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Assessing Contamination at Residential Underground Heating Oil Tank Closures

This policy is intended to provide guidance on how to fulfill the requirement to measure for the presence of contamination at the time of a closure of a residential underground heating oil tank, pursuant to the Massachusetts Fire Prevention Regulations, 527 CMR 9.00.

Assistant Commissioner
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Date

Deputy State Fire Marshall
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Date

DEP Policy #WSC- -98
August , 1998

Draft (7/98) For interoffice For Use in Intra-Agency Policy Deliberations

When any underground storage tank is permanently closed, state law requires that an assessment be performed to look for possible contamination caused by leaks in the tank or associated piping. Untreated contamination in soil or groundwater may become worse with time. Discovering the contamination and initiating cleanup actions early will improve the chances of limiting the impact to the environment and avoiding increased closure costs, decreased property value, and possible third party damage claims against the homeowner.

This document provides a step by step procedure for planning and executing a successful residential tank closure assessment, as well as performing other required steps. The guide is intended for tank removal contractors, fire department officials, and environmental professionals. The procedures in this guide specifically pertain to the closing of residential tanks containing heating oil. Procedures for tanks containing gasoline, non-residential fuel oil, and other petroleum products are provided in the *Underground Storage Tank Closure Assessment Manual, DEP Policy #WSC-402-96.*

Regulators of Heating Oil Tanks

The Department of Fire Services (DFS) regulates the installation, maintenance, and removal of tanks under M.G.L., c. 148 and the Board of Fire Prevention Regulations [527 CMR 9.00]. Among other requirements, these regulations specifically require that **the presence of contamination be measured for within 24 hours of a tank being removed or abandoned in place** [527 CMR 9.07(K)(4) and 527 CMR 9.07(J)(1)].

If the tank is found to be leaking or contamination is discovered during the tank removal, further assessment work may be necessary. These actions are regulated by the Department of Environmental Protection (DEP) under M.G.L. c. 21E and the Massachusetts Contingency Plan (MCP) [310 CMR 40.0000]. Notifications, investigations, and cleanup actions taken to address oil that has contaminated the environment must be done in accordance with these regulations.

Responsibilities at a Tank Closure

Different parties are responsible for different aspects of a residential tank closure as outlined below. Understanding the extent of each party's responsibilities is beneficial in planning a successful tank closure.

Local Fire Department

The Department of Fire Services relies on local fire departments to ensure that the tank removal is performed in accordance with the regulations. Specifically, fire departments determine whether it is safe to remove and transport the tank, provide the necessary

permits, and respond to emergencies involving public safety hazards. They can also provide information about additional requirements imposed by local ordinances.

Department of Environmental Protection

If contamination is found during the tank closure, DEP may need to be notified. If you are uncertain whether a specific situation requires notification or if you have questions about any procedures in this guide, DEP can provide advice on the next steps.

Homeowner

The homeowner is responsible for financing the tank closure and any subsequent cleanup actions that may be necessary. The homeowner must also comply with all applicable regulations throughout the closure process. Since many owners of residential tanks are not familiar with the requirements for tank removals, tank removal contractors and local fire officials can play an important role in advising the owner of these responsibilities prior to the removal.

Tank Removal Contractor

The tank removal contractor is hired by the homeowner to perform the tank closure. Services will usually include removing and disposing of the tank, associated piping and its contents, excavating and stockpiling soil, replacing the tank and/or backfilling the excavation, and documenting all observations made and actions taken during the closure for the homeowner's tank closure records.

Contractors may also perform the closure assessment, as described in this guide. If the contractor is not familiar with these procedures, an environmental professional should be hired to perform these actions.

Licensed Site Professionals

If contamination is found during the tank closure, the homeowner may need to hire a Licensed Site Professional (LSP). LSPs are "hazardous waste cleanup professionals" licensed by the state to oversee any investigations or cleanup work that may be required to address contamination. A list of LSPs is available from the Board that licenses LSPs at (617) 292-5794.

Abandoning a Tank in Place

If the homeowner requests that the tank be left in place (or "closed in place"), **approval must be obtained from the local fire department**. If approval is received, the following steps are required by 527 CMR 9.07(J)(1):

- Remove any remaining oil from the tank under the direction of the fire department.
- Measure for the presence of contamination within 24 hours of the tank closure.
- Clean the tank and fill it with an inert material which is approved for this purpose (such as concrete or a slurry mix).

In addition to these requirements, the fill and vent pipes must be removed if the homeowner is converting to another heating source, as required by 527 CMR 4.00, the Oil Burner Code.

PLEASE NOTE: Although state law does not prohibit the closure of residential underground oil tanks "in place", there may be local by-laws or ordinances affecting the approval. In addition, local fire departments can establish additional criteria for this approval to protect public safety. In many communities, approval will only be given if the removal of the tank would jeopardize the structure of a building.

Documenting Assessment Findings

All observations made and actions taken during the tank closure assessment should be thoroughly documented by the party who is performing the tank closure. The homeowner may need this documentation to demonstrate to the local fire department, DEP, or a potential purchaser of the property that the closure was performed properly and that any contamination was cleaned up.

Documentation may include:

- Information obtained prior to closure, such as relevant tank history;
- A sketch of the property indicating the location of the tank, associated piping, and any sample collection locations (if applicable);
- Observations made during the closure about the condition of the tank, piping, soil, and groundwater (photographs may serve as additional documentation);
- Description of sampling and/or field screening procedures, if performed;
- Results of laboratory analyses, if samples are collected (reports from lab, chain of custody);
- Description of how contaminated soil is managed, including shipping records for removing soil from the property;
- Shipping records documenting proper recycling or disposal of heating oil and/or residues *(see Appendix C for procedures for managing tank residues)*; and
- Copy of Form FP292, the permit for removing tank obtained from local fire department.

