Technical **Memorandum**

Environmental Management Consulting
41125 278th Way SE, Enumclaw, WA 98022 USA
Phone: 360-802-5540 Fax: 360-802-5541
E-Mail: trcard@earthlink.net

TO: Mike Harding

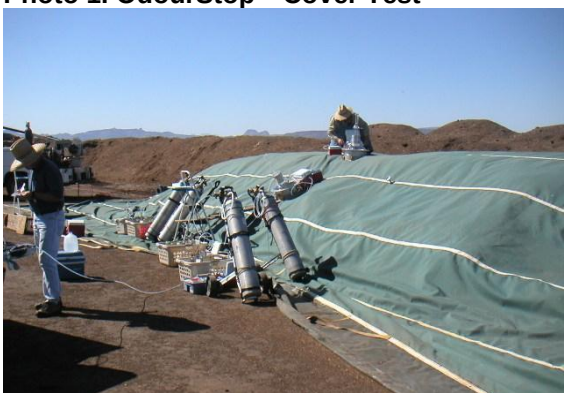
FROM: Tom Card

DATE: November 10, 2008

SUBJECT: OdourStop® Compost Cover Emissions Test

The OdourStop® Compost Cover was tested on October 9, 2008 for VOC emissions by SCAQMD Method 25.3 and ammonia emissions by SCAQMD Method 207.1 (See Photo 1). The test location was at a biosolids compost facility in Western Arizona. A biosolids/amendment mixture was placed on October 6 but did not start actively composting until October 8 based on core temperature readings. All emissions tests were performed using USEPA Surface Isolation Emission Flux Chambers using USEPA test protocols. Helium was used as a tracer to quantify advective flow. Two flux chambers were placed under the cover and four chambers were placed on the cover.

Photo 1. OdourStop® Cover Test



Measurements were taken from the under-the-cover flux chambers before and after the cover flux chamber measurements. For this report, control efficiency was calculated based on comparing the under-the-cover emissions to the on-the-cover emissions. However, micropore covers, such as the OdourStop® Cover, offer additional compost environment benefits and it is generally accepted that a covered compost pile will outperform a non-covered pile. The true test would be to compare the emissions from an uncovered pile to a covered pile, and not just compare over and under the cover emissions. Therefore, testing the cover alone should provide a conservative estimate of control efficiency.

Table 1 presents the calculated cover control efficiency for methane, VOC (non-methane, non-ethane), and ammonia. The complete data set with data validation commentary is provided in a separate document. At the time of the cover test, the pile blower system was not operational. This is not anticipated to materially affect the results. The pile spatial average flux rate was based on the assumption that the top flux chambers represented 33% of the total cover area.

The VOC control (97% control)l is similar to other micropore cover technologies that have been previously tested on both biosolids and food waste. The ammonia control is far higher than previously tested covers. The anticipated ammonia control was 50% to 70% control. Typically the pore size of micropore covers will allow ammonia transmission. The data in Table 1 is valid, but at this time it is not known what the cause of the high ammonia performance is. In addition, the methane performance seems high as well, but at this time, there is no comparative data on miropore cover systems. The major difference between this data and other micropore test data is that the under the cover concentrations were about 10 times higher than previous values.

A seam was tested as well, however, only one data point was taken. This data point suggests that the seam may have slightly higher emissions than the fabric panels. The seam value was not used for the

calculations in Table 1 because it was only a single value. If the seam value was used, it would only lower the control efficiencies a fraction of a percent.

Table 1. OdourStop® Test Results.

	Constituent Flux			
Activity/Location	**Methane**	**VOC**	**Ammonia**	**Units**
Uncovered				
Top	3,364	1,217	3,647	mg/min-m2
	2,889	1,653	3,477	mg/min-m2
Average	**3,127**	**1,435**	**3,562**	**mg/min-m2**
Sides	132	16	86	mg/min-m2
	62	17	171	mg/min-m2
	97	**17**	**128**	mg/min-m2
Average				
Uncovered Average	**1,097**	**485**	**1,261**	**mg/min-m2**
Covered				
Top	2	13	36	mg/min-m2
	2	12	64	mg/min-m2
Average	**2**	**12**	**50**	**mg/min-m2**
Sides	40	14	51	mg/min-m2
	11	18	98	mg/min-m2
Average	**25**	**16**	**74**	**mg/min-m2**
Covered Average	**18**	**15**	**66**	**mg/min-m2**
Cover Control Efficiency	**98.4%**	**97.0%**	**94.7%**	