadvertently contaminated by surface activities or mis-

Continued next page

taken for fill pipes by delivery drivers.

Tank fill ports must be color-coded according to American Petroleum Institute's (API's) fill port coding system [Section 613.3(b) of the state Petroleum Bulk Storage regulations] to help ensure that product is delivered to the proper tank.

To ensure that covers are returned to their correct location, many owners have painted them and extended the paint onto the pad so the covers are easily matched by color.

Piping Leakage Problems

If double-walled piping is present, open up tank top sumps periodically to see if any problems exist. Monitor for traces of petroleum at least weekly, and inspect monitoring systems monthly. Don't rely on sensors. Sensors and sumps may fail and not detect or contain a release if one occurs. Make sure that sensors are properly secured and placed where they can detect product in the sump. Lines and the submersible pump can leak. If there is water in the sump, have it removed.

If flexible pipe is present, examine it as well as looking for traces of petroleum and inspecting the monitoring system. Certain types of flex pipes have had problems that resulted in many reported failures. There are two problems that are believed to occur because of contact with petroleum. First, the flex pipe tends to grow and because it is rigidly anchored,

is stressed to the point of failure. The second problem is that the outside of the pipe may not be compatible with petroleum and hence degrades and fails. When examining flex pipe, look

" If flexible pipe is present, examine it as well as looking for traces of petroleum and inspecting the monitoring system. Certain types of flex pipes have had problems that resulted in many reported failures."

for evidence of pipe growth (piping that is overbent or kinked, fittings or flex connectors that are twisted or misaligned) or for pipe degradation (cracking, bubbling, blistering, bulging, wrinkling, softness, delamination, flaking or fungal growth). If any of these conditions are observed, contact a tank contractor immediately.

Another problem that has been frequently observed involves test boots or reducing tees used to pressure-test the outer wall of double-walled piping. For leak detection to work, the boots must be pulled back from the secondary lines, or the reducing tee test port must be unplugged after the lines have been tested. If this is not done, any leakage into the interstitial space between the inner

and outer wall will not be able to flow back into the sump, and the operator will not know that there is a piping leak.

Interstitial Space Monitoring

Be sure to check the interstitial space. If your tank system has a sensor, be sure to test the device monthly. Once a year, have a contractor remove and physically test the sensor. Be sure to consult the operating manual for your system to obtain the manufacturer's recommendations.

The Choice is Yours

Operating a petroleum bulk storage facility today is complex. State and federal bulk storage requirements are specific and are being enforced. For these reasons, management, monitoring and maintenance are essential. Whether these activities are undertaken in a knowledgeable, proactive manner or in a more haphazard manner is the owner/operator's choice. Both methods have rewards and consequences. We hope, for the reasons outlined in this article, that you make the right choice. It usually takes only a little extra positive attitude and effort to go from mediocre to superior.

Courtesy of New England Interstate Water Pollution Control Commission and artist Hank Aho



The *Tank Bulletin* Goes Online

This issue of *Tank Bulletin* will be the last issue mass-printed and mass-mailed to our readers. We're going online to better serve our readers, and to save printing and distribution costs.

Tank Bulletin archives will be available online, so that readers may reference information in all previous issues of *Tank Bulletin*. In addition, readers may provide an e-mail address and request electronic notification when new issues of *Tank Bulletin* are available. The current issue of *Tank Bulletin*, back issues, and registration for electronic notification when new issues are available can be found at <http://www.dec.state.ny.us/website/der/bulkstor/bulletins/> online. For readers without internet access, DEC will also make a limited number of printed copies available. If you require a printed copy, please send a request with your name and address to: Editor, *Tank Bulletin*, New York State Department of Environmental Conservation, Bulk Storage Program, 625 Broadway, 11th Floor, Albany, NY 12233-7020.

Reminder: PBS Registration Fees Increase

The department reminds facility owners that Petroleum Bulk Storage (PBS) registration fees were doubled in October 2003 — the first increase since February 1992. Environmental Conservation Law Section 17-1009(2) was amended to increase PBS registration fees, superceding the PBS registration fees in 6NYCRR Part 612.3 as follows:

Combined Storage Capacity at Facility	New 5-Year Fee for Facility
Greater than 1,100 to 2,000 gallons	\$100 per storage facility
Greater than 2,000 gallons to less than 5,000 gallons	\$300 per storage facility
5,000 gallons to less than 400,000 gallons	\$500 per storage facility

If you have a copy of the PBS regulations dated December 27, 1985 (on the cover), you are encouraged to note this change.

All new and renewal PBS applications received by DEC require the increased fee. Note that the fee increase does not affect facilities in the five delegated counties (Nassau, Suffolk, Cortland, Rockland, and Westchester) that are regulated by county regulations.

Questions regarding the new fee structure should be directed to your DEC regional office or the Bulk Storage Help Line (518) 402-9543.

Small Heating Oil Tanks — How Are They Regulated in New York State?

In 1996, the NY State Legislature changed subdivision 1 of section 17-1003 of the State Environmental Conservation Law (Petroleum Bulk Storage Act) which deregulated some small heating oil tanks. This was accomplished by revising the definition of “facility or storage facility.”

