Guidelines For Disposal of Contaminated Solids in Landfills

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Nova Scotia Environment

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I. BACKGROUND

Periodically Nova Scotia Environment is requested to comment on the suitability of specific contaminated soils and solid wastes for disposal in particular landfills. The Policy of Nova Scotia Environment for Disposal of Contaminated Solids in Landfills shall be the following:

II. APPLICATION

Disposal will be based on analysis of the particular material. The particular investigative program chosen and substances targeted should be based on the site history and anticipated contaminants present. This should be designed as much as is feasible to maintain program integrity while controlling analytical costs. Inspectors may determine the suitability of sampling and analysis programs for these wastes but should reference the "National Contaminated Sites Remediation Guidance Manual: Sampling, Analyses and Data Management" for the suggested method.

Following determination of material classification, the contaminated solids (if acceptable) can be deposited in a landfill with the agreement of all informed parties, namely:

(a) generator of contaminated waste solids
(b) operator of the landfill

III. PARAMETERS OF CONCERN

1. **Polychlorinated biphenyls (PCB's)** - The *Dangerous Goods Management Regulations* prohibits the disposal of PCB waste by burying it in a landfill or in the ground. PCB wastes are defined in the *Dangerous Goods Management Regulations* as PCBs or articles containing PCBs that have a PCB concentration greater than fifty micrograms per gram (50µg/g or 50 ppm).

2. **Petroleum Hydrocarbons** - Soils contaminated with general petroleum hydrocarbons must be handled pursuant to the Attachment A.

3. **Other Listed Parameters**

   (a) Initially, an analysis of the total concentration of targeted contaminants is performed. If the results indicate contaminant levels less than those listed in Attachment B, the material is acceptable for disposal in landfills. This listing is derived from levels for remediation of commercial/industrial

lands, taken from the CCME publication “Interim Canadian Environmental Criteria for Contaminated Sites” (CCME EPC-CS34 September 1991). However, if the parameters are already known (eg. lead in paint chips), the generator may elect to proceed directly to the testing required in clause (b).

(b) If contaminants exceeding these levels are present, a leachate extraction analysis (Canadian General Standards Board CGSB 164-GP-IMP) is required. Individual analyses should be performed for the contaminants of interest and the results compared to the levels listed in Attachment C. This table is derived from Section 3.27 of the federal Transportation of Dangerous Goods Regulations and the Canadian Drinking Water Quality Guidelines (as quoted in CCME EPC-CS34 September 1991). Based on the results, the following will apply:

(i) if contaminant levels are less than or equal to Attachment C levels, the material is acceptable for disposal in landfills; or

(ii) if contaminant levels are greater than Attachment C levels, the material is considered to be hazardous waste and can only be disposed of in a designated hazardous waste secure landfill. Currently, there is no such facility in Nova Scotia so this may require out of province disposal. Alternatively, the contaminated soil could be treated to alter the contaminant and reduce the leachability problem.

4. Non-Listed Parameters

Requests for disposal of solids containing non-listed parameters should be referred to the appropriate staff person in the Resource Management Unit. This person may in turn contact staff in the specific area of concern.

Date: May 10, 2016

Original signed by
Frances Martin, Deputy Minister
Nova Scotia Environment

Attachment A
Disposal of Oily Soil

Soil containing petroleum hydrocarbons is acceptable for disposal at approved landfills provided all of the petroleum hydrocarbons are fully adsorbed on the soils (no free product is present) and the following criteria is met:

(1) The owner of the landfill agrees to take the material.

(2) Soils containing slight to moderate amounts of gasoline or a small amount of mid range petroleum distillate (i.e. furnace and diesel fuel) may be used for daily cover.

(3) Soils containing a large amount of petroleum hydrocarbon should be spread out and land farmed. The material can later be used for daily cover [gasoline in soils disappears readily (less than one week) when spread thinly (less than 8 inches)].

(4) Bunker C or heavier oils in soils should be buried as degradation is slow and leachate concerns are lower and are not considered to be significant.

Other Considerations:

(1) Free products from spills should be handled as follows:

- gasoline should be collected and returned to the refineries, if possible;
- other products such as stove and furnace oils or heavier products should be sent to a licensed waste oil collector or returned to the refineries.

(2) Municipal operators should maintain a record of all soils disposed of at their site.

(3) All requests for permission to dispose of oily soils should be handled as follows:

- The generator contacts the owner of the landfill who then contacts the local regional/district office for concurrence to dispose as an industrial waste.

Note: The Department does not approve the disposal, but will state whether or not the disposal being planned meets the intent of the Guideline.

Attachment B
Acceptance Parameters for Contaminated Soil (Total Analysis)

Inorganic Parameters	Maximum Limit (µg/g *or* ppm)
antimony	40
arsenic	50
barium	2000
beryllium	8
boron	2
cadmium	20
chromium (+6)	8
chromium (total)	800
cobalt	300
copper	500
cyanide (free)	100
cyanide (total)	500
flouride (total)	2000
lead	1000
mercury	10
molybdenum	40
nickel	500
selenium	10
silver	40
sulphur	500
thallium	1
tin	300
vanadium	200
zinc	1500

Organic Parameters	Maximum Limit (µg/g *or* ppm)
benzene	5
toluene	30
ethylbenzene	50
xylenes	50
styrene	50
polycyclic aromatic hydrocarbons (PAH's) (each) (total)	10 50
aliphatic hydrocarbons (each)	150
phenolics (each)	10
chlorinated aliphatics (each)	50
chlorobenzenes (each)	10
polychlorinated biphenyls (PCB's)	50

Attachment C
Acceptance Parameters for Contaminated Soil (Leachate Results)

Inorganic Parameters	Maximum Limit (mg/l)
aluminum	500
arsenic	5*
barium	100*
beryllium	10
boron	500*
cadmium	0.5*
chromium (+6)	0.5
chromium (total)	5*
cobalt	5
copper	100+
cyanide (free)	4
cyanide (total)	20*
~~iron~~	~~30~~+ (See Note 1)
lead	5*
lithium	250
~~manganese~~	~~5~~+ (See Note 2)
mercury	0.1*
molybdenum	5
nickel	20
selenium	1*
silver	5*
~~sodium~~	~~20~~+ (See Note 3)
sulphur (total)	50,000
uranium	2*
vanadium	10

zinc (total)	500+
Organic Parameters	**Maximum Limit (mg/l)**
benzene	0.5+
toluene	2.4+
ethylbenzene	0.24+
xylenes	30+
styrene	2.4
PAHs (total)	0.01+
aliphatic hydrocarbons (each)	1.5
phenolics (each)	0.1
chlorinated phenols (each	0.2+
chlorinated aliphatics (each)	0.5+
chlorobenzenes (each)	0.5+

* limit from TDG Regulations
\+ limit from Canadian Drinking Water Quality Guidelines
other values are assigned

Note 1: The Iron standard was no longer in effect as of July 17, 2000.
Note 2: The Manganese standard was no longer in effect as of July 17, 2000.
Note 3: The Sodium standard was no longer in effect as of June 5, 2002