

Leaky Heating Oil Tanks

D.J. Friedman

Leaking oil tanks are not only a concern as contaminants of the water supply [see "Water analysis – beyond bacteria counts" in this issue], but have become an increasing general environmental concern addressed by the DEC. Leaking commercial equipment and even simply-suspect equipment have been extremely costly to address. Such burdens were never anticipated when the equipment was installed. While similar regulations pertaining to residential installations are scarce, this topic is of growing concern to home owners and home buyers. This article explores opinions and suggestions culled from news articles, discussions in several states and provinces, and discussions among several home inspectors. This is an interim report. It should not be taken as an authoritative nor final statement on this issue.

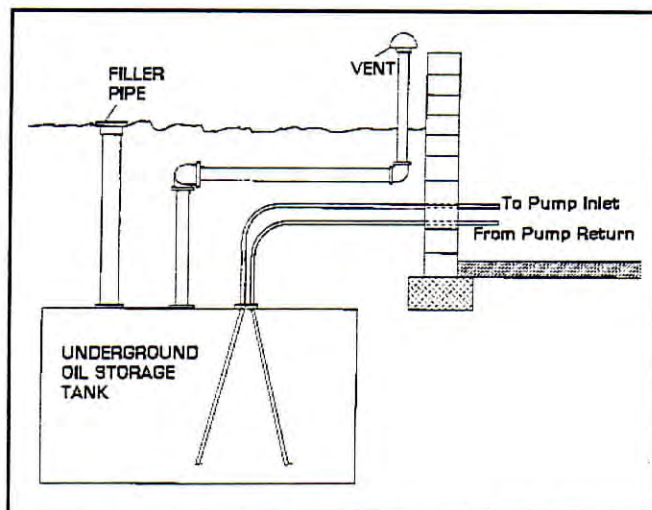
Introduction

Back in 1961, traditional heating oil tank installation procedures and standards¹ recommended that *all* oil-storage tanks be buried outside wherever feasible. That was then. This is now. New concerns about leakage and environmental pollution raise warnings about buried tanks.

In states where oil is used for residential space and water heaters, oil storage tanks are found buried outside (550 or 1080 gallons), outside above ground (often a 275-gallon "indoor" tank never intended for weather exposure), and inside (275 to 550 gallons maximum). Leaks at *any* of these tanks are at risk of causing environmental damage. In one older property we found an indoor tank leaking directly into the casing of a private well which was located in the basement!

New York State's Department of Environmental Conservation has been developing and enforcing a Petroleum Bulk Storage Program since the early 1980's. The goal of this program is to prevent leaks and spills of petroleum into the environment.

The DEC estimates that there may be as many as 185,000 above and underground tanks storing petroleum in New York State subject to DEC regulations. Many of the tanks installed in the 1950's and 60's are bare steel and have a fifty percent chance of developing leaks today. Currently the regulations apply to any facility with a combined capacity (liquid non-waste petroleum-based oils) which exceeds 1,100 gallons but is less than 400,000 gallons. No individual unregulated site can exceed 1,100 gallons: if the owner has a



Typical outdoor tank installation. Ref. RW Beckett.

1,000 gallon tank out by the garage and another 275 gallon tank for heating oil the regulations still apply.² The regulations require that these facilities must be registered with the state. Depending on the size, age, location, and type of product stored the system may have to be upgraded or tested.

How are we affected?

It is not unusual for a homeowner in the Northeastern U.S. to have installed additional storage tanks during the energy crisis of the 1970. The added storage can bring the capacity of the property above the 1,100 gallon threshold and under the DEC regulations. Many older homes with underground

1 Standards of the National Board of Fire Underwriters, as referenced by Domestic and Commercial Oil Burners, Charles H. Burkhardt, 1961, 3rd Ed., McGraw Hill Book Company, p. 172.

2 Telephone conversation, author with Southern New York office of the Department of Environmental Conservation, DEC ca 1988.

steel tanks have a good chance of developing a leak. We should provide our clients with this information. They can then make an informed decision to seek additional data and can also decide if testing should be performed.

What causes tank leaks?