The definition now reads as follows (bold text added): “Facility or Storage Facility” means one or more stationary tanks, including any associated pipes, lines, fixtures and other equipment, which are used singularly or in combination for the storage or containment of more than one thousand one hundred gallons of petroleum at the same site, but shall not include facilities licensed under article twelve of the navigation law or regulated under the federal natural gas act, **or a heating oil tank used for on premises consumption at the same site which is not interconnected to any other heating oil tank and is used to store or contain less than one thousand one hundred gallons of petroleum.**”

For example, a site that presently has a 1,000-gallon gasoline tank and a 275-gallon heating oil tank would not be regulated since the small heating oil tank is no longer included in the site’s combined storage capacity. The combined storage capacity would no longer exceed 1,100 gallons.

Regulated Heating Oil Tanks

Even with this exemption, there are a number of instances when small heating oil tanks are regulated. In the following instances, all heating oil tanks (including small heating oil tanks) at a facility would be regulated:

- One or more heating oil tanks are located at a facility, and at least one tank has a capacity of more than 1,100 gallons;
- One or more small heating oil tanks piped together (manifolded) if the resulting combined capacity is greater than 1,100 gallons; and
- The combined storage capacity of other petroleum products (gasoline, diesel fuel, lubricating oil) is more than 1,100 gallons.

Applicable Regulations

Whether heating oil tanks are regulated or unregulated, certain notice requirements apply. All petroleum releases (leaks and spills) must be reported with the exception of small controlled releases — see the article entitled, “DEC’s Petroleum Spill Reporting Guidance” in this issue of the *Tank Bulletin*. In other words, thou shall not leak or spill. Petroleum releases are regulated.

Tank Tightness Test Notification

New York State law requires DEC to provide owners of petroleum bulk storage (PBS) tanks a minimum of 45 days advance notice before a tank is due for tank tightness testing.

In order to comply with this requirement, DEC has developed a notification package. It includes a cover letter with site/tank information, regional office contact and address, and a listing of Frequently Asked Questions (FAQs). DEC sends these tank tightness test notifications 60 to 90 days ahead of the test due date, to the correspondence address on your tank registration. Be sure DEC has your current correspondence address on file.

Tank tightness tests are required for underground tanks only. This includes buried tanks, and tanks enclosed in concrete vaults with no access. The tightness test due date is determined from the testing schedule included in Section

613.5 of state PBS regulations and the information that you already provided on your PBS application form. To demonstrate compliance, you must have the tank tested before the due date and submit a copy of the test results to your DEC regional office within 30 days after the test date. You also must keep a copy of the test results for your records.

Failure to perform the required tightness testing by the specified date and/or to promptly submit proof of testing is a violation of state PBS regulations, and you may be liable for penalties. Any failed tightness test must be reported to DEC within two hours of discovery by calling the NY State Spill Hotline at 1-(800) 457-7362 from within New York State, or (518) 457-7362 from outside the state.

For more information or a copy of the FAQs, please call the Bulk Storage Help Line at (518) 402-9543.

PBS Application Form, Instructions, and Data Tracking System Updated

When the department updated its Petroleum Bulk Storage (PBS) tracking system (the computer system that tracks PBS facilities and tanks statewide) in 2004, it converted the tank data stored in the old system to new coding in the new tracking system. The department also decided that some old data fields should no longer be tracked, and that some new data fields and expanded choices for information coding should be added. As a result, the Petroleum Bulk Storage (PBS) Application Form and instructions were updated as well.

One new feature of the new PBS application form is the “automatic” population of certain data fields based on tank and pipe models. The new instructions include a tank and piping model chart, listing some commonly used tank models and piping models for which the model description defines the related equipment. For any given tank, if you enter codes for the type of tank model and piping model on the application form, you will save time and effort by not having to enter three codes for tank information (tank type, tank external protection, and tank secondary containment) and three codes for piping information (piping type, piping external protection, and piping secondary containment).

The new PBS Application Form must be used for any new PBS transactions submitted to DEC, including new registrations, ownership transfers, renewals, tank closures, new tank installations, substantial tank modifications, and information corrections. Obsolete application forms will no longer be accepted. Anyone (including consultants, contractors, management agents, operators and owners) with an inventory of the old blank appli-

cation forms should discard them. New PBS applications and instructions are available on DEC’s web site at www.dec.state.ny.us/website/der/bulkstor/forms/. If you don’t have internet access, you can contact DEC’s regional office in your area, or the Bulk Storage Help Line at (518) 402-9543, to obtain copies of the new PBS Application Form and instructions.

Renewals for PBS registrations will continue to be pre-printed and mailed from DEC’s Albany office, using the new form, two to three months prior to a facility’s expiration date. This should allow plenty of time to renew your registration. Please pay special attention to the new data coding and new instructions. If you see “ZZ” in any data field on your registration renewal, it indicates that the old data was missing or not valid, and you should supply new data for that field. The department may return incomplete applications to the tank owner. Furthermore, missing or invalid information may result in DEC notifying you to perform a tank test that may otherwise not have been necessary if the information you submitted about your tank was complete and accurate.

