



## **DISPOSAL OF TANK SLUDGE**

NORTH DAKOTA DEPARTMENT OF HEALTH

Division of Waste Management - Underground Storage Tank Program

Rev: 4/2010 Telephone: (701) 328-5166 Fax: 701-328-5200 Website: [www.ndhealth.gov/wm](http://www.ndhealth.gov/wm)

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### **Underground Storage Tank (UST) Wastes**

This document provides guidelines for the disposal of wastes which are generated from the cleaning of underground storage tanks. It is intended to provide the necessary information to tank owners and tank removal contractors so that each type of waste is tested, treated, and disposed in accordance with the North Dakota Underground Storage Tank Rules, North Dakota Hazardous Waste Management Rules and the North Dakota Solid Waste Management Rules.

Please note that the wastes from USTs may be classified as regulated hazardous wastes if these wastes exhibit certain characteristics. These characteristics are discussed in the following sections of this document. If, after testing these wastes, they are determined to meet the criteria of a characteristic hazardous waste, they must be stored, handled, and disposed in accordance with the North Dakota Hazardous Waste Management Rules. For information regarding these rules contact the Division of Waste Management - Hazardous Waste Program at 701-328-5166.

### **Petroleum USTs (Gasoline, Diesel and Fuel Oil Products)**

#### I. Petroleum product.

Usable petroleum products should be removed from the USTs and sold or reused as products.

#### II. Petroleum tanks (USTs).

A. All USTs which are excavated or closed in-place must be empty and cleaned by removing all liquids and accumulated sludges. NOTE: the following cleaning and closure procedures may be used to comply with this requirement.

1. American Petroleum Institute Recommended Practice 1604, "Removal and Disposal of Used Underground Petroleum Storage Tanks";
2. American Petroleum Institute Publication 2015, "Cleaning Petroleum Storage Tanks";
3. American Petroleum Institute Recommended Practice 1631, "Interior Lining of Underground Storage Tanks" may be used as guidance for compliance with this requirement; and
4. The National Institute for Occupational Safety and Health "Criteria for a Recommended Standard — Working in Confined Space" may be used as guidance for conducting safe closure procedures at some hazardous substance tanks.

B. All USTs which are excavated or closed in-place should be "opened" in a manner as specified in the above referenced industry codes and recommended practices. If an excavated tank is to be used for private, noncommercial, above-ground storage of a petroleum product, the UST owner/operator should contact the State Fire Marshal's Office at 701-328-5555 for recommendations on proper installation and siting.

CAUTION: Under no circumstances should tanks which previously contained leaded gasoline be used for the subsequent storage of foods or liquids intended for animal or human consumption.

- C. Once opened, all sludge, scale and waste product must be removed from the UST and accumulated in a tank or container which is in compliance with the North Dakota Hazardous Waste Management Rules. A 55-gallon drum in good condition may meet the definition of a container. (See the section below regarding "Wastes Contained in Petroleum USTs.")
- D. It is recommended that all USTs be thoroughly cleaned using a suitable cleaning device such as a high pressure steam cleaner. The rinsate generated by this step can be containerized or passed through an oil-water separator. The water from the separator can be discharged to a municipal sanitary sewer or directly to a municipal waste treatment pond after obtaining permission from the appropriate state and/or local official(s).
- E. If the UST is to be disposed of, it must be cut into pieces of a size approved by the landfill operator who has agreed to accept the waste steel. Permission from the owner/operator of the landfill is advised before an UST is delivered for disposal. As an alternative to disposal, steel tanks may be sold as scrap following proper cleaning and decontamination.

III. Wastes Contained in Petroleum USTs (see Charts 1 and 2).

- A. All sludge, scale, waste product and rinsate generated as a result of cleaning the inside of petroleum USTs must be containerized separately in 55-gallon steel drums at the cleaning site. Each drum should be filled not more than one-third (1/3) full and be properly identified and/or labeled. Any rinsate from washing the tank may be discharged in the manner as described in Section II.D. above.
- B. If the total amount of the petroleum UST waste is GREATER than 220 lbs. (approximately 22 gallons - see Chart 2), samples must be taken from each waste type (sludge, scale, waste product and rinsate) and either combined into a single composite sample and analyzed or analyzed separately by the following chemical testing procedure:

Table 1. Petroleum USTs - Testing Procedure

Characteristic	Regulatory Limit
Benzene*	0.5 mg/l
Lead*	5.0 mg/l
Flash point (free liquids)	140°F

\*Must prepare sample using Toxicity Characteristic Leaching Procedure (TCLP).

