

Bio-Logic Environmental Systems

Responsible Waste & Resource Management
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Organics Application to Lake George Abandoned Sawmill Site Analytical Results & Comments to Date

Metals

Certain metals are of concern when detected in soils; categorization of compost quality is based upon metal concentration (NSDOE, 1998).

Trace Elements	Category A Maximum Allowable Concentration (mg/kg DS)	Category B Maximum Allowable Concentration (mg/kg DS)	Sample from Yarmouth Compost Plant (mg/kg DS)
Arsenic	13	75	5.5
Cadmium	3	20	0.5
Chromium	210		12
Cobalt	34	150	2.7
Copper	400		54
Lead	150	500	68
Mercury	0.8	5	ND
Molybdenum	5	20	ND
Nickel	62	180	8.3
Selenium	2	14	ND
Zinc	700	1850	180

ND=Not Detectable

Summary comment: All metals concentrations are well below maximum thresholds; three metals of most concern (mercury, molybdenum, selenium) are not detectable.

Nitrogen & carbon:nitrogen ratio

Compost is not a fertilizer, but does contain a small amount of nitrogen which supports plant growth, typically between 1% and 2%. The ratio of nitrogen to carbon (C:N ratio) is also used to evaluate compost quality.

C:N ratio:	Maximum Threshold <25:1	Sample from Yarmouth Compost Plant 9.2:1
Nitrogen in sample:		2%

Summary comment: this sample contains nitrogen at the higher end of the nitrogen range, which provides additional support to plant growth, while the C:N ratio is well below the maximum threshold.

Maturity

Compost maturity evaluates how stable or unfinished the product is. Immature compost has an offensive odour, releases compounds that are not healthy to the soil, and robs the soil of oxygen. Two of the most reliable tests are the oxygen respiration test (measured in milligrams of oxygen consumed per kilogram of organic matter per hour) and the re-heat test (measured as a temperature difference in degrees Celsius).

Oxygen respiration test: Maximum Threshold **Sample from Yarmouth Compost Plant**
(mg O₂/kg OM/h) ≤400 **42**

Re-heat test Maximum Threshold **Sample from Yarmouth Compost Plant**
(°C) < 8 **1.8**

Summary comment: the compost product is extremely stable or mature and will continue to mineralize (decompose) at a very low rate.

Pathogens

Test results are unavailable at this time and are due within the week.

Foreign Matter

Foreign matter is subdivided into sharp foreign matter and other foreign matter as follows:

Sharp foreign matter

Category A - Compost shall not contain any sharp foreign matter of dimension greater than 3 mm per 500 mL.

Category B - Compost shall have a sharp foreign matter content less than or equal to three (3) pieces of sharp foreign matter per 500 mL, and the maximum dimension of the sharp foreign matter shall be 12.5 mm.

Sharp foreign matter was tested on one sample from the site and two samples collected from the Yarmouth compost facility. All three samples contained sharp foreign matter (predominantly glass fragments) as follows:

	Site Sample	Samples from Yarmouth Compost Plant	
		#1	#2
Sample Volume (L)	30.1	27.3	26.7
Number of sharp pieces > 3 mm	17	9	17
Number of sharp pieces > 12.5 mm	13	8	7

Summary comment: all samples exceeded the allowable sharps maximum dimension of 12.5 mm and therefore does not qualify as category B compost.

Other Foreign matter

Category A - Compost shall contain no more than one (1) piece of foreign matter greater than 25 mm in any dimension per 500 mL.

Category B - Compost shall contain no more than two (2) pieces of foreign matter greater than 25 mm in any dimension per 500 mL.

Other foreign matter was tested on one sample from the site and two samples collected from the Yarmouth compost facility. All three samples contained other foreign matter (predominantly plastic film) as follows:

	Site Sample	Samples from Yarmouth Compost Plant	
		#1	#2
Sample Volume (L)	30.1	27.3	26.7
Number of pieces >25 mm	570	341	364
Number of pieces per 500 mL	9.5	6.2	6.8

Summary comment: all samples exceeded the allowable other foreign matter content of ≤ 2 pieces per 500 mL and therefore does not qualify as category B compost.

Overall summary: based on the presence of sharp foreign matter in exceedance of 12.5 mm, and the presence of other foreign matter in exceedance of two pieces per 500 mL, all three samples do not qualify as category B compost.