THINK TANK

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UST and SIRB Offices Moved

by Kathy Stiller

Just in case you missed the many fliers we sent directly or included with other items mailed to you, on May 29 the Underground Storage Tank Branch (USTB) and the Site Investigation and Restoration Branch (SIRB) moved to 391 Lukens Drive, Riveredge Park, New Castle, DE 19720. Our new telephone numbers are: USTB (302) 395-2500; SIRB (302) 395-2600; and the fax line is (302) 395-2601.

The dust is beginning to settle from the move and hopefully all the bugs are getting worked out. We hope we are continuing to provide the same if not a better level of service to you from our new location. During the move we may have been a little delayed in getting items out but those have been cleared up now and we anticipate that our new working environment will make us more productive and efficient. To this end, you may have noticed that we now have voice mail. We hope that this will enable you to leave a more complete message thus enabling us to be more responsive to your questions and requests.

You also will find that we now have several conference rooms. This should alleviate the need to over crowd the meeting space or hold the meeting at other locations. If you would like to stop by and see the new facility, we welcome you to make arrangements with any USTB or SIRB employee. ■

MTBE Update

by Pat Ellis

Methyl tertiary Butyl Ether (MTBE) is added to gasoline to help reduce air pollution. A few years ago, it was difficult to find much information on it. Now, a simple Internet search using any of the search engines will turn up thousands of references just by using the acronym MTBE. No need to even type in the entire chemical name! There have been numerous day-long to several day long symposiums dealing just with MTBE, and millions of dollars are being spent to gather additional information on MTBE. The "MTBE Issue" is being wrestled with now by all the various state UST programs. The Delaware UST Branch printed a series of four articles in *Think Tank* between the Fall-Winter 1994-95 issue and the Spring 1996 issue dealing with MTBE. This article will provide an update on the information provided in those articles summarizing some of the more recently available information concerning MTBE.

Drinking Water Advisory: Consumer Acceptability Advice and Health Effects Analysis on MTBE

In December 1997, the Environmental Protection Agency issued a health and consumer advisory on MTBE that recommended a concentration range to avoid

Continued on p. 2

MTBE Update - Cont. from p.1

unpleasant taste and odor in drinking water. This advisory supersedes a 1992 draft health advisory on MTBE and recommends that suppliers keep contamination in the range of 20 to 40 micrograms per liter to avert taste and odor problems. The "provisional health and consumer acceptability advisory" is a nonenforceable document that summarizes the currently available cancer and noncancer data on the contaminant, as well as taste and odor effects.

EPA will issue a final health advisory when sufficient health effects data is available. The advisory is intended to provide guidance to interested parties – in particular, water suppliers – that may have drinking water contaminated with MTBE. While MTBE is generally unpleasant in taste and odor, no conclusive data exists on human health effects from drinking MTBE-contaminated water, according to the document. However, laboratory tests on animals support a potential concern for the substance as a human health hazard. To obtain more data, EPA is conducting extensive health effects research on MTBE. In October 1997, an agency-wide task force was formed to develop a research strategy for MTBE and other oxygenates in water.

In 1998, monitoring for the substance will begin in 12 mid-Atlantic and Northeastern states (including Delaware) under a cooperative agreement between the EPA and the US Geological Survey.

The consumer advisory is available for download from the Web at:

www.epa.gov/OST/drinking/mtbe.html

The State of Delaware has recently enacted legislation dealing with taste, odor, and appearance of water supplied by larger water utilities and municipalities. The legislation, sponsored by Representative Richard C. Cathcart and others, requires municipalities and utilities with 500 or more service connections in the state to meet "secondary standards" for aesthetics.

An Evaluation of MTBE Impacts to California Groundwater Resources

In 1995, Lawrence Livermore National Laboratories (LLNL), under contract to the California State Water Resource Control Board (SWRCB), completed a study evaluating hydrocarbon releases from leaking fuel tank sites in California. One of the deficiencies of that study is its failure to look at data for MTBE at these releases, because only limited data was available and regulatory agencies had not required MTBE analysis. As part of a continuing contract, Livermore conducted an additional 18 month long study with funding from the SWRCB, the US Department of Energy, and the Western States Petroleum Association. The results of the MTBE study were released by LLNL on June 11, 1998. The conclusions of this study are:

- MTBE is a frequent and widespread contaminant in shallow groundwater throughout California. MTBE was found at 78% of the 236 sites included in the study, at concentrations up to 100,000 micrograms per liter.