Tank Closure and Closure Assessment Steps

Figure 1: Residential Heating Oil Tank Removal Assessment Steps

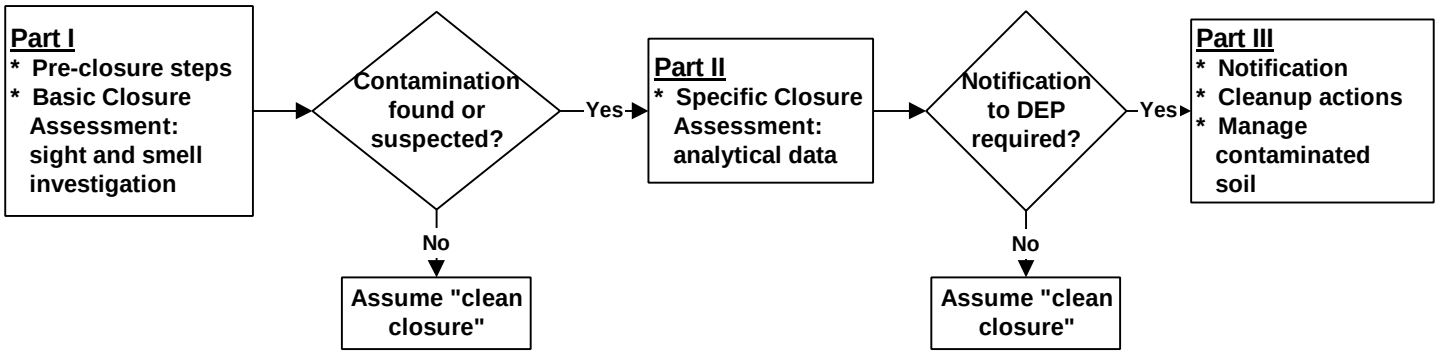
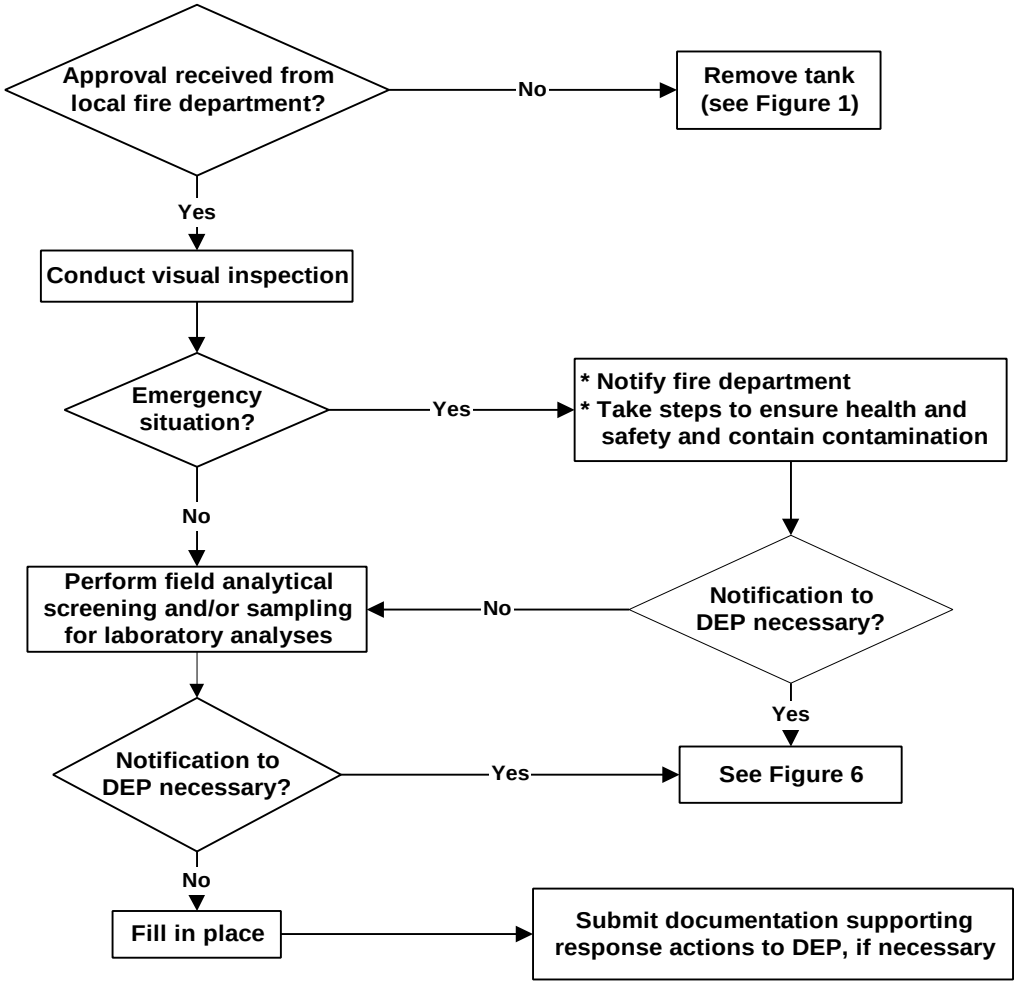


Figure 2: Residential Heating Oil Tank Closure-In-Place Steps



The process described in this section includes the required and recommended procedures for performing a tank closure. Activities that are **required** by state regulations (527 CMR 9.00 and/or 310 CMR 40.0000) are noted. There are three parts to the closure assessment, as described below *(see also Figure 1 on page 4).*

Part I - Pre-Closure and Basic Closure Assessment: The procedures in Part I should be performed at all tank closures and include the following:

- Steps to be taken in planning the tank closure; and
- The Basic Closure Assessment, which involves a "sight and smell" investigation. No specific training is required to perform this assessment.

If no contamination is found or suspected after completing the steps in Part I, a "clean closure" can be assumed and the regulatory requirement to measure for the presence of contamination has been fulfilled.

PLEASE NOTE: Although analytical data is not required as part of the basic closure assessment, it provides indisputable proof that the closure was "clean". The homeowner may wish to have this level of documentation as part of his/her records, especially if there is a possibility that the property will be sold in the future. Laboratory analysis of one composite sample (procedures described in Part II) is generally adequate documentation of a "clean closure".

Part II - Specific Closure Assessment and Notification Requirements: If the results of Part I indicate contamination is or may be present, additional steps are necessary to confirm or refute these findings. The Specific Closure Assessment involves collecting data by performing field screening and/or having samples analyzed by a laboratory. The steps in Part II may be performed by the tank removal contractor if he or she is knowledgeable about these procedures; otherwise, an environmental professional will need to be present.

