



SOUTH KING FIRE

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UNUSED RESIDENTIAL HEATING OIL STORAGE TANKS

FIRE PREVENTION GUIDELINES

SCOPE AND PURPOSE

To establish requirements for the removal or abandonment of unused residential heating oil underground storage tanks (limited to R-3 Residential Occupancies) within the city limits of Federal Way and Des Moines.

CODE AUTHORITY

International Fire Code.

SPECIAL PROVISIONS

Underground storage tanks of less than 1,100 U.S. gallon capacity, located on a R-3 Residential Occupancy property and used for the storage of home heating oil, that have not been used for a period of one year, shall either be removed and properly disposed of, or abandoned in place.

1. An International Fire Code (IFC) permit is required and shall be applied for by the person or company who will be conducting the removal or abandonment of the underground tank. Please call the Inspection Request line at least two (2) business days before you are going to be removing/filling the tank(s). The paperwork can usually be completed on site. The following information must be submitted when applying for the permit:
 - a. A site plan drawing indicating the property lines and building locations in relation to the tank. Site plan need not be to scale.
 - b. Tank capacity (in gallons).
 - c. Type of fill material to be used, if tank is to be abandoned in place.

NO WORK SHALL BE DONE PRIOR TO THE ISSUANCE OF A PERMIT WITHOUT THE APPROVAL OF THE FIRE MARSHAL'S OFFICE (FMO).

2. To provide general safety precautions:
 - a. Barricade off a minimum twenty (20) foot "safe zone" around the area of work.
 - b. Maintain at least two (2) 20-B:C rated fire extinguishers on site.
 - c. Do not allow the release of any flammable or combustible liquids onto the ground or into a waterway.
 - d. While the tank is being ventilated, flammable vapors flow into the surrounding atmosphere. Ignition sources shall be eliminated from the immediate vicinity.
3. If contamination of the soil or groundwater is detected during the removal or abandonment operation, contact the Washington State Department of Ecology. Remediation of the site, if required, will be under the direction of the Department of Ecology.
4. A site inspection by the FMO is required prior to removal of the tank from the ground.
 - a. When removing liquid from the tank:
 - 1) Excavate down to the top of the tank.
 - 2) Open all valves and allow product lines to drain back into the tank. Use particular care in emptying lines to avoid spilling product into the excavation.
 - 3) All remaining contents of the tank shall be pumped out and properly disposed of.
 - 4) The tank shall be triple rinsed. Documentation certifying the triple rinse of the tank shall be provided to the FMO either prior to, or at the time of site inspection.

- 5) Disconnect all product lines. Leave the vent line in place or provide a temporary vent if necessary.
 - 6) Leave fill riser and drop tube in place and cap or plug all other tank openings.
- b. The tank must be rendered vapor free before removal as follows:
- 1) Carbon dioxide shall be used to render the vapors inert. Use a carbon dioxide cylinder equipped with a pressure regulator.
 - 2) Remove the fill riser and drop tube and plug opening. Remove a plug from the opposite end of the tank from the vent pipe.
 - 3) Introduce carbon dioxide into the tank through this opening at a rate of forty (40) pounds per square inch (psi). The carbon dioxide hose should extend to the bottom of the storage tank.
 - 4) Vapor concentrations shall be checked periodically with a combustible gas meter. Readings of twenty (20) % or less of LEL (lower explosive limit) must be obtained in the tank and the vent riser before the tank is considered to be gas free.
 - 5) After the tank is gas free, distribute one-point-five (1.5) pounds of dry ice per one-hundred (100) gallons tank capacity throughout the length of the tank.
- c. When removing the tank from the ground:
- 1) Plug and cap all openings. Use screwed (boiler) plugs to plug any corrosion leak holes.
 - 2) Make sure that one plug in the tank has a one-half (1/2) inch size vent hole open to atmosphere to prevent pressure buildup.
 - 3) Remove the tank from the site as promptly as possible after purging operations have been completed.
 - 4) Exercise caution during the loading, securing on the truck and unloading at the disposal site. When transporting the tank, make sure the plug having the one-half (1/2) inch vent hole is positioned at the uppermost part of the tank.
 - 5) If the tank must remain on site overnight, secure in place and barricade around tank. Vapor may be released from scale and sediment in the tank and vapor testing must be done to insure a gas free vessel. If testing indicates vapors are present, repeat vapor removal operations.
5. A site inspection by FMO is required at the time of tank filling and sealing of openings. The following conditions are required for abandonment in place.
- a. Open all valves and allow product lines to drain back into the tank.
 - b. All remaining contents of the tank shall be pumped out and properly disposed of.
 - c. The tank shall be triple rinsed. Documentation certifying the triple rinse of the tank shall be provided FMO either prior to, or at the time of site inspection.
 - d. The tank shall be completely filled with cement-sand slurry or other filler material approved by FMO. An acceptable cement-sand slurry mix consists of the following:
 - 1) One (1) yard sand.
 - 2) One-point-five (1.5) sacks Portland type cement.
 - 3) Forty-seven (47) gallons water.
 - 4) Twenty-four (24) ounces air-entraining agent (Darex, Master Builders)
 - 5) Eighteen (18) ounces water wetting agent (WR Grace, Possith 300-N, Master Builders)

e. All tank fill openings vent lines shall be sealed with a filler material and cut six (6) inches below grade if not covered by cement or asphalt.

f. Sand or gravel shall not be used as a filler material.

Exception: When the entire length of the top of the tank is excavated and the entire top of the tank is cut open and removed, sand or gravel may be used as a fill material.

6. In lieu of filling with a cement-sand slurry mix, tanks may be filled with an approved foam agent. Fill the tank with foam until it comes out the tank vent-pipe opening. Type of foam used must be approved by FMO.