- MTBE plumes are more mobile than BTEX plumes. Although results of using 1995/6 data only show that most MTBE plumes were approximately the same length as BTEX plumes, results predict that this relationship will change through time as MTBE plumes continue to grow while BTEX plumes gradually shrink. The data concerning plume length is difficult to interpret because it is believed that the data includes many multiple-release sites where there may have been an initial release of non-MTBE-containing gasoline followed later by a release of gasoline containing MTBE.

- The primary attenuation mechanism for MTBE is dispersion. Observed attenuation of BTEX and MTBE compounds at downgradient monitor wells suggests that MTBE is not significantly degrading in existing monitoring networks. Thus, MTBE may be regarded as recalcitrant under site-specific conditions. Assuming resistance of MTBE to biodegradation, MTBE plumes eventually attenuate to regulatory concentration goals due to dispersion, although in contrast to BTEX compounds, the mass would not be depleted and significantly longer distances and time frames would be required to meet regulatory goals.

- MTBE has the potential to impact regional groundwater resources and may present a cumulative contamination hazard. To date, impacts of MTBE to public water systems have been limited and are similar in frequency to those of benzene. Based on historical data, future impacts of aromatic hydrocarbons, such as benzene, to water supplies are not expected to be common, due to retardation and relative ease of biodegradation. In contrast, MTBE contamination may be a progressive problem due to the chemical's apparent recalcitrance to natural attenuation and its mobility. With a compound that appears both ubiq-

uitous and recalcitrant, water resource management on the regional scale will become increasingly important. Leak prevention is a critical requirement for the continued use of MTBE to ensure future protection of drinking water resources.

- Two major areas of uncertainty were identified in LLNL's results. First, presently available data are limited. Analysis for MTBE has only been required since 1995, so historical monitoring data is very limited. A series of 29 sites from San Diego County had analytical data from the beginning of 1992 to give an idea of how MTBE plumes behave with time. This data indicates that MTBE moves beyond monitoring networks at significantly higher concentrations than individual BTEX fuel components.

  Second, the issue of recalcitrance of MTBE has not been resolved. It has been demonstrated that a number of laboratory-cultured microorganisms isolated from various environments can degrade MTBE, yet there is no convincing evidence to date that this destructive process occurs quickly or commonly in the field. Reductions of benzene concentrations by as much as several orders of magnitude in the downgradient direction are observed within existing monitoring networks, indicating significant attenuation of benzene at the majority of LUST sites. By comparison, attenuation of MTBE appears to be more limited because concentration reductions generally do not exceed one order of magnitude.

Copies of the Lawrence Livermore study are available for download from the Lawrence Livermore Web site at:

www-erd.llnl.gov/mtbe/new-mtbe.html

EPA MTBE Fact Sheets

A series of seven MTBE fact sheets are being developed by EPA's Office of Underground Storage Tanks. The first three fact sheets, entitled "Overview", "Remediation of MTBE Contaminated Soil and Groundwater", and "Use and Distribution of MTBE and Ethanol", have been completed. The remaining fact sheets will include the USEPA health advisory, analytical methods for fuel oxygenates, impacts of MTBE releases on state UST programs, and potential oxygenate substitutes for MTBE. The first three sheets are available on the OUST Web site at:

www.epa.gov/OUST/mtbe

Santa Monica MTBE Contamination

In 1966, the city of Santa Monica, California, was forced to cease pumping groundwater from two well fields used for public drinking water supply due to persistent and increasing concentrations of MTBE in all seven municipal supply wells. This lost production accounted for 50% of the city's supply. Investigation of the Charnock well field revealed more than 30 possible sources of contamination. At the Arcadia well field, an adjacent Mobil service station was determined to be the source. Without an admission of responsibility, Shell, Chevron, and Exxon have entered into a voluntary agreement to replace the Charnock drinking water supply and implement a source remediation and well field restoration program. Mobil has entered into a similar agreement with respect to the Arcadia well drinking water supply. It is currently costing $3.5 million/year to buy replacement water from the Metropolitan Water District in Los Angeles for Santa Monica. Remedial goals include not only treating the groundwater supply, but also complete restoration of the aquifer. Pilot testing is underway for a final remediation system at both well fields.