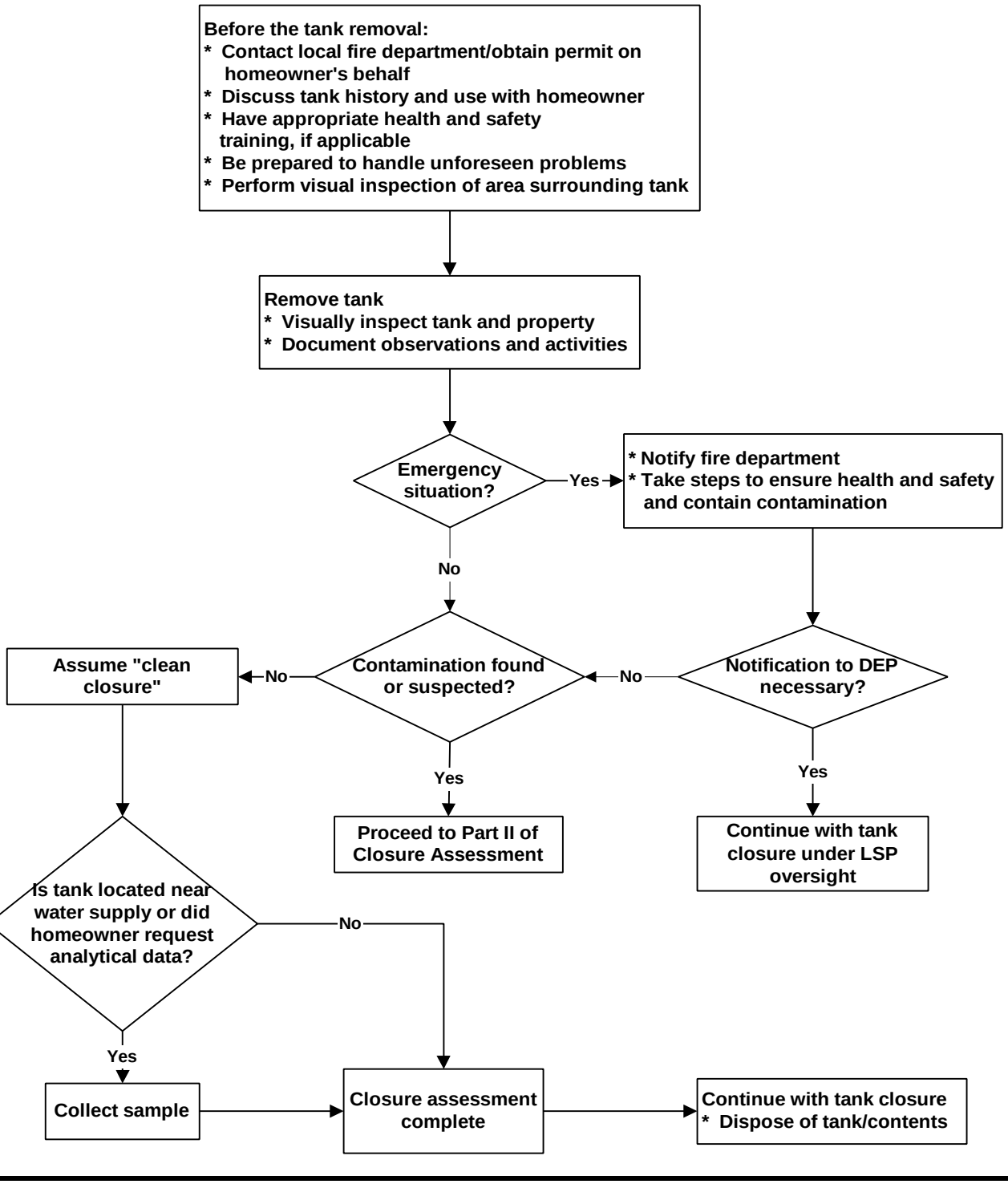
Part III - Reporting and Managing Contamination: Part III steps are required by DEP if Part II indicates that contamination exceeds a reporting threshold.

Remember to clearly and thoroughly document all assessment activities and observations, as described on page 3.

Part I:

Pre-Closure and Basic Closure Assessment

Figure 3: Pre-Closure and Basic Closure Assessment Steps for Heating Oil Tank Removal



Before the Closure

(1) **(Required)** Prior to closing a tank, the local fire department must be notified. The tank removal contractor may make this notification on behalf of the homeowner.

(2) **(Required)** Ask the local fire department about any additional requirements that may be specific to the community in which the tank is located. If the homeowner wishes to leave the tank in ground, inquire about restrictions.

(3) **(Required)** Obtain, the permit for the tank removal (Form # FP-292), from the local fire department [M.G.L. c. 148, Section 38A].

(4) Ask the homeowner about any evidence or history of spills or leaks from tank or piping such as overfills, odors, or unexplained increases in oil consumption. The age and size of tank and the fill material around the tank are also useful pieces of information. The homeowner's oil dealer may also be able to provide this information.

(5) Ensure that all personnel performing the tank removal are trained for the following specific tasks, if necessary:

a) **Confined Space Entry:** An Occupational Safety and Health Administration (OSHA) certification is required for entering an excavation or tank.

b) **Emergency Response:** If contamination is found, immediate actions (such as containing or recovering pure oil) will need to be taken to protect health, safety, and the environment. An OSHA certification is required for managing oil and/or hazardous materials. The local fire department will direct responses to any emergency situation and other public safety conditions.

(6) Establish procedures for the following:

- Cleaning and transporting tank and piping;
- Disposing of contents in tank *(see Appendix C on page 24)*;
- Notifying fire department/DEP, limiting public access, and other steps that may be necessary if contamination is found;
- Making arrangements with a cleanup contractor in case contamination is found;
- Contacting a laboratory prior to the sampling date, if laboratory work is to be done; and
- Managing soil (stockpiling, backfilling, disposal and transporting).

