

SUBMISSION INSTRUCTIONS: APPLICATION FOR LANDFILL DISPOSAL OF SOILS

Prior to delivering any soils to the landfill, the applicant must complete an Application for Landfill Disposal of Soils and return it to R-Board for approval.

Results of chemical analyses of soils, where required, should be attached to the Landfill Disposal of Soils Application Form.

For purposes of this section "*soil*" shall include *soil, sediment, dredge spoils*, and *other earth materials*, having not more than 1% by volume *non-earth materials*.

1.0 APPLICABILITY

These instructions are applicable to all forms of soil from all types of source areas.

The instructions are applicable to materials derived from source areas associated with both public sector and private sector ownership.

R-Board reserves the right to waive requirements prescribed herein, for good cause (for example, in the event of emergencies), to the extent that such waivers remain consistent with applicable laws and regulations.

2.0 BASIS FOR DISPOSAL ACCEPTANCE CRITERIA

The facility will *not* accept soils that contain "*free liquids*". "*Free liquids*" means liquids that readily separate from the solid portion of a waste under ambient temperature and pressure as determined by the *Paint Filter Liquids Test*, Method 9095 (USEPA Publication SW-846).

All soils must pass the "*free liquids*" test. Furthermore, all chemical analyses prescribed herein must be performed on material that has *passed* the "*free liquids*" test.

The criteria for accepting soils that are contaminated *solely* with petroleum related products is based upon the Virginia Solid Waste Regulations, as follows:

- Soils exhibiting greater than 100 milligram per kilogram (mg/kg) of EOX may not be disposed until separate approval from the department is granted. This request shall document the cause for the high EOX level.
- If the concentration of total BTEX is greater than 10 mg/kg or *TPH* is greater than *500 mg/kg*, the soil cannot be disposed of in any landfill unless the facility permit expressly allows such disposal.

- If the concentration of TPH is greater than *50 mg/kg* and less than *500 mg/kg* and total BTEX is less than 10 mg/kg, the disposal of the contaminated soil may be approved for permitted landfills equipped with liners and leachate collection systems.

The criteria for accepting soils that are contaminated with chemical compounds that are subject to the *toxicity characteristic* for classification as a “*hazardous waste*” are based Virginia Hazardous Waste Management Regulations (9VAC20-60) (**TABLE ATTACHED**).

3.0 DISPOSAL ACCEPTANCE CRITERIA

In order for the facility to accept the soils, the results of chemical analyses must meet the following criteria (as applicable):

- The material must pass the “*free liquids*” test.
- The concentration of TPH-GRO shall not exceed 500 mg/kg
- The concentration of TPH-DRO shall not exceed 500 mg/kg
- The concentration of TPH-GRO + TPH-DRO shall not exceed 500 mg/kg
- The concentration of total BTEX shall not exceed 10 mg/kg
- The concentration of EOX shall not exceed 100 mg/kg
- The concentration of total polychlorinated bi-phenyls (PCBs) shall not exceed 50 mg/kg.
- The concentration of each individual RCRA 8 metal (TCLP) shall not exceed its respective *toxicity characteristic* threshold concentration (**TABLE ATTACHED**).
- The concentration of each individual regulated organic compound shall not exceed its respective *toxicity characteristic* threshold concentration (**TABLE ATTACHED**).

Materials that *fail* any of the disposal acceptance criteria *may not be comingled* with soils that *pass* the applicable disposal acceptance criteria.

4.0 TESTING REQUIREMENTS

Important: All of the chemical analyses (tests) described in this section must be performed on material that has passed the “free liquids” test.

Samples must be analyzed by a *laboratory* that is certified by VELAP for the analyses performed.

Analyses must be performed using *methods* listed in USEPA Publication SW-846 (methods for solid waste).

Requirements for testing (chemical analyses) are here *categorized* in a manner that accommodates the *known or suspected historical use* of *both* (1) the property from which the soils are being derived and (2) adjacent parcels.

If the applicant has any question as to which testing category is applicable, the applicant is encouraged to contact R-Board for guidance.

Category 1 - not contaminated

Applications for material that is considered to be uncontaminated, based either on direct observation (color, odor) or historical use of the source area, must furnish lab analyses for:

- Total Petroleum Hydrocarbons – Gasoline Range Organic Compounds (TPH-GRO)
- Total Petroleum Hydrocarbons – Diesel Range Organic Compounds (TPH-DRO)

Category 2 - virgin petroleum

Applications for material *known* to contain, or *suspected* to contain, *virgin petroleum products* (unused motor oil, hydraulic oil, gasoline, diesel fuel, heating oil, etc.), from any type of source area, must furnish lab analyses for:

- Total Petroleum Hydrocarbons – Gasoline Range Organic Compounds (TPH-GRO)
- Total Petroleum Hydrocarbons – Diesel Range Organic Compounds (TPH-DRO)

Category 3 - used petroleum

Applications for material *known* to contain, or *suspected* to contain, *used (non-virgin) petroleum products* (motor oil, hydraulic oil, gasoline, diesel fuel, heating oil, etc.) must furnish lab analyses for:

- Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO)
- Total Petroleum Hydrocarbons – Diesel Range Organics (TPH-DRO)
- Selected gasoline constituents (benzene, toluene, ethylbenzene and total xylenes (BTEX))
- Total Organic Halogens (EOX)
- “RCRA 8 metals” using the Toxicity Characteristics Leaching Procedure (TCLP)

Materials from source areas that are *adjacent* to properties that are *known* or *suspected* to have managed petroleum products are themselves *suspected* to contain used petroleum products.