MTBE and the Delaware UST Program

While Delaware does not currently require testing for MTBE at all LUST sites (it is required on a site-by-site basis), testing will be required as the Delaware Risk-Based Corrective Action (RBCA) Program is phased in during the coming months. Cleanup standards for MTBE are being developed for the various tiers of the program.

ASTSWMO MTBE Workgroup

The Association of State and Territorial Solid Waste Management Officials (ASTSWMO) LUST Tank Force has an MTBE Workgroup that developed through the EPA-sponsored MTBE Task Force. Members of the ASTSWMO Workgroup gather information for dissemination to the states and act as a clearinghouse for new information. The workgroup issues a quarterly newsletter that includes state and federal government activities and policies regarding MTBE, new publications and research papers, the results of various surveys that are currently underway, and postings of Internet web sites where additional information can be found. Pat Ellis of the UST Branch is the co-editor of the newsletter. Newsletters are posted on the ASTSWMO web site at:

www.astswmo.org/Publications/bookshelf.htm ■

What would you do?

by David H. Lerner

A 550 gallon residential heating oil UST is removed by a local contractor. Soil samples are collected and analyzed for TPH-DRO by a local environmental consultant. No soil staining or odor is present in the excavated soils and nothing registered on properly-calibrated field-screening instruments (e.g., PID or OVA).

Even though no contamination was detected using field methods, the analyses show that the soils surrounding the former tank contain from less than 10 ppm TPH to 150 ppm TPH. What are the *owner, contractor,* and *consultant* required to do at this point? Four possible responses are listed below. Select the correct response.

A. They are not required to do anything, including reporting, cleanup, or submission of site assessment results to DNREC because TPH concentrations in the soils are below DNREC's action level of 1,000 ppm for heating oil and the tank is not regulated.

B. They must by law immediately notify the UST Branch at (302) 395-2500 because elevated TPH levels in the soils indicate that a release of a regulated substance has occurred. They will be asked to submit sample data and supporting documentation.

C. They must by law immediately report the findings to DNREC's Emergency Response Hot Line at 1-800-662-8802 because elevated TPH levels in the soils indicate that a release of a regulated substance has occurred.

D. They are not required to report or submit any data to the UST Branch or the Emergency Response Hot Line. They must, however, remove and dispose of all soils greater than 100 ppm TPH no later than 30 days after the tank has been removed.

Answer and discussion:

The correct response is C. All releases, identified or suspected, must be reported to DNREC's Emergency Response Hot Line at **1-800-662-8802** in accordance with regulations promulgated under Section 6028. Calling the Hot Line establishes a legal record of compliance with these regulations. *Contacting the UST Branch is not legally considered reporting a release.*

After the release is reported, the report will be referred to the UST Branch for further investigation or corrective action. A follow-up call to the UST Branch at 302-395-2500 will help expedite matters regarding release reporting and cleanup.

DNREC considers the above situation to be an *identified release,* even though no contamination was indicated using field-screening methods. Because a release has occurred, the tank owner, operator, and responsible parties must bring the tank into compliance with Chapter 60, as well as 7 Del. Code, Chapter 74 (*Underground Storage Tank Act)* and any regulations promulgated under Chapters 60 and 74. ■

RBCA Update

Approximately a year ago, the UST Branch began focusing on improving Delaware's existing UST investigation and corrective action process by incorporating some of the concepts of risk assessment found in the ASTM's Standard Guide for Risk Based Corrective Action (RBCA). The Delaware LUST Committee recommended that a Technical Advisory Group made up of contractors, consultants, citizens, oil company representatives and experts on toxicology, risk assessment and Delaware geology work with the UST Branch in its efforts to develop a Delaware Risk Based Corrective Action Program (DERBCAP).

The UST Branch has met three times since March, 1998 with the Technical Advisory Group. Work continues at this time with the Advisory Group to develop a final draft DERBCAP guidance document by the end of this year. We plan to use the guidance in working draft format for one year after its introduction to allow for adjustments based on user feedback before finalizing the guidance.

Delaware tank owners and their consultants may notice a change to the hydrogeologic investigation sampling and ground water monitoring requirements. The list of chemicals required to test soil and groundwater samples has been expanded to allow for a better assessment of the risk to human health and the environment. Consultant and contractor training on the DERBCAP guidance is also planned. Look for scheduling information in a later publication. In the meantime, if you have any questions on this program contact the UST Branch. ■

Odds n' Ends

California:

In a period of one week in December last year there were two tank explosions resulting in one death and three people severely burned. Both explosions occurred when safety procedures were bypassed in order to save time.