Water in oil joins with sulphur and other components in oil to become acidic and corrosive. It causes tank failure by rust penetration from the inside. Water enters the fuel oil tank from a poorly sealed fill box which is flush with the ground or which is located below a roof edge, from missing fill pipe or vent pipe caps, from loose pipe fittings, and less commonly, from water delivered with fuel from an improperly maintained bulk storage facility.

In outside above-ground tanks water also often enters the fuel oil tank from condensation as temperatures change, particularly when the tank is not kept filled. Water can also leak *into* a tank from ground water when the oil level is low if the tank is damaged.¹

Improper installation: tanks set in beds of cinders or ashes cause outside-in corrosion and leaks. Tanks may also be damaged by being dropped or pushed into the excavated hole rather than being carefully lowered by a rope.

What if a system is leaking?

Anyone visually inspecting a petroleum storage tank of any size and finding the system is leaking, must report the leak within two hours to DEC. The NY spill hotline is 1-800-457-6362. We do not consider a minor drip onto the boiler room floor at a bad fitting a reportable leak for these purposes.²

What to tell your client

A buried fuel tank is installed. Such components are not inspected during a home or building inspection unless specific prior test arrangements have been made for advice by an appropriate expert. Some general advice is below. You should call the US Department of Environmental Conservation (DEC) for advice in this matter. The Southern New York area office is in New Paltz, NY, at 914-255-5453

Buried fuel tanks should be tested for amount of water present in tank bottom, and any water should be pumped out. Water corrodes the tank and leads to leaks. While we've found them lasting longer, a common life expectancy of buried oil tanks is 10-15 years. We do

not have the same data for gas tanks. Life may be similar. If the tank is to remain in use, ask your fuel supplier about using an additive or other methods to help remove water.

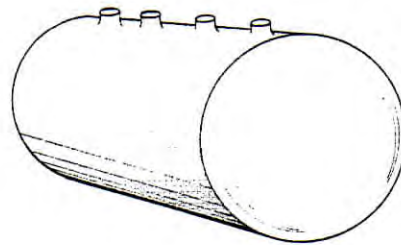
Tank testing: specialists and some oil companies have equipment to test buried tanks for leaks. Both simple pressure-testing and sophisticated electronic testing are used, mostly on commercial equipment not residential tanks. Testing for water *in* the tank is simple and can be done by any service person using a simple chemical paste on a probe.

Tank failure: In New England for a two year period [1984-5] among customers who have buried heating oil tanks (16% of total customers) surveyors found an average of 1.7 tank leaks per thousand customers. They also found 2.5 fuel line leaks per 1000 customers.³ Underground fuel storage tanks usually fail from rust perforation due to several effects of water inside the tank including, in the case of heating oil, combination of water with sulphur in the fuel. External rust, unless very heavy, isn't highly correlated with internal rust. A new tank can involve significant expense. There are also mandatory requirements to follow proper methods of "abandoning" old unused buried tanks.

Tank removal or abandonment, if a tank is not to be used, can involve significant expense. A proper abandonment procedure involves pumping out remaining fuel, confirming that there has been no leakage, and filling the tank with an approved filler, or removing it entirely.

Environmental issues: the U.S. Department of Environmental Conservation has a program registering buried tanks at any site storing more than 1100 gallons of heating oil. Requirements for gas (auto fuel), or other fuels may be different. Eventually this concern may spread to smaller residential tanks. The concern is for leaks which contaminate the environment. Tanks located where they may leak into a local waterway or into the water supply are a special environmental concern.⁴

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- 1 R.W. Beckett Corporation, Technical Information Bulletin, October 15, 1990. The Beckett Corporation, an manufacturer of oil heating equipment, has been very generous in sharing oil heating equipment repair and maintenance suggestions with ASHI Members.
 - 2 Beware! A small leak at an oil line can result in air entry into the system which can create other dangerous conditions at the equipment.
 - 3 Fuel Oil and Oil Heat magazine, August 1985 p.18.
 - 4 Free publications are available from DEC regional offices: "Petroleum Storage Regulations," "How to Register Your Petroleum Storage Facility," "Testing Underground Storage Tanks." A Help-line number is also available at 1-800-242-4351.