Also, one gentle reminder to facility owners: be aware of your registration expiration date. If a renewal package does not arrive as expected, it is not a valid excuse to let your registration expire. DEC is not mandated to send out renewal packages; we do it as a courtesy to you. Unfortunately, some renewal packages do not reach their intended destinations (for example, due to out-of-date addresses). If you need new forms or have questions about how to complete the new forms, please call the appropriate regional office, or the Bulk Storage Help Line.

Aboveground Storage Tanks (ASTs) — Tank Design & Certification - UL142

The Chemical Bulk Storage (CBS) regulations under 6 NYCRR Part 599.8(b) require that all Aboveground Storage Tanks (ASTs) be designed, constructed and installed or certified by a qualified engineer or technician.

The design, construction, installation and certification must be in accordance with a consensus code, standard or practice developed by a nationally recognized association or independent testing laboratory that meets the requirements of the regulations.

While this section of the regulation identifies six specific consensus codes, the listing was never intended to be all-inclusive. Other codes not listed at the time that the CBS regulations were promulgated, or which were developed after the CBS regulations were implemented, may be acceptable to DEC for use by the regulated community. One example of this is ULI42 - “Standard For Steel Aboveground Tanks For Flammable and Combustible Liquids.” This consensus code applies to horizontal and vertical welded steel tanks intended for the outside storage of flammable and combustible liquids that are non-corrosive, stable, and have a specific gravity not exceeding that of water. If an owner purchases a tank that has been constructed in accordance with ULI42, DEC will accept it as satisfying the requirements of Section 599.8(b).

DEC's Petroleum Spill Reporting Guidance

Do I have to report small petroleum spills on paved areas?

What is the reporting threshold for petroleum?

When do I have to report a petroleum spill?

These and other questions are addressed in DEC's petroleum spill reporting guidance. For a copy, call the Bulk Storage Help Line at (518) 402-9543.

Petroleum Spill Guidance at a Glance

Petroleum spills must be reported to DEC within two hours of discovery, with one minor exception involving small spills. To fit within the exception, a small spill must meet all of the following criteria:

- The spill is known to be less than five gallons;
- The spill is contained and under the control of the spiller;
- The spill has not and will not reach the State's water or any land; and
- The spill is cleaned up within two hours of discovery.

If a spill does not satisfy all of these criteria, it must be reported to the DEC Hotline at 1(800) 457-7362 within New York State, 1(518) 457-7362 from outside New York State within two hours of discovery. For a petroleum spill not deemed reportable, it is strongly recommended that the facts concerning the incident be documented by the spiller and a record be maintained for one year.

Other federal and local agencies may need to be notified, including the National Response Center at 1(800) 424-8802, and your local fire and emergency response corps.

DEC's Hazardous Substance (Chemical Bulk Storage) Spill Reporting Guidance

Each chemical on the state's list of Hazardous Substances (6 NYCRR Part 597) has a corresponding "reportable quantity." For each release, spill or overfill of the "reportable quantity" of a regulated chemical, you must report the event to DEC. To report these events, call the DEC Hotline at 1(800) 457-7362 within New York State, 1(518) 457-7362 from outside New York State, generally within two hours of the release, spill or overfill.

In addition, you must, within two hours, report releases of **any** amount (i.e., less than the "reportable quantity") of a listed chemical which may enter the environment and result in:

- a fire with off-site impacts,
- an explosion,
- contravention of air quality standards,
- vapors, dust and/or gases that may cause illness or injury to people outside the facility; or
- runoff from fire control or dilution waters that may cause or contribute to a contravention of water quality standards.

In the event of a release (spill which enters the environment), the owner or operator must also take immediate action to protect human health, safety and the environment. Appropriate spill response, investigation, and corrective action are needed.

You do not have to notify DEC within the two-hour time frame if a spill or overfill is captured in an appropriate secondary containment system, you contain the hazardous substance, and you expect to recover or account for the total volume of the spill within 24 hours. If the spill or overfill will not be completely contained and recovered or accounted for in 24 hours, however, or if the secondary containment allows the "reportable quantity" of chemical to reach the environment, DEC must be notified within 24 hours from the time the spill or overfill occurred. Suspected or probable releases to the environment also must be reported to the DEC hotline within 24 hours of discovery.

Testing and Inspection of New Aboveground CBS Tanks at Installation

Section 599.11(f) of the state's Chemical Bulk Storage (CBS) regulations requires that new aboveground tanks and ancillary equipment be inspected and tested by a qualified inspector. This requirement can be broken down into three parts:

1. A visual inspection to determine if there are visible defects such as weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage or improper installation.
2. A test for tightness. This is typically accomplished by using a pneumatic (air pressure) test where all fittings, welds and joints on the tank and piping are coated with a soap solution and inspected for bubbles. Bubbles would indicate air leaks.
3. A multi-faceted inspection in accordance with a consensus standard:

- Ensure that the tank and piping system have been constructed in accordance with a consensus standard. If the manufacturer has constructed and certified the tank or piping as meeting an acceptable standard and has provided the information necessary to allow future five-year inspections to be conducted, then the inspector can rely on this information. If the tank manufacturer has not provided this certification, then the tank must undergo a five-year type of inspection to demonstrate compliance with a construction standard.