Basic Closure Assessment

(7) Visually inspect the area where the tank is located throughout the closure process. Check the entire area throughout the closure, paying particular attention to the following:

A. Before the tank and piping is uncovered:

- stained soil around the fill pipe
- petroleum odors

⇒ *Before excavating the tank, ensure that its contents has been completely removed.*

B. While the tank and its piping are being uncovered:

- signs of corrosion, breakage, or loose fittings in the system connections, including the piping and fittings
- signs of contamination in the area where the feedline is located
- stained soil attached to tank

⇒ *When the tank is being removed, place containers or sorbent pads under pipe openings or at points where piping is cut to catch drips of any oil remaining in the system.*

⇒ *Throughout the tank removal, separate stained soils from clean soils, and store separately on plastic liners that are at least 6 mil. thick (see Part III for soil management procedures).*

C. After the tank and piping is removed:

- corrosion or stains on the tank or piping surface
- stained or oily soil in piping trenches (most leaks actually occur in piping and not the tank)
- stained or saturated soil in the excavation
- sheens or floating oil on any water in the excavation

⇒ *If the tank is temporarily stored on the ground surface, place it on a plastic liner that is at least 6 mil. thick.*

(8) Determine if further assessment is appropriate based on results of the Basic Closure Assessment:

A. If contamination is not found or suspected:

1. **Assume that the closure is "clean."**

2. Collect a soil sample(s) to be analyzed at a laboratory *(see Part II for procedures)* if:

   - The local fire department requires analytical data be obtained;
   - The tank is located near a private well, public water supply, wetland, or surface water; or
   - The homeowner requests analytical data for his/her records to confirm that no contamination was present.

B. If contamination is found or suspected:

1. **Notify the fire department.**

2. **Ensure the safety of workers and surrounding populations under the direction of the fire department.**

3. **If possible, pump and/or clean out any oil remaining in the tank and collect oil that has leaked using sorbent pads for sheens/thin layers of oil or vacuum trucks for thick layers of oil.**

4. **Determine if notification to DEP is required.** If any of the following conditions were discovered during the visual inspection, inform the homeowner of their obligation to notify DEP (this notification may also be made by the tank removal contractor or the fire department on behalf of the homeowner):

   a) **More than 10 gallons of oil is spilled within 24 hours: notify DEP within 2 hours.**
   b) **Pure oil with a thickness of 1/2" or more on groundwater in the excavation: notify DEP within 72 hours.**
   c) **Pure oil with a thickness between 1/8"-1/2" on groundwater in the excavation: notify DEP within 120 days.**

   ⇒ *If uncertain about whether conditions require notification to DEP, check with DEP.*

If notification is required at this point, the homeowner will need to hire a Licensed Site Professional to oversee additional assessment and any cleanup actions.

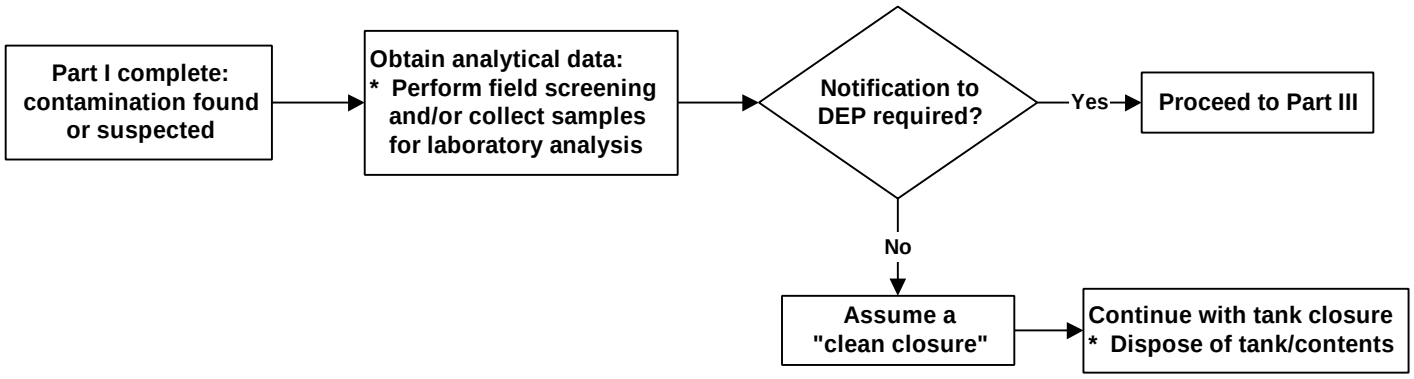
5. **If notification to DEP is not required, proceed to Part II.**

Part II:

Specific Closure Assessment and Notification Requirements

If Part I indicated that contamination may be present, analytical data is necessary to determine if cleanup actions are necessary. Analytical data can be obtained by performing field screening *(see Step 1)*, sending samples to a laboratory *(see Step 5)*, or both.

Figure 4: Specific Closure Assessment



Field Analytical Screening

(1) Perform field analytical screening to:

A. Identify areas that are contaminated;
B. Separate contaminated soils from clean soils; and/or
C. Select locations for collecting samples for laboratory analysis.

The following procedures assume the use of the *Jar Headspace Analytical Screening Method*, described in Appendix A on page 19. Although not discussed in this document, there are several other acceptable petroleum screening methods available.

PLEASE NOTE: Waving the probe of the instrument over the excavation is useful for roughly identifying contaminated areas, but it cannot substitute for a headspace reading for the purposes of measuring contamination levels and separating soils.

Sampling Procedures

(2) Collect soil samples following these procedures:

A. Use soil in backhoe bucket. **For safety reasons, do not enter the excavation to collect samples.**

B. Scrape away the top 2-3 inches of exposed soil in the backhoe bucket and collect the sample from the newly exposed soil.