- C. If the results from this chemical testing indicates the petroleum UST waste is nonhazardous (i.e., the analytical parameters are within regulatory limits), the waste

may be solidified in preparation for disposal at a state-permitted landfill or treated in a manner consistent with the Department's "Guidelines for Proper Land Treatment of Petroleum Product Contaminated Soils" (contact the Department for a copy of this guidance document). If solidified, the waste in each accumulation drum should be mixed in a 1:1 ratio with a solidifying agent such as Portland cement, fly ash, or cement kiln dust. The waste in each drum should be thoroughly mixed so that the solidified waste is homogeneous. The resulting waste must have no free liquids as measured by the Paint Filter Liquids Test (SW-846 Method 9095, provided as Attachment 1 to this guidance document).

- D. If the chemical testing of the petroleum UST waste indicates that the waste exhibits hazardous characteristics, the waste owner must manage the waste as a regulated hazardous waste. For requirements on the proper handling, storage, and disposal of this material, the owner should contact the Division of Waste Management - Hazardous Waste Program.
- E. If the total amount of petroleum UST waste is LESS than 220 lbs. (approximately 22 gallons - see Chart 1), the waste owner has two options for disposal or treatment of the waste. These are:
  - 1. The waste may be solidified in preparation for disposal at a state-permitted landfill. The waste in each accumulation drum should be mixed in a 1:1 ratio with a solidifying agent such as Portland cement, fly ash, or cement kiln dust. The waste in each drum should be thoroughly mixed so that the solidified waste is homogeneous. The resulting waste must have no free liquids as measured by the Paint Filter Liquids Test (SW-846 Method 9095, provided as Attachment 1 to this guidance document).
  - 2. Samples may be taken from each waste type (sludge, scale, waste product, and rinsate) and either combined into a single composite sample and analyzed or analyzed separately by the chemical testing procedure as described in Table 1. If the results from this chemical testing indicate that the petroleum UST waste is nonhazardous (i.e., the analytical parameters are within regulatory limits), the waste may be treated in a manner consistent with the Department's "Guidelines for Proper Land Treatment of Petroleum Product Contaminated Soils" (contact the Department for a copy of this guidance document). If the chemical testing of the petroleum UST waste indicates that the waste exhibits hazardous characteristics, the waste owner may solidify the waste in preparation for disposal at a state-permitted landfill as described in option number 1. noted above.

Permission from the owner/operator of the landfill facility is advised before any petroleum UST wastes are delivered for treatment or disposal.

### **Waste/Used Oil USTs**

- I. Recyclable used oil.

Recyclable waste/used oil should be delivered to a waste/used oil reclaimer for recycling (contact the Department for a list of names of waste/used oil reclaimers).

II. Waste/used oil tanks (USTs).

Waste/used oil USTs should be cleaned by the same procedure which is used for petroleum tanks, as described above in Section II. - Petroleum tanks (USTs).

III. Wastes contained in waste/used oil USTs (see Charts 1 and 2).

- A. All sludge, scale, waste product, and rinsate generated as a result of cleaning the inside of waste/used oil USTs must be containerized separately in 55-gallon steel drums at the cleaning site. Each drum should be filled not more than one third (1/3) full and be properly identified and/or labeled. Any rinsate from washing the tank may be discharged in the same manner as described above for petroleum tanks - Section II.D.
- B. If the total amount of the waste/used oil UST waste is GREATER than 220 lbs. (approximately 22 gallons - see Chart 2), samples must be taken from each waste type (sludge, scale, waste product, or rinsate) and either combined into a single composite sample and analyzed or analyzed separately by the following chemical testing procedures:

Table 2. Waste/Used Oil USTs - Testing Procedures

Characteristic	Regulatory Limit
Benzene*	0.5 mg/l
Chromium*	5.0 mg/l
Lead*	5.0 mg/l
TOX (Total Organic Halogens)	1000.0 mg/l
Flash point (Free Liquids)	140°F

\*Must prepare sample using Toxicity Characteristic Leaching Procedures (TCLP).

