

# HotRot Units Do Not Produce Leachate

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## HotRot Units Do Not Produce Leachate

**Leachate** is a major concern for traditional composting systems. As organic materials are composted the process releases water and carbon dioxide. Excess water will accumulate in a static pile or windrow and will eventually percolate down through the material being composted. As this excess moisture percolates through the material it reacts with the carbon dioxide and other organic compounds forming a weak acid; this lowers the pH of the composting material retarding the composting process. The liquor also dissolves nutrients and suspends particulates, finally draining from the composting mass as dark highly polluting liquor.

The **HotRot** system is **leachate-free**. Excess moisture is released from the HotRot vessel as vapour during periodic but frequent shaft rotation. By effectively distilling the water, nutrients and particulates remain in the composting material where they belong. Excess moisture and carbon dioxide is released from the process before it reacts and has a chance to lower the pH and inhibit the process.

Excess moisture from the HotRot system passes through the biofilter to atmosphere or is partially condensed in the exhaust system in colder climates. Condensate is a clear low polluting liquid which can be easily disposed of through irrigation or to sewer.



Leachate from aerated static pile composting system – left

Condensate from HotRot composting system –right

Leachate **disposal** is expensive. Sewer effluent charges are based on volume, biochemical oxygen demand (BOD) and total suspended solids; with chemical oxygen demand (COD) sometimes used instead of BOD. Many sewer systems will also charge a premium for effluent with a pH less than 5.0.

## Results of Analysis

**Results of Analysis<sup>a</sup>**

		<b>Aerated static pile leachate</b>		<b>HotRot condensate</b>	
	Units		RDL		RDL
<b>Carbonaceous BOD</b>	mg/l	25000	5000	170	90
<b>Total COD</b>	mg/l	87000	2000	390	20
<b>pH</b>	pH	4.76	n/a	8.08	n/a
<b>Total suspended solids</b>	mg/l	480	100	2	2
RDL = reportable detection limit					

As can be seen from the above analyses, the HotRot condensate is significantly less polluting than leachate from a more traditional system; thus a HotRot system will have significantly lower operating costs. Not only is condensate less polluting than leachate but condensate production is about 1/5-1/10 that of leachate volumes as most of the excess moisture removed from the HotRot system is release to atmosphere as vapour via the biofilter.

Looking at a plant processing 10,000 tonne of waste per annum; leachate volumes could be as high as 4,000m<sup>3</sup>, whereas condensate volumes will be in the region of 400-800m<sup>3</sup>.

Using some real trade-waste charges we can see the potential disposal cost for each.

Aerated static pile:

Volume charge = 4,000m <sup>3</sup> x \$0.43/m <sup>3</sup> =	\$1,720
BOD charge = 4,000m <sup>3</sup> x 25kg/m <sup>3</sup> x \$0.29/kg =	\$29,000
SS charge = 4,000m <sup>3</sup> x 0.48kg/m <sup>3</sup> x \$0.24/kg =	\$4,608
<b>Total disposal charges for leachate:</b>	<b>\$35,328</b>

HotRot composting system:

Volume charge = 800m <sup>3</sup> x \$0.43/m <sup>3</sup> =	\$344
BOD charge = 800m <sup>3</sup> x 0.17kg/m <sup>3</sup> x \$0.29/kg =	\$39.44
SS charge = 800m <sup>3</sup> x 0.002kg/m <sup>3</sup> x \$0.24/kg =	\$0.38
<b>Total disposal charges for condensate:</b>	<b>\$384</b>

**HotRot can reduce effluent disposal charges by 99.0%**