In both accidents, the tanks had not been purged of flammable vapors prior to work, the atmosphere inside the tanks had not been tested, and ignition sources had been introduced inside the tanks.

The number of tank removals are up this year due to the upcoming corrosion protection deadline in December. Don't take chances. Have a properly calibrated Combustible Gas Indicator (CGI) on site and use it to test the atmosphere in the tank. Purge tanks to 10% of the Lower Explosive Limit (LEL) prior to removal. Ground your equipment to prevent sparks or static electricity discharge, use non-sparking tools, and ban smoking anywhere on site.

Remember, gasoline vapors are heavier than air and given a chance will collect in low places on site.

Maryland:

Recently, there was a major release of 5,100 gallons of gasoline at a "state-of-the-art" retail gasoline station. Enviro Flex piping broke at the fitting. The coupling broke in half and it now appears that Total Containment has a bad batch of 2½" fittings. The fittings are failing and causing the plastic pipe to back off.

The product filled the pump sump and appears to have flowed over the edge and into the pea gravel. Officials are not sure the sump was liquid tight at the time of release, but it did pass a hydrostatic test the next day. Product (by underground route) found its way into a storm drain and then into a stream. One apartment complex was evacuated until the emergency was over.

It appears that the system was programmed to alarm only and not shut off the pump. If the station attendant does not react to the alarm, a major release can occur. An old manual line leak detector would have gone into low flow automatically.

According to Maryland officials, "What we found is if any dispenser is being used, the electronic leak detection system can not go into test mode. With these 'super stations' and with regular grade product as we had here, you can go for hours on end with at least one dispenser in use."

There has been a second similar occurrence in Maryland, two in Atlanta and one or more in New Jersey.

Delaware:

Friday June 26, a certified contractor, was fined by an Environmental Protection Officer (EPO) for failure to notify the Department of a retrofit at a retail gasoline station. In addition, all work at the station was halted.

Owners and operators of underground storage tanks will want to make sure their contractor is familiar with the requirements of Delaware's *Regulations Governing Underground Storage Tank Systems* so work on their regulated USTs can proceed without interruption.

EPA actions in Delaware:

Four complaints were filed by EPA for violations of UST regulations.

"Leaking underground tanks are a major source of soil and groundwater contamination. We must enforce compliance with UST regulations now, or face costly cleanups later," said EPA Regional Administrator W. Michael McCabe.

The agency actions seek:

- $52,985 from *Crown Enterprises, Inc.* and *Central Transport International, Inc.* of Warren, Michigan for tank closure and leak detection violations at *Central Transport Terminal* (Wilmington).

- $15,615 from *GLS Leasco, Inc.* for violations of tank closure and leak detection requirements at *American Freightways Terminal* (New Castle).

- $44,259 from *Ronald C. Palmiere*, owner of *Ron's Discount Gas and Tire Center* (Wilmington) for violations of registration, design and construction, leak detection, recordkeeping, and tank closure.

- $4,991 from *Paul R. Phillips* Jr., owner of *Phillips Lumber and Glass* (Wilmington) for failing to notify DNREC about a 500 gallon tank on the business premises and failure to respond to an EPA information request.

Those cited have a right to hearings on the violations and penalties.

THINK TANK

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Announcements

The following UST Branch personnel were promoted to:

Pat Ellis - Hydrologist IV
Frank Gavas - Hydrologist III
Matt Lesley - Hydrologist III
Erin Glennon - Environmental Scientist II

New Hires:

Stephanie Harris - Senior Secretary
Tara Chambers - Secretary
Colin Gomes - Senior Environmental Compliance Specialist - assisting with vapor recovery program.

Seasonal Hire:

Mary Tavani - Environmental Compliance Specialist - assisting with tank fee collection, financial responsibility documentation, and compliance.

Married:

Frank Gavas to *Jennifer Cross*, June 5. Jennifer is employed as an Environmental Scientist with the DNREC Division of Water Resources and was formerly employed with the UST Branch. The couple live in Arden.

DNREC/UST Branch
391 Lukens Drive
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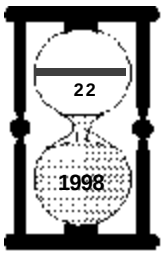

On August 22 you have only ***4 months***