C. For closures-in-place, collect soil samples from soil borings using a Split Spoon or Thin Walled (Shelby) sampler.

D. Measurements should be performed as soon as possible after the sample is collected to ensure an accurate reading.

Sampling Locations

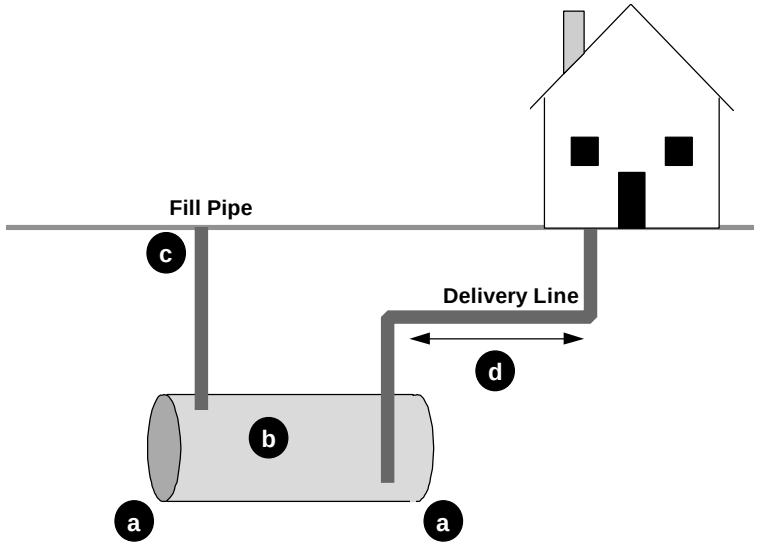
(3) Collect samples from the locations described in one of the following procedures: Procedure A for tank removals and Procedure B for closures in place. (These procedures may also be used to collect samples for laboratory analysis, as described in Step 6.)

Procedure A: Sampling locations when the tank is removed

1. Collect soil from the following locations *(see Figure 5, below)*:

   a) Under each end of the tank;
   b) Each sidewall of the excavation;
   c) Area surrounding the fill pipe; and
   a) Beneath piping and near elbows and joints, if possible.

Figure 5: Recommended Sampling Locations



2. If groundwater is encountered in the excavation, collect the soil sample(s) at the water table at the ends of each tank.

3. Take a sample at a location where contamination is not likely to be present (away from the tank). The measurement of this sample will provide the concentrations that would exist in the area where the tank is located if the tank and associated contamination were not present.

Procedure B: Sampling locations when the tank is abandoned-in-place

1. Install a minimum of three soil borings per tank (at each end of the tank and on one side) and collect and screen soil samples from each boring below the tank bottom. If practical, test pits can be used to obtain a groundwater sample.

   Alternately, a sample from beneath the tank may be obtained by cutting through top of the tank, cleaning the inside of the tank, and cutting through the tank bottom. **Please Note: Make sure that the tank is adequately cleaned to prevent any remaining contents from escaping to the surrounding soil.**

2. Install additional borings to collect and screen soil from along piping runs.

3. If tank is located beneath a building, install the borings downgradient from the tank, but as close it as possible. Borings should be located at each end of the tank and on one side, whenever possible. Collect and screen soil samples at or below the tank bottom.

(4) Determine the next steps based on the results of field screening and visual inspection:

A. **(Required) If headspace readings of soil or groundwater samples indicate total organic vapors of 100 parts per million by volume (ppmv) or more:**

   1. **Notify the local fire department and DEP.** This applies to screening performed during closure on samples taken <u>at least two feet below</u> the ground surface. Notification must be made to DEP within **72 hours.**

   2. A Licensed Site Professional must be hired by the homeowner to oversee activities to address contamination.

B. **If headspace readings of soil or groundwater samples indicate total organic vapors less than 100 ppmv but greater than readings taken away from the area where tank is located:**

   Follow Step 5 to collect sample(s) for laboratory analysis from the locations of the highest headspace readings to determine if concentrations at those locations exceed an applicable MCP Reportable Concentration *(see Table 3).*

C. **If headspace readings do not indicate the presence of volatile compounds or if the readings at the screening locations are do not exceed readings taken away from the area where tank is located, it can be assumed that the closure is "clean."**

Laboratory Analysis

(5) Collect at least one sample to be submitted for laboratory analysis from location(s) described in Step 3. If field screening was performed, collect samples from locations of highest readings.

⇒ *Soils that appear to have similar levels of contamination (based on screening results, appearance or odors) may be combined into one sample.*

A. Determine the laboratory method to be used to analyze the sample(s). Table 1 contains methods that are commonly used to identify heating oil constituents. *Analysis for volatile organic compounds in groundwater is recommended when the tank is located near a water supply. Analysis for volatile organic compounds in soil is recommended for fresh oil spills.*

Table 1: Methods for Analyzing Soil and Water for Heating Oil

Analytical Method	Analytes
Method for Determination of EPH[1]	**Extractable Petroleum Hydrocarbons**
1664 or 418.1	**Total Petroleum Hydrocarbons**
8100 or 8270	**Polynuclear Aromatic Hydrocarbons**
Method for Determination of VPH[1]	**Volatile Petroleum Hydrocarbons**
8020, 8240, or 8260	**Volatile Organic Compounds (BTEX, MBTE)**

For more information on laboratory analytical methods and associated costs, contact the laboratory directly. DEP can also provide guidance on the capabilities and limitations of the various methods *(see page 22 for phone numbers)*.

B. **Contact a laboratory <u>before</u> the samples are collected to:**

1. Indicate the analyses to be performed, sampling date, quantity of samples, delivery date, etc.;

[1] DEP has designed two analytical methods to identify the presence of petroleum constituents to support the toxicological approach of evaluating human health hazards that may result from exposure to such compounds. The Method for Determination of Extractable Petroleum Hydrocarbons (EPH) is suitable for all heating oil spills. The Method for Determination of Volatile Petroleum Hydrocarbons (VPH) is suitable when analyzing for volatile organic compounds.

2. Obtain specific laboratory requirements for quantity of sample required, sampling containers, necessary preservatives, special handling requirements, and other specifications;
3. Ensure that the lab can conduct the needed analyses in the required timeframe; and
4. Arrange to obtain materials necessary to perform sampling, such as sample jars, labels, and Chain of Custody form.

C. Transport samples in the following manner:

1. Label all samples immediately: record date, sample number, and location from which sample was obtained;
2. Tightly seal samples, store on ice, and transport to laboratory as soon as possible and within time frame specified by the laboratory; and
3. Include a Chain of Custody form with each sample shipment to track the handling of samples from collection to the laboratory. The laboratory will usually provide this form.

Notification to DEP

(6) See Tables 2 and 3 below to determine if a notification to DEP is required, and the timeframe in which the notification must be made.