- C. If the results from this chemical testing indicates that the waste/used oil UST waste is nonhazardous (i.e., the analytical parameters are within regulatory limits), the waste may be solidified in preparation for disposal at a state-permitted landfill or treated in a manner consistent with the Department's "Guidelines for Proper Land Treatment of Petroleum Product Contaminated Soils" (contact the Department for a copy of this guidance document). If solidified, the waste in each accumulation drum should be mixed in a 1:1 ratio with a solidifying agent such as Portland cement, fly ash, or cement kiln dust. The waste in each drum should be thoroughly mixed so that solidified waste is homogeneous. The resulting waste must have no free liquids as measured by the Paint Filter Liquids Test (SW-846 Method 9095 provided as Attachment 1 to this guidance document).
- D. If the chemical testing of the waste/used oil UST waste indicates that the waste exhibits hazardous characteristics, the waste owner must manage the waste as a regulated hazardous waste. For requirements on the proper handling, storage, and

disposal of this material, the owner should contact the Division of Waste Management - Hazardous Waste Program.

- E. If the total amount of the waste/used oil UST waste is LESS than 220 lbs. (approximately 22 gallons - see Chart 1), the waste owner has two options for disposal or treatment of the waste. These are:
1. The waste may be solidified in preparation for disposal at a state-permitted landfill. The waste in each accumulation drum should be mixed in a 1:1 ratio with a solidifying agent such as Portland cement, fly ash, or cement kiln dust. The waste in each drum should be thoroughly mixed so that solidified waste is homogeneous. The resulting waste must have no free liquids as measured by the Paint Filter Liquids Test (SW-846 Method 9095 provided as Attachment 1 to this guidance document).
  2. Samples may be taken from each waste type (sludge, scale, waste product, and rinsate) and either combined into a single composite sample and analyzed or analyzed separately by the chemical testing procedure as described in Table 2. If the results from this chemical testing indicates that the waste/used oil UST waste is nonhazardous (i.e., the analytical parameters are within regulatory limits), the waste may be treated in a manner consistent with the Department's "Guidelines for Proper Land Treatment of Petroleum Product Contaminated Soils" (contact the Department for a copy of this guidance document). If the chemical testing of the waste/used oil UST waste indicates the waste exhibits hazardous characteristics, the waste owner may solidify the waste in preparation for disposal at a state-permitted landfill as described in option 1 above.

Permission from the owner/operator of the landfill facility is advised before any waste/used oil UST wastes are delivered for treatment or disposal.

IV. Contaminated Soils From Waste/Used Oil USTs (see Charts 1 and 2).

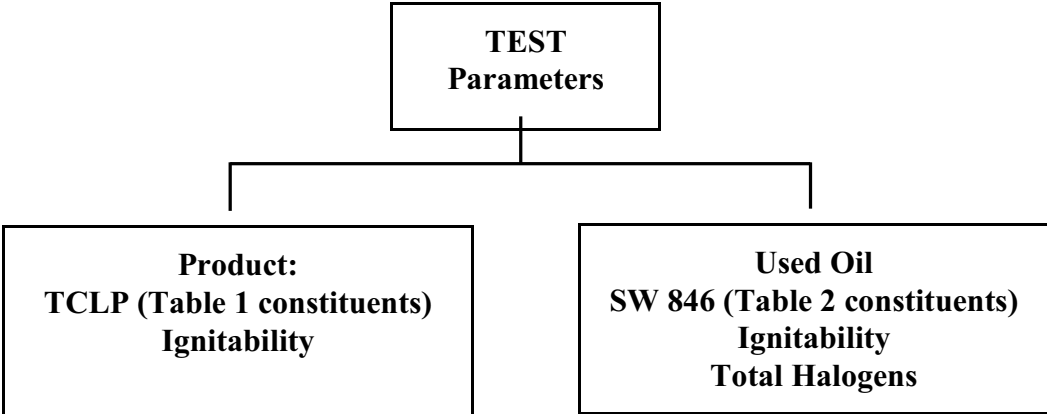
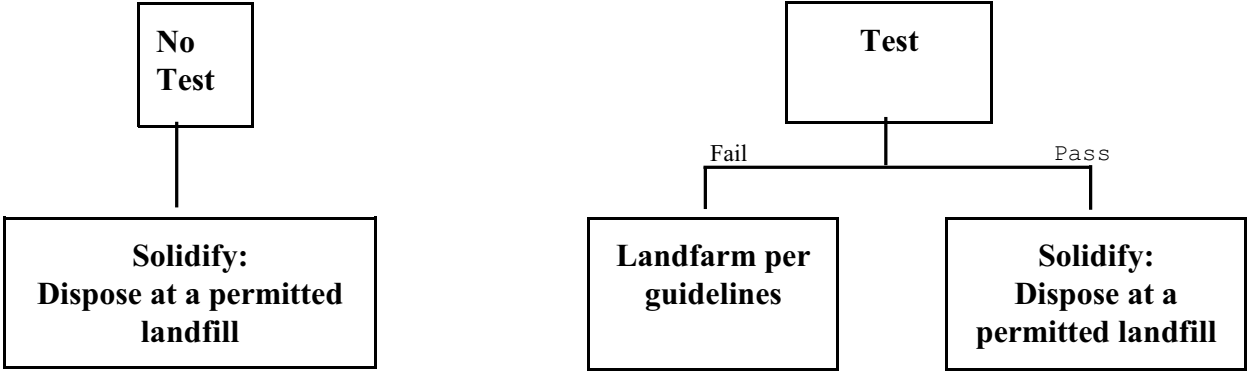
- A. All soil contaminated by waste/used oil should be stockpiled at the excavation site or tank cleaning site. The contaminated soils must be stockpiled in a bermed area which is lined with an impermeable material such as plastic sheeting or concrete. The stockpile of contaminated soils must be properly identified and/or labeled.
- B. The stockpile of contaminated soils should be sampled and tested using the Paint Filter Liquids Test and the chemical testing procedure described in III.B. of this section ("Wastes Contained in Waste/Used Oil USTs"). The same testing procedures (i.e., TC Leaching Procedures, etc.) should be used to determine if the soils are suitable for disposal at a permitted landfill. PLEASE NOTE THAT THIS CHEMICAL TESTING PROCEDURE IS REQUIRED FOR ANY VOLUME OF WASTE/USED OIL - CONTAMINATED SOIL IN EXCESS OF 220 LBS.
- C. All contaminated soils which pass the chemical testing and the Paint Filter Liquids Test can be delivered to a Department approved landfill for treatment in a manner consistent with the Department's "Guidelines for Proper Land Treatment of Petroleum Product Contaminated Soils" (contact the Department for a copy of this guidance