- Inspect the ancillary equipment to ensure compliance. This involves inspecting piping and other associated system equipment.

- Inspect the tank system installation to ensure that the tank and equipment have been installed in strict accordance with the manufacturer's instructions and industry standards.

- Review the entire tank system to ensure that all components work together correctly. The tank and the ancillary equipment may all meet standards when considered separately, but the system could be in danger of failure if, for example, the tank had an undersized vent or lacked an emergency vent.

Once the inspection has been completed, the inspector must provide a report that includes a statement certifying compliance and the results of all tests and inspections. This report must be made part of the Spill Prevention Report for at least five years after the tank is installed.

Aboveground FRP Tanks and Piping Recommended Practice for Conducting a Five-Year Inspection

All aboveground storage tanks (ASTs) and piping, including fiberglass-reinforced plastic (FRP) tanks and piping, are subject to the five-year inspection requirement under 6 NYCRR Section 598.7(d) of the state's Chemical Bulk Storage (CBS) regulations.

Owners/operators are required to inspect ASTs and piping systems on a five-year cycle. An exception is made when thinning of one millimeter per year or greater occurs on the pipe or tank walls, or when the expected remaining useful life (as determined by inspection) is less than ten years. Then, reinspection must be performed on the tank or pipe at one-half of the remaining useful life. Under these conditions, subsequent reinspection could become more frequent than the usual five-year cycle.

The primary purpose of this inspection is to assess and evaluate system tightness, structural soundness, corrosion, wear, foundation weakness and operability. The CBS regulations require the inspection to:

- be consistent with a consensus code, standard or practice which is developed by a nationally recognized association or independent testing laboratory; and
- meet the specifications of the regulation.

The department has identified a recommended practice for

inspection of aboveground FRP tanks and piping, which was developed by the Technical Association of the Pulp and Paper Industry (TAPPI), as embodied in TAPPI's Technical Information Paper (TIP) entitled "Guidelines for Inspecting Used FRP Equipment," TIP 0402-28, 1999. If an owner has an inspection conducted in accordance with this recommended practice, DEC will accept it as satisfying the requirements of Section 598.7(d) for FRP tanks/piping.

A word of caution ... in searching the internet for consensus codes, standards, or recommended practices, one finds many related articles on the subject such as:

- specific test methods (e.g., acoustic emissions);
- industry overviews; and
- in-depth company guidance documents that are well-developed and may even be titled "Inspection Guide for FRP Equipment."

Under the CBS program, these items either do not qualify as a consensus code developed by a nationally recognized association or independent testing laboratory and meeting the specifications of this subdivision, or do not serve as a complete resource on defining a comprehensive inspection program, including the frequency of inspection.

Anyone aware of other consensus codes, standards, or practices which address FRP tank systems, or having a question on whether a particular code, standard, or practice is acceptable under the state's CBS program, is urged to contact Cynthia Leece, P.E., of DEC's Spill Prevention and Bulk Storage Section, at (518) 402-9553.

Bulk Storage Forms, Publications and Regulations Now Available on DEC's Internet Web Site or via E-Mail

Many bulk storage forms, publications and regulations are available at www.dec.state.ny.us, DEC's web-site. To access this material, click on the Programs button. Scroll down to the Office of Air and Waste Management, and click on Division of Environmental Remediation. On the next web page, scroll down to Our Programs Work, and click on Petroleum and Chemical Bulk Storage Program. You can also go to www.dec.state.ny.us/website/der/bulkstor/ directly. On this page, scroll down to one of the following areas: Regulations, Helpful Information (which includes forms and instructions), or Frequently Asked Questions (FAQs).

Information is available for download from the web site, or via e-mail by contacting your DEC regional office (see map on back cover) or the Bulk Storage Help Line at (518) 402-9543. Content changes periodically, so please check our web site often.

Translucent Aboveground Storage Tanks and Level Gauges

Owners and operators of aboveground translucent tanks (plastic, fiberglass, etc.) frequently telephone DEC to ask if their tanks are required to have level gauges. Often, construction of tanks using these unique materials leads to a vessel that is semitransparent, allowing the liquid level to be visible.

New York State Chemical Bulk Storage (CBS) regulations require that all aboveground tanks "...be equipped with a gauge or other monitoring device which accurately determines the level or quantity of the substance in the tank. The gauge must be accessible to the operator or carrier and be installed so that it can be conveniently read ... Where filling or emptying is remotely operated, all gauges, gauge labeling, and alarms ... must be located at the remote operating station." [6 NYCRR 599.17(b)(1)(iii)].

For tanks where the level of the regulated substance is clearly visible through the translucent tank shell, the tank itself may serve the same purpose as a level gauge. Where translucent tanks satisfy the following characteristics, the requirement for a level gauge is fulfilled:

- The operator/carrier must be in a location that allows direct visual observation and control of the filling operation (as defined in written transfer procedures); and
- The design and working capacity on the receiving tank is clearly, boldly, and permanently marked on the tank's exterior; and
- Graduated markings indicating volume are permanently attached to the side of the tank; and

- The tank is translucent so that the liquid level is clearly visible.

