EPA 700/F-84/009

is
al Protection

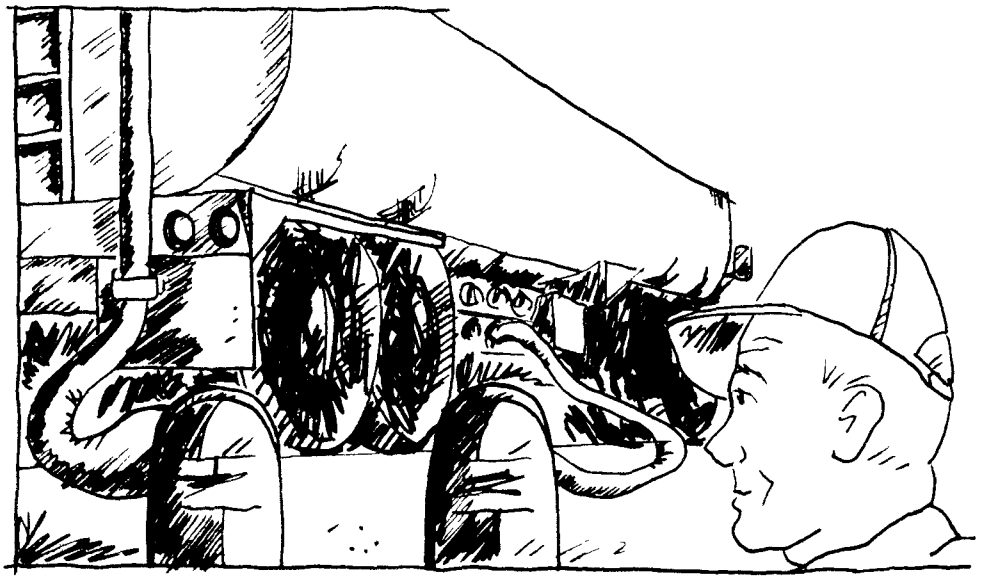
Office of
Toxic Substances
Washington, DC 20460

September 1984

EPA

Leaking Underground Storage Tanks Containing Motor Fuels: A Chemical Advisory

What Can Leaks Do?



Leaks Can Cost Money

A tiny leak from an underground storage tank or pipe may hardly seem worth worrying about, but it can cost you money. A leak as small as one-half drop per second (0.05 gallons per hour) causes losses of 438 gallons a year; a leak of one gallon per hour will result in losses of 8,760 gallons a year. Losses like this can add up to a lot of money.

Leaks Can Cause Damage

Half the population of the United States depends on groundwater from community or private wells for their water supplies. Motor fuels that leak from tanks and pipes can enter and contaminate these groundwater and drinking water supplies. Leaks can also damage underground structures (such as sewer lines and telephone cables); present fire or explosion hazards; and damage crops, livestock, and wildlife. Even in small amounts, long-term exposure to motor fuels may cause health problems. Water can also flow into the tanks from these leakholes and contaminate your motor fuel.

Leaks Can Result in Liability Claims

Leaks that are not discovered for a long time can cause widespread damage. Early detection of leaks can help minimize damages and cleanup costs. If you, the tank owner or operator, are sued for damages resulting from a leaking tank or pipe, the courts may hold you responsible—even if you didn't know about the leak. In some cases, the courts have ordered tank owners and operators to pay for clean up, soil decontamination, alternative water supplies, and even to buy homes that have been contaminated. These costs to the tank owner or operator can run into millions of dollars.

What Causes Leaks?

Leaks from tanks can be caused by improper installation or breakdown of the materials of which the tank or pipes are made. Breakdown of steel tanks or pipes by corrosion or rupture of fiberglass tanks are among the major causes of leaks. Tank and pipe corrosion may be affected by many different factors including spills of product, improper or infrequent maintenance, soil type and moisture, or severe weather conditions.

Tanks made of unprotected steel will corrode. The majority of unprotected steel tanks begin to leak when they are anywhere from 2 to 20 years old. Steel tanks with corrosion protection can also corrode if the corrosion protection is not correctly installed or maintained. Fiberglass tanks will not corrode on the outside, but these tanks are not as strong as steel tanks and may begin to leak if they are not properly installed.

Do You Have A Leak?

There are many ways to test for leaks in underground tanks and pipes. The three basic methods for detecting leaks are: (1) inventory review, (2) tank leak testing, and (3) leak effects monitoring. EPA has reviewed a number of methods for detecting leaks. These reviews are included in the document "More About Leaking Underground Storage Tanks: A Background Booklet for the Chemical Advisory." You can get a copy of this document by calling EPA's toll-free number, 800-424-9065.