Table 2: Summary of DEP Reportable Conditions

Condition	Notify DEP within
Spill of more than 10 gallons of oil in 24 hours	**2 hours**
Pure oil with a thickness of greater than or equal to ½" on groundwater	**72 hours**
Concentrations greater than or equal to Reportable Concentrations (see Table 3) in groundwater within 400' of a public water supply or 500' of a private well	**72 hours**
Headspace reading of more than 100 ppmv	**72 hours**
Pure oil with a thickness of less than ½" but greater than 1/8" on groundwater	**120 days**
Concentrations in soil or groundwater greater than or equal to Reportable Concentrations (see Table 3)	**120 days**

Table 3: DEP Reportable Concentrations for Selected Heating Oil Constituents

Analyte	Reportable Concentrations		
	Soil (mg/kg)	Groundwater (mg/L)[2]	
	(RCS-1)	RCGW-1	RCGW-2
Total Petroleum Hydrocarbons (TPH)	200	0.2	1
Extractable Petroleum Hydrocarbons (EPH)			
C_9 through C_{18} Aliphatic Hydrocarbons	1,000	1	1
C_{19} through C_{36} Aliphatic Hydrocarbons	2,500	5	20
C_{11} through C_{22} Aromatic Hydrocarbons	200	0.2	30
Volatile Petroleum Hydrocarbons			
C_5 through C_8 Aliphatic Hydrocarbons	100	0.4	1
C_9 through C_{12} Aliphatic Hydrocarbons	1,000	1	1
C_9 through C_{10} Aromatic Hydrocarbons	100	0.2	4
Benzene	10	0.005	2
Toluene	90	1	6
Ethylbenzene	80	0.7	4
Xylenes (total)	500	6	6

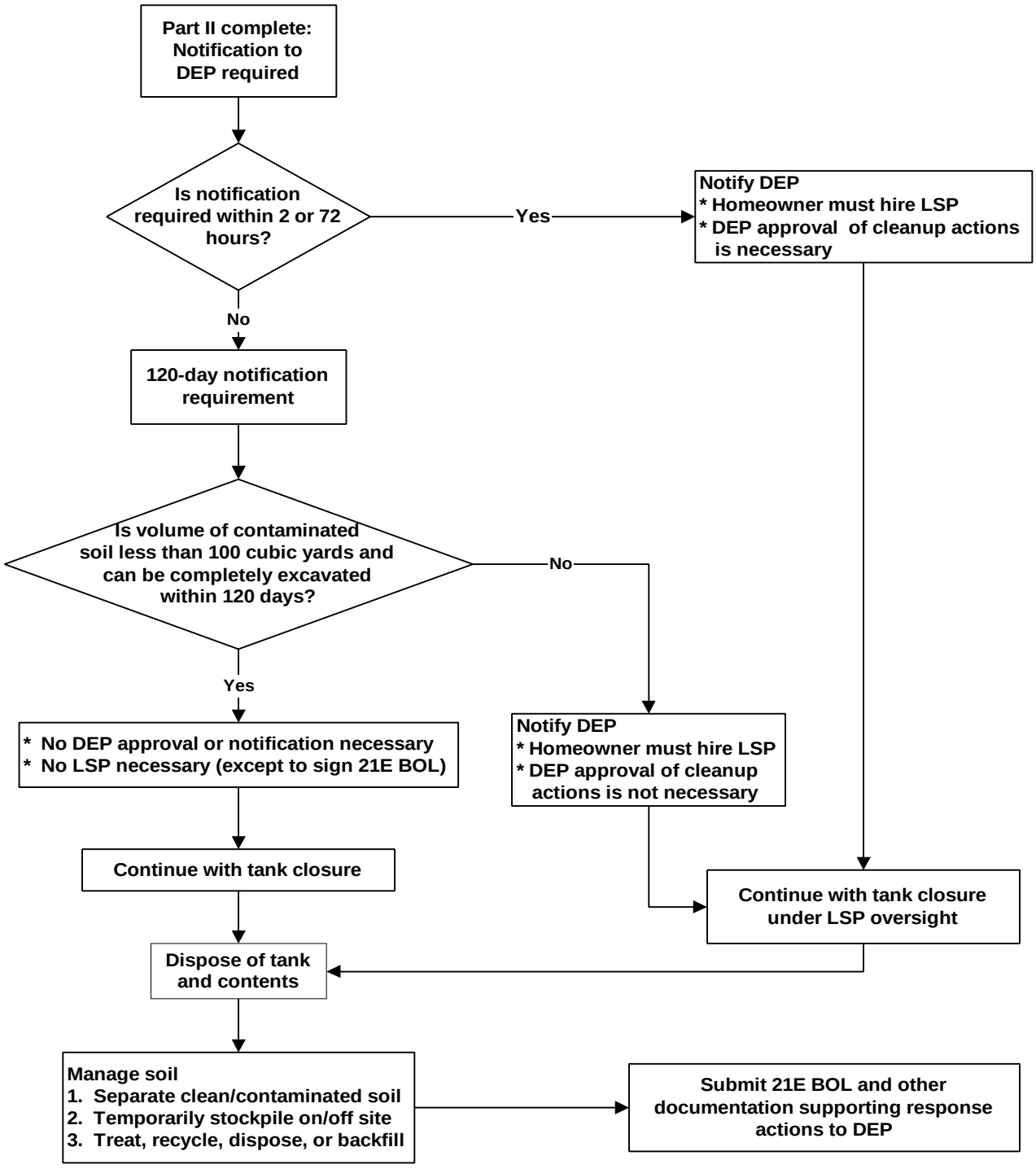
(7) If notification to DEP is required, proceed to Part III. If notification is not required, assume that the closure is "clean".

[2] Use RCGW-1 standards for groundwater samples obtained within a Current Drinking Water Source Area or a Potential Drinking Water Source Area. Use RCGW-2 for all other groundwater samples.

Part III

Reporting and Managing Contamination

Figure 6: Actions to Take if Notification to DEP is Required



(1) **(Required)** If any of the conditions listed in Table 2 or Table 3 are discovered, inform the homeowner immediately and advise him/her of their obligation to notify DEP within the appropriate timeframe (the tank removal contractor or the local fire department may make this notification on behalf of the homeowner). If uncertain about whether a notification requirement is applicable, contact DEP for clarification *(see telephone numbers on page 22)*.

