



Risk Management Considerations for Heating Oil and Fuel Tanks

Fuel Storage Tanks can be used for storing oils for heating systems and fuels for equipment and vehicles. These tanks can be inside a building, exterior to the building and below grade and can be found on residential, commercial, industrial and municipal properties.

The applicable codes and standards noted below are in place and constantly updated to ensure safe and responsible operation, installation and maintenance. These codes also help to reduce the environmental impacts of leaks and spills by providing measures for the required clean-up, if a leak or spill does occur.

Legislation and Codes:

- Federal and Provincial Governments
- *Environmental Protection Act*
- Environmental Guideline for Industrial Waste Discharges
- Spill Contingency Planning and Reporting Regulations
- Used Oil and Waste Fuel Management Regulations
- National Fire Code of Canada (Ontario Fire Code - Section 4)
- National Building Code of Canada
- National Fire Protection Association

Standards:

- ULC - Underwriters' Laboratory of Canada
- CAN/ULC-S602, Aboveground Steel Tanks for the Storage of Combustible Liquids Intended To Be Used as Heating and/or Generator Fuels
- ULC/ORD-C80.1-00, Aboveground Non-metallic Tanks for Fuel Oil
- CSA B-139-06 Installation Code for Oil Burning Equipment

When a Spill Occurs

It is the legal and financial responsibility of the home owner, building/land owner and/or the property manager to clean up all leaks and spills, notify anyone who might be affected; restore the land and environment to acceptable standards. Failure to do so can result in legal action from numerous parties.

In Ontario, if a spill occurs on private property the Technical Standards & Safety Authority (TSSA) must be notified. If the spill is located off of the owner's property the Ministry of the Environment must be contacted. If the spill occurs in or around bodies of water such as the St. Lawrence River it may fall under Federal regulations.

When a leak or spill occurs, the quicker the remediation begins the better it will contain the spill, minimize damage to property and the environment. It will also appear more favourable to the owner of the property in the eyes of the Court. Allowing a leak to continue after the owner is aware of the situation will only increase potential fines and damage. Fuel is a liquid and it mixes easily with soil and water. Liquids travel very easily creating large areas of contamination which make it much more difficult to get the fuel out of the ground. The fuel can create further damage and escalate the cleanup costs when it travels under structures, into bedrock and into ground water supply systems.

Tanks

Tanks can be installed inside the building, exterior to the building or below grade. Always consult your local regulatory authority to determine if your installation meets the applicable codes. In Ontario, contact TSSA or a TSSA approved contractor.

All tanks must have a certification label affixed to the exterior of the tank, stating the tank meets the ULC and CSA Standards and provides information including the age, volume, tank dimensions, wall thickness and if the tank is meant for indoor or outdoor installation.

Certain tank installations can be grandfathered if the installation was approved at the time of its installation.

Most steel tanks have a lifespan of 15 to 20 years.

All below grade tank installations in Ontario must be registered with the TSSA. These installations are generally large scale with volumes in excess of 50,000 Litres and generally do not apply to heating oils or smaller fuel tank installations. There are advantages to the underground fuel tanks including smaller temperature fluctuations resulting in less moisture content and less product loss due to lower venting requirements. In addition, the tanks are not susceptible to fire exposures from buildings on the same property. The major drawback is that it can be difficult to detect leaks.

Indoor fuel tank installations are permitted for heating equipment, generators and in some protected industrial occupancies. The approved indoor storage of tanks is based upon the occupancy, the type and the volume of the fuel being stored, the tank design, fire rated areas, proper mechanical ventilation and sprinkler systems.

Tanks can be single wall construction, double wall, double bottom or have additional containment features. As of July 1, 2010, all new indoor or outdoor tanks must have double walled construction as per B139-09 Installation Code for Oil Burning Equipment. Double walled tanks have higher costs, increased durability and the interstitial space between the two tanks wall acts as a containment feature that will contain more fuel than the volume of the internal tank.

Inspection ports are required on all double walled tanks to monitor the interstitial space.

Epoxy coatings, stainless steel, fiberglass and steel/polyethylene tanks are newer products that are available for improved tank durability.

Recommendations

- All work and inspections on tanks should be completed by a Certified TSSA Contractor.
- Ensure all necessary permits are obtained for new installations.
- Observe and maintain separation distances to property lines, structures and buildings.
- It is recommended that the tank and all components should be checked before, during and after each heating season and at minimum annually by a certified contractor.
- Know the date of your last inspection and keep all documentation regarding the tank.
- All tanks should be installed in locations that prevent mechanical damage. Where this is not possible bollards or barriers should be installed.
- Tanks shall be adequately braced/supported on masonry, cement or steel supports with a solid flat level surface.
- Except for the steel saddles that are less than 300 mm (12") all other supports for the tanks shall have a two hour fire rating.
- Wooded tank stands are prohibited by the National Fire Code of Canada because they can burn, rot, and the moisture contained in wood can lead to tank corrosion.
- Tanks that are installed in areas where flooding is possible should be secured against floating off if its supports or the concrete pad.
- Do not install the tank in a way that debris can collect between a structure and the tank.

- Control vegetation surrounding the tank.
- Ensure all fuel lines, vents and fill lines for the tank are supported and will not be damaged by falling ice, snow or trees.
- Install a cover over the fuel line piping near the ground, so it cannot be stepped on.
- Install flex connections on fuel lines to allow for minor shifting of tank or building.
- Install seismic bracing where deemed required.
- Leak detection systems are recommended for all installations.
- Ensure safety valves are in place on the fuel line to the burner for all heating equipment and adding an additional safety valve at the tank is a good measure to shut off the flow of fuel from the tank in a fire situation.
- Minimize the length of the fuel line where possible. The shorter the distance the less chance of damage from mechanical impact, weather or vandalism.
- Recommend overflow devices, overflow alarms and liquid level alarms are installed for larger volume installations.
- Avoid transferring fuel from a used tank to a new one because it can lead to deterioration due to the presence of water or microorganisms. New tanks are also initially more susceptible to corrosion.

Interior Tanks

- Indoor installations are beneficial for heating oil systems because there is less exposure to the elements - minimizing exterior corrosion. Controlled temperatures help to minimize moisture content and internal corrosion and there is less chance of damage or vandalism to the tank.
- Install the tank at least five feet (5ft) away from all fuel fired equipment and significant heat sources.
- For single walled tanks a measure of containment is recommended, great enough to accept 110% of the rated volume of the tank.

- Close off or seal access to the floor drains and sump pits to stop contamination of the water system.
- Ensure the tank is coated with rust resisting materials, such as paint or epoxy resins.
- Ensure the tank is well supported because they are able to tip easily.

Exterior Tanks

- Monitor water content in fuel as well as sludge and microorganisms because they all lead to internal tank deterioration.
- Heating oils and some fuels expand and contract as they are subjected to temperature fluctuations, which can cause leaks, drips and generally makes the equipment run less efficiently.
- During warmer periods consideration should be given to keeping tanks filled to capacity while still adhering to all codes and standards. This measure will help to reduce the amount of condensation that can form in the tanks. The resulting water content in the tank can lead to internal corrosion.
- Ensure the tank is coated with rust resisting materials, such as paint or epoxy resins.

Fuel Centres and Tanks at Municipal Sites

- Keep the location of the tanks out of the main route of travel.
- Observe and maintain separation distances to property lines, structures and buildings.
- Install bollard protection or concrete barriers.
- Install emergency shutdown controls at the pumps and at a remote location on the site.
- Key pad access control for pumps to minimize theft and track usage.
- Spill absorbent materials should be provided.
- Fire Extinguishers should be provided.