Inventory Review

Inventory review is a practical and inexpensive way for owners and operators of underground storage tanks to first discover whether there is a loss of product. The inventory review requires very little extra effort—for metered pumps, daily measurements of motor fuel levels can be compared to the amount dispensed. For both metered and unmetered pumps, inventory review should be done on a regular basis. If the inventory review shows a continuing loss, the operator or owner should use another, more exact testing method before finally deciding that there is a leak problem.

A step-by-step guide to one inventory review method is available from EPA by calling toll-free 800-424-9065. Petroleum organizations or your motor fuel supplier can also give you more information on inventory review and leak detection tests. The American Petroleum Institute's (API) Publication No. 1621 (1977), "Recommended Practice for Bulk Liquid Stock Control at Retail Outlets" provides detailed information on inventory review. This publication can be obtained at a cost of 75¢ from the American Petroleum Institute at 1200 L Street, N.W., Washington, D.C. 20005 or by phoning (202) 682-8375.

Tank Leak Testing

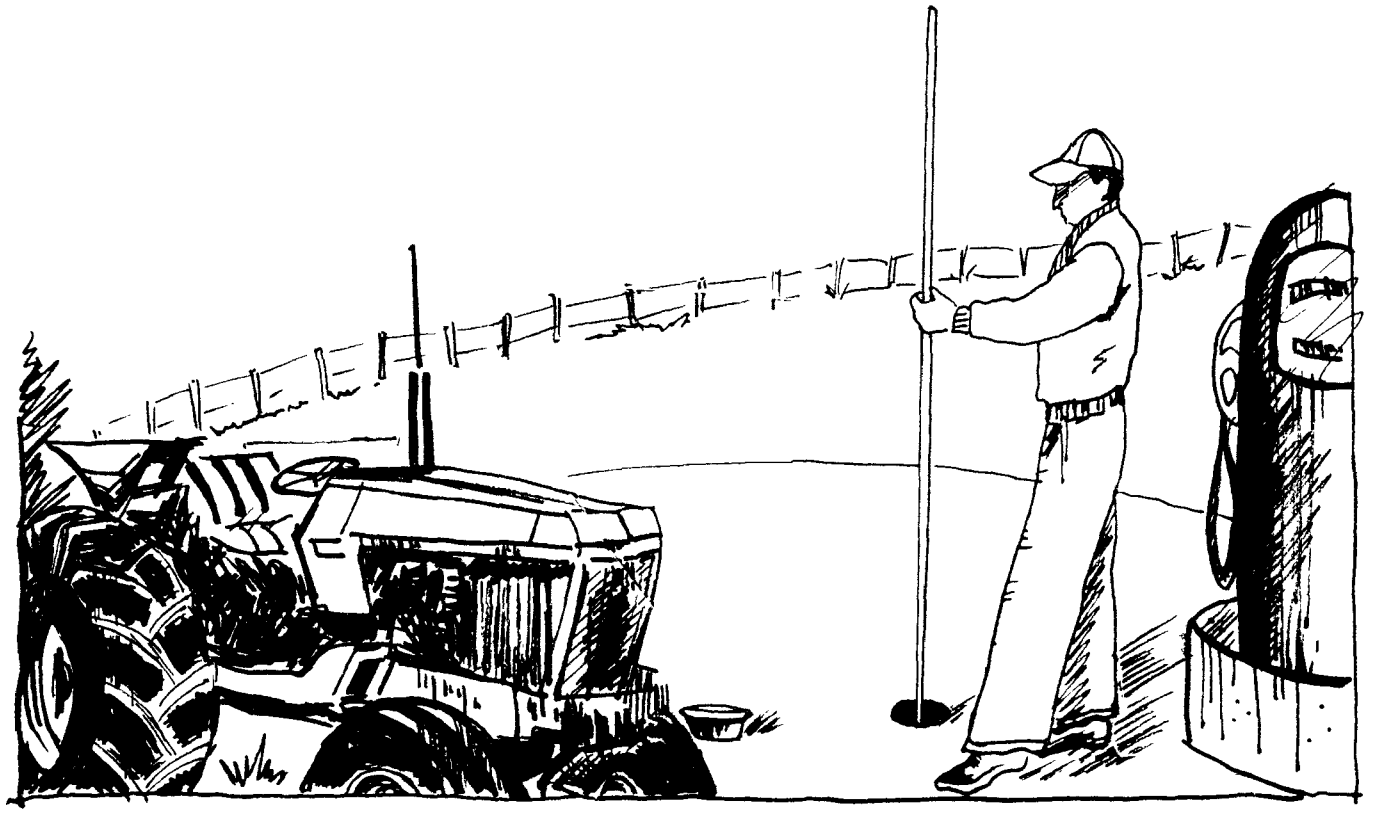
A number of tests are available to detect leaks or determine the "tightness" of the tank and pipes. Each test has certain good and bad points, depending on the situation in which the underground tank and pipes are being tested. However, a major factor to consider in choosing a test method is the accuracy of the test.