document); permission from the owner/operator of the landfill facility is advised before any contaminated soil is delivered for treatment.

- D. All contaminated soils which pass the chemical testing, but fail the Paint Filter Liquids Test, must be allowed to drain until they can pass the test. Alternatively, the soils may be mixed with a sufficient volume of dry, uncontaminated soil to absorb the free liquids.
1. All liquids which drain from the contaminated soils must be collected, containerized, analyzed, and disposed as outlined in the section above regarding "Wastes Contained in Waste/Used Oil USTs."
  2. Once the contaminated soils pass the Paint Filter Liquids Test, they can be delivered to a Department-approved landfill for treatment; permission from the owner/operator of the landfill facility is advised before any contaminated soil is delivered for treatment.
- E. If the chemical testing of the waste/used oil-contaminated soil indicates that the soil exhibits hazardous characteristics, the waste owner must manage the waste as a regulated hazardous waste.
1. All soils which failed the chemical testing and which cumulatively amount to less than 220 lbs. (see Chart 1), may be mixed with an appropriate solidification agent such as Portland cement, fly ash, or cement kiln dust and delivered to a Department-approved landfill for disposal. The solidification agent should be mixed with the soil at a 1:1 ratio. The resulting solidified waste must pass the Paint Filter Liquids Test before it will be authorized for disposal at a permitted municipal or industrial landfill.
  2. All soils which failed the chemical testing and which cumulatively amount to more than 220 lbs. (see Chart 2), will need to be stored, manifested, and shipped to a hazardous waste management facility which is approved to handle RCRA wastes. In this case, the waste generator should contact the Division of Waste Management - Hazardous Waste Program for further information. NOTE: variations in the procedures outlined above must receive Departmental approval BEFORE excavation of the UST begins.