(2) When reporting contamination, the caller should provide as much of the following information as possible:

A. Address where contamination is located;
B. Caller's name and telephone number;
C. Size of tanks removed or found to be leaking;
D. Name of contractor removing tanks, hazardous waste contractor pumping out tanks, and environmental consultant/LSP performing assessment, if any;
E. Actions taken so far; and
F. Any nearby areas of concern, such as public or private drinking water supplies, surface waters, or wetlands.

(3) Proceed with the tank closure. Depending on notification requirement, follow either A or B, below *(also see Figure 6 on page 16)*.

A. **(Required) For 2- or 72-hour notification requirements to DEP:** The homeowner must hire an LSP after DEP is notified. The LSP will oversee all actions taken to address contamination. Depending on the severity of the contamination, the LSP also may direct activities related to the completion of the tank closure.

B. **For 120-day notification requirements to DEP:** The actions taken to address these conditions will depend on the specific circumstances.

1. **If contamination has affected no more than 100 cubic yards of soil and the soil can be completely excavated within 120 days**, notification to DEP can be avoided if a "Limited Removal Action" is performed in accordance with 310 CMR 40.0318. Under a Limited Removal Action, it is possible to stockpile the contaminated soil without LSP oversight or DEP approval. In addition, if a Hazardous Waste Manifest is used instead of a 21E Bill of Lading to transport soil, an LSP certification is not required (*see Part III for soil transporting procedures).*

2. **If 120-day reportable condition is not limited to contaminated soil (e.g., pure oil or contaminated groundwater has been found), the quantity of contaminated soil exceed 100 cubic yards, or the soil can not be removed within 120 days,** DEP must be notified and an LSP must be hired prior to work being done to address contamination.

Management of Contaminated Soil and/or Groundwater

(4) (Required) Manage contaminated soil.

A. **Do <u>not</u> dig up large volumes of contaminated soil if the homeowner is not prepared to manage it within 120 days. The costs of managing large volumes of soil can be substantial and should be taken into consideration before excavating.**

B. **Temporarily store contaminated soil at the same property where excavation took place, at another property owned by the same owner, or at a facility permitted to store such materials.** Store soil on plastic liners that are at least 6 mil. thick. Completely and securely cover with the same material.

C. **Do <u>not</u> mix clean soil with contaminated soil.** The level of contamination and quantity of contaminated soil has a direct bearing on the options and associated costs of managing the soil. Segregate soils into three soil stockpiles:

1. Soil presumed to be clean;
2. Soil believed to be contaminated, but not at high levels; and
3. Soil observed to contain significant levels of contamination.

Backfilling

D. **Contaminated soil can be backfilled into an excavation in certain situations, but always consider long term cleanup goals.** Specifically, the following should be kept in mind:

1. Contaminated soil containing high levels of oil and/or hazardous material should not be backfilled into areas with lower levels of contamination;

2. Contaminated soil should be backfilled as close as reasonably possible to their point of origin; and

3. If public safety issues warrant backfilling the excavation as quickly as possible <u>and</u> the extent of the contamination or necessary cleanup actions have not been determined, a liner should be placed in excavation before backfilling.

Transporting Documentation

E. Transport contaminated soil off-site within 120 days of initial excavation using the appropriate documentation:

1. A **Massachusetts Hazardous Waste Manifest** may be used to transport contaminated soils. An LSP (or DEP) certification is not required. However, soils transported using the Hazardous Waste Manifest are subject to transporter fee and must be shipped by a licensed hazardous waste transporter **within 90 days of initial excavation**. The Massachusetts Hazardous Waste Manifest **must** be used if the contaminated soil is classified as a Hazardous Waste.

2. A **21E Bill of Lading** is required when transporting soils with contamination levels above applicable MCP Reportable Concentrations, unless they are shipped under a Hazardous Waste Manifest. A 21E Bill of Lading requires a signature of an LSP, except when cleanup is being supervised by DEP and DEP signs the Bill Of Lading.

3. A **Material Shipping Record** may be used only for off-site transport of contaminated soil with concentrations below all applicable MCP Reportable Concentrations. The soil may not be disposed of or reused at locations where:

   a) The applicable notification thresholds are less than the concentration of oil in the soil being disposed of or reused; or
   b) The existing concentrations of oil at the receiving site are significantly lower than the levels of oil present in the soil being reused or disposed.

4. **No documentation** is necessary if the conditions in #3 above are met and the receiving location does not request transporting documentation.

(5) **(Required)** Manage contaminated groundwater. An LSP must be hired to oversee the management of contaminated groundwater **except** for the following situations:

A. When groundwater is determined to contain levels of oil and/or hazardous material below applicable MCP notification thresholds and is discharged to the ground within 100 feet of the point of withdrawal;

B. When contaminated groundwater is pumped to a temporary on-site storage container, or into a “vacuum” truck operated by a licensed Massachusetts hazardous waste transporter if approved by DEP, with ultimate disposal at an approved off-site location; or

C. When parties performing the tank removal choose to work “in the wet” and do not remove groundwater from the tank excavation.

An LSP is required when contaminated groundwater (above notification thresholds) is discharged to a sewer system, surface water, or returned to the ground surface or subsurface. These discharges must be performed in accordance with 310 CMR 40.0040 (portion of MCP related to “remedial discharges”). There are significant penalties for

discharging contaminated water to a catch basin, surface water body, sewer, or onto or into the ground when such a discharge is not performed in compliance with 310 CMR 40.0000, and 314 CMR 3.00, 5.00 and 7.00.

Appendix A:

Jar Headspace Analytical Screening Procedures

The following is the recommended procedure for conducting analytical screening of contaminated soil or groundwater using a portable Photoionization Detector (PID) or Flame Ionization Detector (FID):

(1) Soil or "mason" type jars with a volume of 16 oz. (approximately 500 ml) are preferred. Jars with a volume of less than 8 oz. (approximately 250 ml) should not be used.

(2) Half-fill two clean glass jars with the sample to be analyzed. Quickly cover each open top with one or two sheets of clean aluminum foil. Replace screw caps and tightly seal the jars.