Remember, while the level gauge is a key element in preventing spills and overfills, the following items are also required when transferring hazardous substances:

- Mated couplings are installed (to prevent mixing), written transfer procedures for each substance are followed (to prevent delivery of a substance to the wrong tank and prohibit transfer of incompatible substances at the same time within the same transfer station), and written procedures are documented in the facility's Spill Prevention Report [§598.4(b)(7)]; and
- Tanks must be equipped with one of the following [§599.17(b)(1)(i)]: a high-level warning alarm; a high-level trip; or an automatic bypass to an overflow tank if the overflow tank is equipped with overflow protection or other equivalent systems for preventing overfills; and

- The tank [Part 599.9] and transfer station [§599.17(c)] must have a permanently installed secondary containment system that meets Part 599 requirements.

If you have questions, please call Cynthia Leece, P.E., of DEC's Spill Prevention and Bulk Storage Section, at (518) 402-9553.

"New York State Chemical Bulk Storage (CBS) regulations require that all aboveground tanks be equipped with a gauge or other monitoring device which accurately determines the level or quantity of the substance in the tank."

Visit us on the web at:
<http://www.dec.state.ny.us/website/der/>



TANK BULLETIN

New York State Department of Environmental Conservation

April 2009

CHANGES TO THE PETROLEUM BULK STORAGE PROGRAM

On July 21, 2008, New York State law for the Petroleum Bulk Storage (PBS) program was modified. There are two major areas of changes :

What You Need to Know

**Registration
Deadline:
July 21, 2009**

**New Definition
of Petroleum**

**New Definition
of Facility**

**What Should
Tank Owners
Do?**

**Changes That
Will Affect All
Facilities**

**Where Can I
Find
Registration
Forms,
Regulations,
and Law?**

**Getting More
Information**

- Certain tanks and facilities not previously regulated by the DEC under the PBS program were added to the program (see information below on these changes).
- Changes were made to comply with requirements mandated by the federal Energy Policy Act of 2005 (see below for information on new requirements that will affect all facilities.)

The new law requires that certain tanks not previously regulated under the State PBS regulations be registered and in compliance with the existing regulations by July 21, 2009.

Specific changes to the law include:

- broadening the definition of “petroleum” to include all fractions of crude oil;
- changing the definition of “facility” to include underground tanks greater than 110 gallons;
- requiring tanks that are newly regulated due to the changes in the definitions of “petroleum” and “facility” to be registered with the NYSDEC and be in compliance with existing Petroleum Bulk Storage Regulations (6 NYCRR Parts 612, 613, and 614) requirements by July 21, 2009.

The new definition of “facility”: a single property or contiguous or adjacent properties used for a common purpose which are owned or operated by the same person on or in which are located: (a) one or more stationary tanks which are used singularly or in combination for the storage of more than 1,100 gallons or (b) any tank whose capacity is greater than 110 gallons where 10% or more of the volume of the tank is underground.

Notes: A property that includes a heating oil tank with a capacity less than 1,100 gallons that is used solely for on-premises consumption is not a “facility” unless the heating oil tank is on a site that otherwise meets the definition of facility (used to store more than 1,100 gallons of other petroleum or having an underground tank greater than 110 gallons). A farm or residence that includes tanks 1,100 gallons or less used to store motor fuel for non-commercial purposes is not a “facility,” unless the farm or residence otherwise meets the definition of facility.

The new definition of “petroleum”: crude oil and any fraction thereof; any mixture containing crude oil or any fraction thereof; and synthetic forms of lubricating oil, dielectric oils, insulating oils, hydraulic oils and cutting oils. This includes crude oil, motor fuels, heating oils, lubricating and cutting oils, petroleum greases, petroleum spirits (mineral spirits, naphtha), mineral and insulating oils (and products made from mineral oil including automatic transmission fluid), and used oil.

Note: Petroleum does not include hazardous waste, substances regulated under the chemical bulk storage program, animal or vegetable oils that do not contain crude oil or any fraction thereof, or products that are gases at 68° Fahrenheit and one atmosphere pressure (e.g, propane).

Tanks storing asphalt are not included. While transformer oil, hydraulic oil, and asphaltic emulsions do meet the definition of petroleum, the Department is considering appropriate storage standards for transformers, hydraulic lift tanks and tanks storing asphaltic emulsions. The Department is considering issuing an enforcement discretion memo providing relief for these three categories of tanks until the revised PBS regulations are finalized.

What Should Tank Owners Do?

Step 1: Determine if the new definitions of “petroleum” and “facility” affect you by reviewing all storage tanks at the property. Make a list of all of the tank capacities and products stored at the property. If you have a previously-registered facility, you will need to add tanks to your existing registration if either (a) or (b) below are true. If you have a site that has never been registered before, you will need to register all tanks on the property that meet either of the following criteria:

(a) You have any underground storage tanks (larger than 110 gallons and more than 10% underground) used to store petroleum (other than heating oil used on-site), and the site is not a farm or residence.