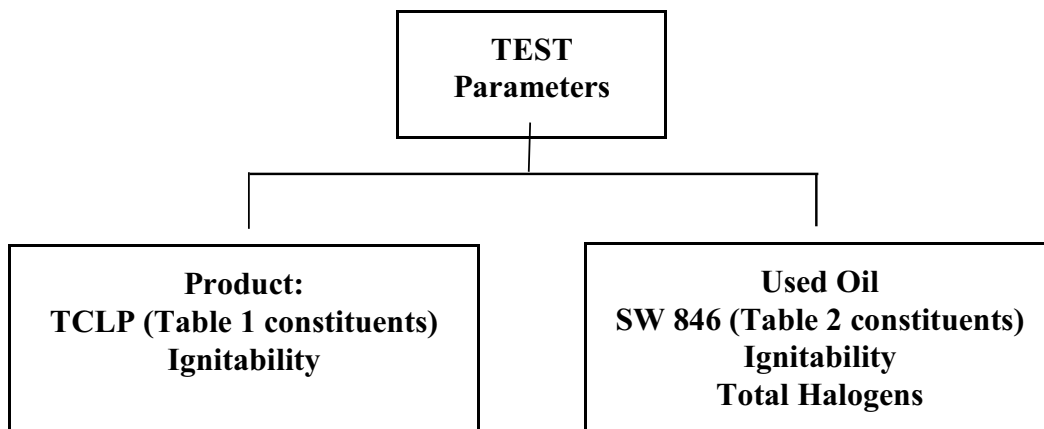
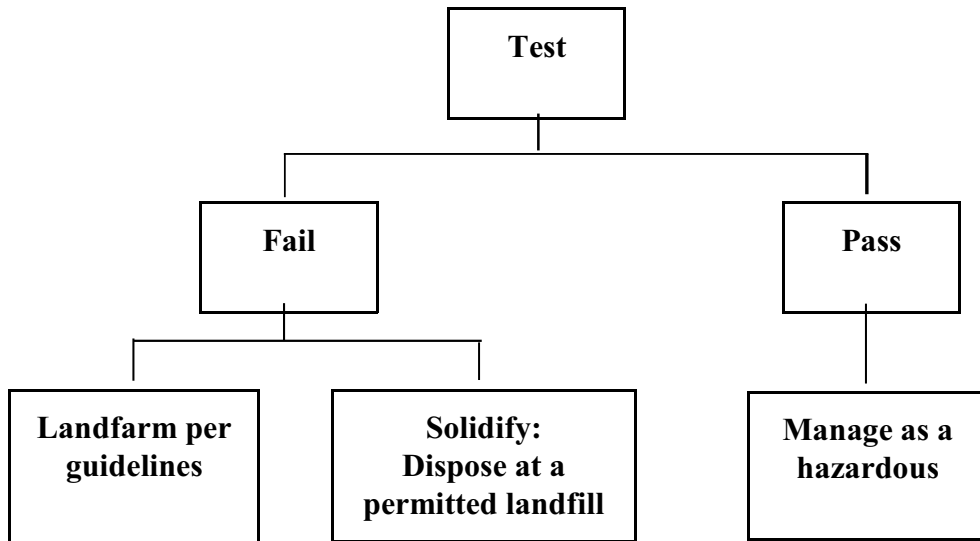
**Chart 1. Petroleum and Used Oil USTs  
less than 220 pounds total (25 gallons)**

Waste	Containment method
Sludge Scale Rinsate Used oil contaminated soil	Containerize separately in 55-gallon drums, not more than 1/3 filled



**Chart 2. Petroleum and Used Oil USTs  
more than 220 pounds total (25 gallons)**

Waste	Containment method
Sludge Scale Rinsate Used oil contaminated soil	Containerize separately in 55-gallon drums, not more than 1/3 filled





**Paint Filter Liquids Test**

1.0 Scope and Application

1.1 This method is used to determine the presence of free liquids in a representative sample of waste.

1.2 The method is used to determine compliance with 40 CFR 264.314 and 265.314.

2.0 Summary of Method

2.1 A predetermined amount of material is placed in a paint filter. If any portion of the material passes through and drops from the filter within the 5-minute test period, the material is deemed to contain free liquids.

3.0 Interferences

3.1 Filter media were observed to separate from the filter cone on exposure to alkaline materials. This development causes no problem if the sample is not disturbed.

4.0 Apparatus and Materials

4.1 Conical paint filter: Mesh number 60 (fine meshed size). Available at local paint stores such as Sherwin-Williams and Glidden.

4.2 Glass funnel: If the paint filter, with the waste, cannot sustain its weight on the ring stand, then a fluted glass funnel or glass funnel with a mouth large enough to allow at least 1 inch of the filter mesh to protrude should be used to support the filter. The funnel is to be fluted or have a large open mouth in order to support the paint filter yet not interfere with the movement, to the graduated cylinder, of the liquid that passes through the filter mesh.