(3) Vigorously shake jars for 15 seconds. Allow headspace to develop for at least 10 minutes. When temperatures are below 32 F, headspace development should be done in a heated vehicle or building. Vigorously shake jars again for 15 seconds.

(4) Remove screw lid and expose the foil. Quickly puncture the foil with instrument sampling probe, to a point about one-half of the headspace depth. Be careful that the probe does not pick up water droplets or soil particles.

(5) Record the highest meter response as the jar headspace concentration. Maximum response should occur between 2 and 5 seconds after inserting the probe through the foil and into the jar. Erratic meter response may occur when organic vapor concentrations are high or when excess moisture is present. These readings should not be used.

(6) Compare the headspace screening data of the two jar samples. Generally, values should be within 20% of each other.

(7) PID and FID field instruments should be operated and calibrated to yield "total organic vapors" in ppm (v/v) as benzene. PID instruments must be operated with a 10.0 +/- eV lamp source. Operation, maintenance, and calibration should be performed in accordance with the manufacturer's specifications. For jar headspace analysis, instrument calibration should be checked and adjusted every 10 analyses (or each time the instrument is used, if less than 10 samples are analyzed).

(8) Instrumentation with digital (LED/LCD) displays may not be able to recognize maximum headspace response unless equipped with a "maximum hold" feature or strip-chart recorder.

Appendix B:

Telephone Numbers

Massachusetts Department of Fire Services

UST Compliance Program .....(617) 727-8500

Massachusetts Department of Environmental Protection - general information (see next page for emergency/notification numbers)

Bureau of Waste Site Cleanup

Headquarters, Boston..... (617) 292-5851/5852

Regional Offices:

West, Springfield .....(413) 784-1100
Central, Worcester.....(508) 792-7653
Northeast, Wilmington .....(978) 664-7600
Southeast, Lakeville.....(508) 946-2700

MCP Help Line (to obtain BWSC policies and general information)
Outside MA and 617 area code.....(617) 338-2255
In MA (all other area codes).....1-800-462-0444

Bureau of Waste Prevention

Division of Hazardous Waste, Boston ..... (617) 292-5853/5854

For temporary Hazardous Waste Generator I.D. Number
Outside MA.....(617) 292-5849

Used Oil Hotline.....(617) 556-1022

Bureau of Resource Protection

Division of Water Pollution Control .....(617) 292-5673
Division of Water Supply.....(617) 292-5770
Division of Wetlands and Waterways.....(617) 292-5918

LSP Board (for a list of Licensed Site Professionals) .....(617) 556-1091

Occupational Safety and Health Administration, Regional Office

Technical Support Section.....(617) 565-7164

DEP ER #s

Appendix C:

Disposal of Tank Residues

Disposal of tank residues (tank bottoms) is regulated by DEP's Bureau of Waste Prevention and the Massachusetts Hazardous Waste Regulations [310 CMR 30.000]. To determine how tank residues will be managed, you need to know your status as a generator.

Estimating the amount of hazardous waste per job

Your status as a generator is partly determined by how much hazardous waste is generated. When making this determination, keep the following in mind:

- Home heating oil is not considered hazardous waste, as long as it maintains the characteristics of this type of fuel. Heating oil may be sold or kept by the homeowner.
- If the tank is not in use, it may contain a combination of sludge and liquid (possibly water). This combination may be considered hazardous waste.

Determine your status as a generator

How you are regulated also depends on the rate at which you produce hazardous waste and how much you accumulate before shipping it.

Large Quantity Generator (LQG):

- Produces more than 1,000 kilograms (approximately 265 gallons) of waste oil per month;
- May accumulate any amount, but are limited to 90 days in which they can hold the waste on site;
- Must obtain an EPA Identification Number; and
- Must use a licensed transporter and a manifest when shipping the waste oil.

Small Quantity Generator (SQG):

- Produces less than 1,000 kilograms (approximately 265 gallons) of waste oil per month;
- May accumulate up to 550 gallons in drums or 1,650 gallons in tanks, but must transport accumulated waste at least every 180 days;
- Must use a licensed transporter;
- May use either a manifest or a log for shipments; and
- Must register with DEP as a Hazardous Waste Generator.

Very Small Quantity Generator (VSQG):

- Produces less than 100 kilograms (27 gallons) per month;
- May accumulate up to 165 gallons for an unlimited period of time;
- May transport waste oil to another generator or receiving facility;

- Must register with DEP as a Hazardous Waste Generator; and
- May transport up to 55 gallons per trip in own vehicle to your central business location.

Other information

- You must label the container as Hazardous Waste, including the type of waste and the type of hazard (the type of hazard for waste oil is Toxic and for fuel oil is Ignitable).
- Seal the container tightly and secure it to the vehicle. You should keep a copy of your DEP Registration in your vehicle.
- Keep your shipping papers (manifests) for at least 3 years.

You may obtain an application for the EPA ID or register as a Hazardous Waste Generator by calling DEP at (617) 292-5849.

For more information, call the DEP Hazardous Waste Compliance Line at (617) 292 5898.

Appendix D

List of Acronyms

BOL	Bill of Lading
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
BWSC	Bureau of Waste Site Cleanup
CFR	Federal Register
CGI	Combustible Gas Indicator
CMR	Code of Massachusetts Regulations
DEP	Department of Environmental Protection
DPS	Department of Public Safety
EPH	Extractable Petroleum Hydrocarbons
FID	Flame Ionization Detector
GC	Gas Chromatograph
IR	Infrared Spectrophotometer
IRA	Immediate Response Action
LEL	Lower Explosive Limit
LRA	Limited Removal Action
LSP	Licensed Site Professional
MCP	Massachusetts Contingency Plan
MGL	Massachusetts General Law
NAPL	Nonaqueous Phase Liquid
OSHA	Occupational Safety and Health Administration
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PPM	Parts per Million
PPMV	Parts per Million Volume
RAM	Release Abatement Measure
RAO	Response Action Outcome
PID	Photoionization Detector
RC	Reportable Concentration
RQ	Reportable Quantity
TPH	Total Petroleum Hydrocarbons
21E	M.G.L. Chapter 21E
UST	Underground Storage Tank
VOC	Volatile Organic Compound
VPH	Volatile Petroleum Hydrocarbons