(b) When you add together the capacity of all petroleum storage tanks (not including heating oil tanks less than 1,100 gallons or farm/residential non-retail motor fuel tanks 1,100 gallons or smaller) the total capacity is greater than 1,100 gallons.

Examples:

Here are some examples of facilities affected

by the changes in the law:

1. A vehicle repair shop has several small aboveground tanks storing engine lube oil, used lube oil, and automatic transmission fluid (ATF), and the total storage capacity of the storage tanks is over 1,100 gallons. All of the tanks must be registered.
2. A site has an underground motor fuel tank over 110 gallons (perhaps for fleet operations or construction equipment). All tanks at the property would need to be registered (including any other heating oil tanks, aboveground tanks, etc.).
3. A farm or residence has a 1000-gallon gasoline storage tank, a 1000-gallon diesel storage tank and a 500-gallon heating oil tank. All tanks should currently be registered because the combined capacity of the tanks storing motor fuel is greater than 1,100 gallons. Under the new definition of facility, none of the tanks need to be registered because there are no single tanks greater than 1,100 gallons. The site will not be regulated after July 21, 2008.

Step 2: If you have tanks to add to your registration or are a newly regulated facility, you will need to determine if the tanks are in compliance with the requirements of existing state regulations (i.e., 6 NYCRR Parts 613 and 614).

- Underground tanks installed before December 27, 1986 will probably need to be tested for tightness and operators will need to begin keeping inventory monitoring records (see sections 613.4 and 613.5).
- Underground tanks installed after December 27, 1986 must be protected from corrosion (tank and piping systems), have secondary containment (tank), a leak monitoring system (tank and piping systems) and an overfill prevention system.
- All aboveground tanks will need to be inspected monthly (see section 613.6) and, if the tank is in contact with the ground, will need to have a ten-year inspection (see section 613.6).
- Aboveground tanks installed after December 27, 1986 must be constructed of welded steel and be protected from atmospheric corrosion. If the tank is resting on-grade, it must have an impermeable barrier under the tank with the ability to monitor for any leakage and must be protected from corrosion if in contact with soil.
- All aboveground tanks 10,000 gallons or larger (regardless of installation date) must have secondary containment around the tank. (Note that traditional double-wall aboveground tanks do not by themselves provide secondary containment.) All smaller aboveground tanks must be evaluated for the potential to discharge to waters of the state and if they are likely to do so, must also be provided with secondary containment or re-designed so that discharges are not reasonably expected to occur.

If any tank is not in compliance with the requirements listed above, it must be brought into compliance by July 21, 2009,

by either closing the tank or installing appropriate equipment.

Changes That Will Affect All Facilities

The new law gives DEC the authority to achieve equivalency with the EPA requirements and to implement requirements from the federal Energy Policy Act of 2005. Specific changes to the law include:

- authority to require tanks to meet equipment requirements (including upgrading existing tanks);
- authority to prohibit deliveries in certain situations;
- authority to require operator training.

Equipment Changes

The PBS regulations will be modified to require the following equipment changes:

- The EPA Underground Storage Tank regulations required owners/operators to upgrade their tank systems by December 22, 1998 to protect them from corrosion, to install and use release detection equipment on both tank and piping, and to have spill (catch basins) and overfill prevention equipment.
- The federal Energy Policy Act of 2005 requires all federally-regulated underground tanks installed after February 8, 2006 to have secondary containment for the entire tank system (tank, piping and under-dispenser).

Delivery Prohibition

The federal Energy Policy Act of 2005 requires States to prohibit deliveries when spill prevention equipment is not installed, and to consider prohibiting deliveries for not correcting operational violations. The new State law authorizes the Department to prohibit deliveries

when:

- a tank is leaking,
- where a leak is probable,
- for violations of the requirements to install equipment for spill prevention, overfill protection, leak detection, corrosion protection, or secondary containment, and
- for violation of requirements to properly operate or maintain leak detection, spill, overfill or corrosion protection equipment.

Operator Training

The new State law and the federal Energy Policy Act of 2005 require training for three levels of operators at each facility. Specifically, the laws require training for persons that have *primary* responsibility for the on-site operation and maintenance of tank systems (Class A), persons that have *daily* on-site responsibility for operation and maintenance of tank systems (Class B), and on-site employees having primary responsibility for addressing emergencies presented by spills and releases for tank systems (Class C).

Class A and B operators will be required to have their knowledge evaluated to demonstrate their competency to be an operator. Class C operators will be required to be trained and have their knowledge evaluated by either the Class A or B operator. EPA requires that operators be trained and tested no later than August 8, 2012. *Note that one*

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The New York State Department of Environmental Conservation's (NYSDEC) Division of Environmental Remediation maintains an email list for those who would like to receive information regarding the Department's petroleum and chemical bulk storage programs. This mailing list is used only by the NYSDEC so you will only receive information from the Department.