Category 4 - sediment basins

Material derived from *sediment basins* is, by default, *suspected* to contain *used (non-virgin) petroleum products* (motor oil, hydraulic oil, gasoline, diesel fuel, heating oil, etc.). Since concentrations are likely to be relatively low, sampling requirements are less stringent than those for Category 2. Accordingly, applications for material derived from *sediment basins* must furnish lab analyses for:

- Total Petroleum Hydrocarbons – Gasoline Range Organic Compounds (TPH-GRO)
- Total Petroleum Hydrocarbons – Diesel Range Organic Compounds (TPH-DRO)

If the sediment basin does *not* collect water from *paved areas*, the applicant may seek an *exemption* from this requirement.

Category 5 - dry cleaning facilities

Applications for material *known* to have been derived, or *suspected* to have been derived, from an *active* or *former dry cleaning facility*, or from any parcel adjacent to such a property, must furnish lab analyses for:

- Total Organic Halogens (EOX)
- tetrachloroethene, trichloroethene, 1,1-dichloroethene, vinyl chloride using the Toxicity Characteristics Leaching Procedure (TCLP)

Materials from source areas that are *adjacent* to properties that are *known* or *suspected* to have managed dry cleaning solvents are themselves *suspected* to contain dry cleaning solvents.

Category 6 - hazardous waste generators

Applications for material *known* to have been derived, or *suspected* to have been derived, from a *commercial / industrial facility known* to have managed, or *suspected* to have managed, *hazardous wastes* or *products* containing regulated substances that, once released to soils, may likely constitute a hazardous waste, must furnish lab analysis for:

- listed semi-volatile organic compounds using the Toxicity Characteristic Leaching Procedure (TCLP)
- listed volatile organic compounds using the Toxicity Characteristic Leaching Procedure (TCLP)
- listed metals (“RCRA 8”) using the Toxicity Characteristics Leaching Procedure (TCLP)
- polychlorinated bi-phenyls (PCBs) (standard extraction)

Materials from source areas that are *adjacent* to properties that are *known* or *suspected* to have managed *hazardous wastes* are themselves *suspected* to contain the same chemical constituents.

Category 7 - other conditions

For soils that cannot be readily classified as one of the six categories defined above, the applicant will contact R-Board in order to determine testing requirements for those soils.

5.0 SAMPLING PROTOCOLS

For the purposes of this Application, samples of soil shall be obtained using the protocols prescribed in this section.

Important: All of the samples obtained / prepared for the chemical analyses (tests) described herein must represent material that has passed the “free liquids” test.

Samples may be obtained from material that has *not* yet been excavated (*in-situ* sampling) or from material that has already been excavated and set aside for testing (*ex-situ* sampling).

5.1 Sampling Frequency

A minimum of one composite sample shall be analyzed for each required chemical analysis for every *250 cubic yards* of soil to be disposed.

For quantities of soil greater than *2,500 cubic yards*, the sampling frequency may be adjusted with the approval of R-Board (which may - or may not - also require approval from Virginia DEQ).

5.2 Composite Sample Concept

The chemical analyses prescribed herein shall be based upon “*composite samples*.” A composite sample on one prepared from two or more “*discrete*”, or “*grab*”, samples.

Whether the sampling is to be performed *in-situ* or *ex-situ*, the material shall be divided into *sampling units* consisting of approximately *250 cubic yards*.

For each *soil sampling unit*, the composite sample shall be representative of the entire *soil sampling unit*.

Soil sampling units may be either or “*physical*” or “*conceptual*”:

- “*Physical*” sampling units are created during excavation/dredging, whereby the material is physically separated into individual piles for sampling purposes. Physical sampling units are effectively restricted to material that has been, or is being, excavated.
- “*Conceptual*” sampling units are typically defined on a map/site plan, on which the overall area to be sampled has been subdivided for sampling purposes. Conceptual sampling units are most applicable to *in-situ* sampling, but can also be used for *ex-situ* sampling when the excavated material has *not* been physically separated into piles.

5.3 Composite Sampling Protocol

Prepare one composite sample for each *250-cubic yard* sampling unit. Prepare each composite sample using not less than *eight sub-samples* of sub-equal size (volume):

- If the sampling unit is *less than three feet* thick, then obtain at least half of the subsamples from near the *bottom* of the sampling unit.
- If the sampling unit is *more than three feet* thick, obtain the subsamples from depths of approximately *three feet* within the soil unit.

Comment. *Hand-augers* or *agronomic soil probes* are typically used to obtain sub-samples. *Stainless steel* equipment is recommended.

Place the subsamples into a suitable vessel (stainless steel bowl for non-volatile constituents, plastic bag for volatile or non-volatile constituents) and homogenize.

Place homogenized composite sample material into laboratory-supplied containers.

Complete the laboratory-supplied labels and affix to sample containers.

Prepare a chain-of-custody form as the composite samples are being prepared.

5.4 Sample Management

Samples should be placed on or beneath ice in an insulated container as immediately after preparing each composite sample.

Use of a custody seal, to be placed on the insulated container, is recommended, particularly if the samples are being shipped to the laboratory via a third party courier service.

Toxicity Characteristic Wastes

EPA ID	Chemical Name	CAS #	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0.
D023	o-Cresol	95-48-7	200.0
D024	m-Cresol	108-39-4	200.0
D025	p-Cresol	106-44-5	200.0
D026	Cresol		200.0
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2