The accuracy of a tank and pipe test is affected by many factors including: temperature of the motor fuel, condition and position of the tank, and testing time. Another factor that you will want to consider is the cost of the test, including whether the tank must be shut down to run the test.

Because tanks and pipes can always start leaking after the test shows that they are tight, it's important that you keep a continuing check on your tanks and pipes with inventory reviews, leak effects monitoring or periodic tank testing.

Monitoring Leak Effects

Monitoring leak effects involves looking for signs of the motor fuel in the soil and groundwater samples using groundwater monitoring wells or line leak detectors. This monitoring may be as simple as smelling motor fuel odors or noticing wet spots and dead vegetation near tanks and pipes, or as complex as automated sampling and analysis of wells. However, effects that are detected can also be caused by surface spills of motor fuel. Further testing of the tanks and pipes is usually necessary to determine if the effect is from a surface spill or a tank or pipe leak. Once a leak has been detected and confirmed, groundwater sampling is often used to determine how much groundwater has been contaminated.



U.S. GOVT. PRINTING OFC.:453-381-1984

What Should You Do If You Have A Leak?

Underground Tank Replacement and Repair

Once a leak is discovered, tank owners generally have two basic options: (1) to remove and replace existing tanks and pipes, or (2) repair existing tanks or pipes. Repair of tank or pipe leaks may include fixing a leak and installing a corrosion protection system, or applying an internal lining.

No matter whether you are thinking about putting in new storage tanks or protection systems for tanks already in the ground, you should remember that "an ounce of prevention is worth a pound of cure." While the installation of tanks and pipes with leak prevention or monitoring systems may cost 20 to 100 percent more than unprotected steel tanks, the protected and fiberglass tanks may last longer and typically have longer warranties. Warranties for protected and fiberglass tanks may be for 20 to 30 years; most unprotected steel tanks have only a one year warranty on workmanship defects.

Because fiberglass tanks are not as strong as steel tanks, they must be properly installed to avoid their rupturing from uneven loads. There has also been some concern about the compatibility of existing fiberglass tanks and pipes with some of the alcohol fuels or alcohol-blended fuels. If you have questions about the compatibility of a product in a fiberglass tank or piping, contact the representative for your fiberglass tank company.

Other types of tanks to consider are asphalt coated steel, fiberglass coated steel, fiberglass coated double-walled steel, and epoxy coated steel. These different types of tanks offer varying degrees of protection at a wide range of costs. There is also a variety of piping available.

Reporting Leaks

Underground tank systems may be subject to Federal, State, or local regulations. These regulations vary considerably. Many States have adopted uniform fire code requirements for tank permits, specifications, and installation procedures. Recently, several states, such as Maryland, Florida, and California have adopted laws to protect groundwater by requiring leak detection systems. Several States also require clean-up of leaks once they are discovered. Many localities are also issuing regulations that deal with leaking underground storage tanks. You should become familiar with the Federal, State, and local regulations that apply to you. If you discover a leak, you should promptly report it to the appropriate Federal, State or local authority, such as a fire marshal, civil defense official, or natural resource agency. If the leak appears to pose a threat of contamination to a drinking water well, the health department should be notified.

Is Insurance Available?

Many tank owners and operators are covered by Comprehensive General Liability (CGL) policies. These policies generally cover pollution claims resulting from "sudden and accidental" occurrences. Even though some CGLs have been modified recently to cover gradual leaks or "non-sudden pollution losses," these owners and operators should not assume that their CGL policy covers gradual leaks of motor fuel from underground storage tanks or pipes.

In cases where tank owners are covered by CGL policies, some insurance companies have shown a willingness to modify the policies to cover gradual pollution. Usually, however, tank owners and operators must purchase a separate pollution liability policy (sometimes known as environmental impairment liability) to obtain protection for gradual leaks. For more information on obtaining leak insurance, contact your insurance broker, a national petroleum marketing trade association (or an equivalent State association), or the Pollution Liability Insurance Association.

EPA

United States
Environmental Protectio
Agency

Office of Toxic Substan
TSCA Assistance Office
Washington DC 20460

Official Business
Penalty for Private Use
$300

EPA 700/F-84/009
Leaking underground storage tanks containing motor fuels:...

Third-Class Bulk Rate
Postage and Fees Paid
EPA
Permit No. G-35