To subscribe to the Tank Bulletin and receive other notifications from the Department regarding bulk storage issues, visit the Department's website at:

<http://lists.dec.state.ny.us/mailman/listinfo/tankbulletin>

person may fill the role of more than one category of operator. Further information on specific training/testing requirements is being developed and will be made available soon.

[Where Can I Find Copies of the Registration Forms, Regulations, and Law?](#)

The registration form, registration worksheet and registration instructions are available on the NYSDEC website at <http://www.dec.ny.gov/chemical/4767.html> or by calling the Bulk Storage helpline at (518) 402-9543.

Petroleum Bulk Storage Regulations (6NYCRR Parts 612, 613, and 614) are available on the NYSDEC website at <http://www.dec.ny.gov/regs/2490.html>.

A copy of the new law is available on the NYS Assembly website at <http://public.leginfo.state.ny.us/menugetf.cgi?COMMONQUERY=LAWS> (Click on ENV and then Article 17, Title 10).

[Where Can I Find More Information?](#)

More information on the federal Energy Policy Act of 2005 is available at http://epa.gov/oust/fedlaws/epact_05.htm.

If you have further questions about NYSDEC bulk storage regulations, call 518-402-9543.



Tank Bulletin

New York State Department of Environmental Conservation

July 2012

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UST Operator Training in NY State

The federal Energy Policy Act of 2005 requires state environmental regulatory agencies to develop training requirements for operators of underground storage tanks (USTs). Operators must demonstrate their knowledge of how to properly operate and maintain UST systems. The New York State Department of Environmental Conservation (DEC) is currently revising its Petroleum Bulk Storage (PBS) regulations, which will incorporate the federal UST operator training requirements.

Some states already have operator training programs that require training to be completed on or before August 8, 2012. New York's program, however, is still in development and a training deadline is yet to be established. The United States Environmental Protection Agency (USEPA) is also currently developing its operator training requirements. This means that **UST operator training requirements will go into effect in New York State when either the New York State or USEPA regulations take effect.** DEC currently estimates that both the New York State and USEPA will be completed by late 2013 (subject to change). The following Frequently Asked Questions provide further detail.

UST operator training requirements will go into effect in New York State when either the New York State or USEPA regulations take effect (current estimate is late 2013; subject to change)

1. Who must be trained and what must the training cover?

DEC will identify three classes of operators and minimum requirements for each class in accordance with the USEPA's guidelines. The three operator classes and the objectives of training are as follows:

Class A operators have primary responsibility to operate and maintain the UST system and typically manage resources and personnel to achieve and maintain compliance. Training for Class A operators should allow the operator to make informed decisions regarding compliance with regulatory requirements.

Class B operators have daily responsibility for on-site operation and maintenance of UST systems. Training for Class B operators should provide an in-depth understanding of operation and maintenance aspects of UST systems.

Class C operators are daily on-site employees who are generally the first line of response to actual or potential emergencies. Training should allow the Class C operator to take appropriate action in response to UST-related emergencies or alarms caused by spills or releases from an UST system.

A person may be designated to more than one operator class as long as they are trained in each operator class for which they are designated.

(continued on page 2)

Operator Training (continued from page 1)

2. Must the training be periodically repeated?

USEPA requires states to specify retraining requirements for operators. DEC will, at a minimum, require retraining and retesting in those topics where a significant compliance violation has been identified. Details of this aspect of the operator training program will be specified in the revised PBS regulations.

3. What documentation will I need to maintain?

UST system owners will be required to maintain records that show that the operators have been trained and have demonstrated competency in accordance with applicable regulations.

4. Can I designate a third party as my Class A and/or Class B operator?

Yes, DEC expects that facilities will be able to designate third parties as Class A and Class B operators. Details of this aspect of the operator training program will be specified in the revised PBS regulations.

5. Will DEC approve trainers or training classes for operators?

DEC does not anticipate specifying training requirements for operators beyond what USEPA has already defined. DEC intends to develop operator training guidance and examinations for Class A and Class B operators. The examinations will be administered separately from the training class. We do not anticipate approving any trainers or training programs. This approach will allow the regulated community to develop its own training, which will allow greater flexibility and may allow it to be completed more quickly and at less cost. DEC anticipates working with the Commissioner's PBS Advisory Council and others in the regulated community in the development of this guidance and the examinations. Details of these aspects of the operator training program will be specified in the revised PBS regulations.

UST system owners will be required to maintain records that show that the operators have been trained and have demonstrated competency in accordance with applicable regulations.

6. USEPA is developing federal UST operator training requirements. Will the federal operator training requirements apply to facilities with federally-regulated USTs?

The federal operator training requirements will apply to UST operators in New York only if the federal requirements go into effect before DEC requirements go into effect.

7. Where can I obtain additional information on operator training requirements?

Information regarding operator training is available on USEPA's web site at <http://www.epa.gov/OUST/fedlaws/optraing.htm>. This link provides access to the USEPA's operator training guidelines, the status of states' compliance with the USEPA's guidelines, and an operator training resource guide and accompanying spreadsheet. DEC will provide more information on operator training at <http://www.dec.ny.gov/chemical/287.html> as it becomes available. This web page also has links to several DEC web pages pertaining to the Bulk Storage programs.