4.3 Ring stand and ring, or tripod.

4.4 Graduated cylinder or beaker: 100-milliliters (ml).

5.0 Reagents

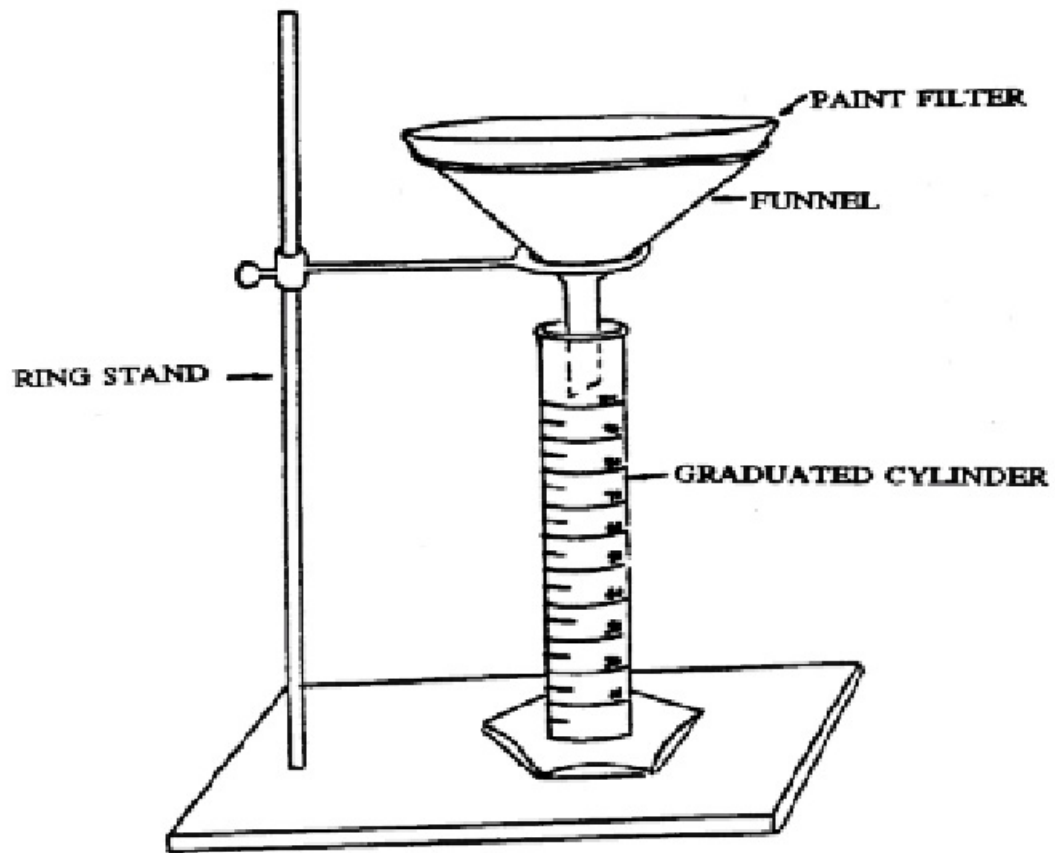
5.1 None.

6.0 Sample Collection, Preservation and Handling

6.1 All samples must be collected according to the directions in Chapter 9 of SW-846 (samples must be representative of waste).

- 6.2 A 100-ml or 100-g (grams) representative sample is required for the test. If it is not possible to obtain a sample of 100 ml or 100 g that is sufficiently representative of the waste, the analyst may use larger size samples in multiples of 100 ml or 100 g, i.e., 200, 300, 400 ml or g. However, when larger samples are used, analysts shall divide the sample into 100-ml or 100-g portions and test each portion separately. If any portion contains free liquids, the entire sample is considered to have free liquids.
  
- 7.0 Procedure
  - 7.1 Assemble test apparatus as shown in Figure 1.
  - 7.2 Place sample in the filter. A funnel may be used to provide support for the paint filter.
  - 7.3 Allow sample to drain for 5 minutes into the graduated cylinder.
  - 7.4 If any portion of the test material collects in the graduated cylinder in the 5-minute period, then the material is deemed to contain free liquids for purposes of 40 CFR 264.314 and 265.314.
  
- 8.0 Quality Control
  - 8.1 Duplicate samples should be analyzed on a routine basis.
  
- 9.0 Method Performance
  - 9.1 No data provided.
  
- 10.0 References
  - 10.0 None required.

Figure 1. Paint Filter Test Apparatus.



## Method 9095 - Paint Filter Liquids Test

