Fire Prevention Division

Guideline No. 6106

April 16, 1996

UNUSED RESIDENTIAL HEATING OIL STORAGE TANKS

A. 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) in South King Fire & Rescue (SKF&R) within the city limits of Federal Way and Des Moines.

B. Code Authority

International Fire Code section 104.

C. 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. Permit Required

   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.

   The following information shall be submitted when applying for the IFC 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.

      The permit will be issued by SKF&R, located at 31617 1 Avenue S., Federal Way, WA 98003. The Fire Prevention Division may be reached at 253-946-7318 (inspection request line). If you call this number at least two business days before you are going to be removing/filling the tank(s), the paperwork can usually be completed on site. The cost of the permit is $50.00.

      NO WORK SHALL BE DONE PRIOR TO THE ISSUANCE OF A PERMIT, WITHOUT THE APPROVAL OF SOUTH KING FIRE & RESCUE, FIRE PREVENTION DIVISION.

2. General Safety Precautions

   a. Barricade off a minimum twenty (20') foot "safe zone" around the area of work.

   b. Maintain at least two 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. Contamination of Soil and/or Groundwater

   If contamination of the soil or groundwater is detected during the removal or abandonment operation, contact the Washington State Department of Ecology at 425-649-7000. Remediation of the site, if

required, will be under the direction of the Department of Ecology.

4. Conditions for Removal of Underground Tanks

   A site inspection by South King Fire & Rescue, Fire Prevention Division is required ***prior*** to removal of the tank from the ground.

   a. Liquid Removal:

      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 Fire Prevention Division 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. Vapor Removal: The tank must be rendered vapor free before removal.

      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 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 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 1.5 pounds of dry ice per 100 gallons tank capacity throughout the length of the tank.

   c. Removal of Tank from 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 inch (1/2”) 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”) 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. Conditions for Abandonment in Place

A site inspection by the South King Fire & Rescue, Fire Prevention Division is required at the time of tank filling and sealing of openings.

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 to the Fire Prevention Division 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 the Fire Marshal. An acceptable cement-sand slurry mix consists of the following:

   1) 1 yard sand

   2) 1.5 sacks Portland type cement

   3) 47 gallons water

   4) 24 ounces air-entraining agent (Darex, Master Builders)

   5) 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

G. Foam Filling of Tanks

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 the Fire Marshal.