UST operators can receive updates on operator training and additional information about the PBS program by subscribing to the Tank Bulletin email notification service (see page 4 below).

Revisions to the Bulk Storage Regulations

DEC is revising all of its regulations that address the bulk storage of petroleum and hazardous chemicals. This includes the Petroleum Bulk Storage (PBS) program, the Major Oil Storage Facility (MOSF) program, and the Chemical Bulk Storage (CBS) program. The main goal of completing these rulemakings is to consolidate existing federal regulations into the existing State regulations. This will make it possible for bulk storage facility owners and operators to have one set of regulations that describe what must be done to be in compliance with both State and federal rules. The regulations will establish separate requirements for underground tanks that are USEPA-regulated and for underground tanks that are exempt from the USEPA regulations (e.g., tanks storing heating oil for consumptive use on the premises).

The revisions to the State regulations will include the changes made to the Environmental Conservation Law (ECL) in 2008. Many of these changes originated in the federal Energy Policy Act of 2005 and are described in the April 2009 issue of the Tank Bulletin which is available on line at <http://www.dec.ny.gov/chemical/53278.html>. In summary, the main revisions are to: (1) change the definition of petroleum to be consistent with the federal definition; (2) change the definition of “facility” to be based upon the location (property) of the tanks rather than upon the tanks themselves (resulting in property owners, rather than tank owners, being required to register facilities with DEC); (3) incorporate the federal requirements for prohibiting deliveries of petroleum to tanks with significant violations of the regulations; (4) incorporate requirements for secondary containment of piping and dispensers (also known as under dispenser containment); and (5) incorporate requirements for operator training.



DEC recognizes that it will likely be necessary to revise the PBS regulations as a result of currently proposed changes to the corresponding federal regulation (40 CFR Part 280). However, with the exception of certain matters such as secondary containment, operator training, and delivery prohibition requirements, the requirements of the final version of the federal regulatory revisions and when the final regulation will be promulgated are both uncertain. Therefore, any other changes to DEC’s PBS regulations required by revisions to 40 CFR Part 280 will be made as part of a future rulemaking after the federal revisions are finalized.

Lubricating Oil Tanks at Repair Shops

DEC frequently receives questions regarding the regulation of lubricating oil (virgin and used) stored at an automotive repair facility. Here are a few examples of some common questions and answers.

1. The instructions for a PBS application indicate that a deed must be submitted to document a change in facility ownership. What about repair shops where the company that supplies the virgin lube oil also supplies the storage tank? Who registers these tanks and where is this specified in law/regulation?

ECL Article 17, Title 10, Section 17-1003 specifies that the owner of the property where the tank is located is responsible for registering the tank/facility. The latest version of the application form requires that the identity of the property owner and tank owner be provided. This change will also be incorporated into the revised PBS regulations (see above).

Lubricating Oil Tanks (continued from page 3)

2. An automobile repair shop has a 275 gallon used oil tank plus three totes (70 gallons each) containing new lubricating or transmission fluid. Do these tanks need to be registered? What would be the fee?

If the totes are not used as stationary tanks, the lubricating oil and transmission fluid totes do not need to be registered. If the totes are used as storage tanks (i.e., left in place with deliveries made to the totes to refill them), then they are considered storage tanks which must be registered and must comply with all of the PBS requirements if located at a facility. Since this example site has less than 1,100 gallons of total storage capacity and no underground storage tanks, it is not considered a facility. (See question #4 below regarding use of an aboveground plastic tank.) All stationary used oil tanks must be registered regardless of capacity. There is no fee to register used oil tanks if they reside at a property with a combined capacity of less than 1,101 gallons. For further information regarding used oil PBS requirements, see 6 NYCRR 374-2.3(c)(2) and [DEC's Used Oil website](#).

3. What are the main equipment requirements for small tanks storing used oil at an automobile repair shop?

The main requirements for a typical used oil tank at an automobile repair shop include:

- tank must be labeled "USED OIL" and may also be labeled with a purple square (color code for used oil) [374-2.3(c)(8), 613.3(b)];
- aboveground tanks must be labeled with the tank identification number and show the design and working capacities on the tank and at the gauge [374-2.3(c)(8)(i), 613.3(c)(3)(ii)];
- underground tanks must be labeled with the tank capacity at the fill pipe [374-2.3(c)(8)(ii)];
- a product level gauge or high level alarm must be installed [6 NYCRR 613.3(c)(3)];
- secondary containment is required for aboveground used oil tanks if a spill from the tank to the surface or groundwaters of the State could reasonably be expected [613.3(c)(6)]; and
- secondary containment is required for underground used oil tanks with capacities greater than 110 gallons installed after December 27, 1986 [6 NYCRR 614.4].

4. Can I store used oil in an aboveground plastic tank?

The regulations (see 374.2-3 (c)(2)(ii)) require that tanks installed after December 27, 1986 be in compliance with Part 614 of the PBS regulations. Unless a variance is granted, the PBS regulations specify that aboveground tanks be constructed of steel.

Subscribing to the Tank Bulletin

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