

Working Group

Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations

August 27, 2010

Purpose of Meeting

- Update the universe of sources
- Review preliminary draft rule language
- Discuss assumptions and cost data
- Discuss key design concepts
- Get feedback and suggestions

Universe of Sources (updated)

- Number of facilities = 16 (as of 2009)
- Total throughput ≈ 692,000 tons/yr

Throughput Range (tons/yr)	Sub-total Throughput (tons/yr)	Facilities (#)
< 10,000	33,590	7
10,000 – < 100,000	158,420	6
≥ 100,000	500,000	3

Note: 2007 Survey – 13 facilities and 708,328 tons/yr throughput

Draft Rule Language

- Purpose
 - To reduce emissions of VOC, NH₃ and PM
 - To prevent inadvertent decomposition occurring during greenwaste composting
- Applicability
 - New and existing greenwaste composting operations that produce compost from greenwaste-only, greenwaste/foodwaste or greenwaste/manure feedstock
 - Includes associated chipping and grinding
- Definitions included

Draft Rule Requirements

- Feedstock holding requirements [(d)(1)]
 - Greenwaste stockpile
 - Foodwaste: immediate mixing; or no longer than 2 days of receipt with 6" of finished compost cover
 - Maintain temperature at < 122°F
 - Daily temperature monitoring and records
- Windrow composting requirements [(d)(2)]
 - No passively aerated windrows
 - Limit fugitive PM emissions
 - Baseline emission factors

Draft Rule Requirements (cont'd)

- For operations of greenwaste, manure (up to 20%) or foodwaste (up to 25%) [(d)(3)]:
 - Conduct in turned windrow or pile
 - Apply 6" finished compost to the surface of windrow during the active composting phase only at initial construction and after each turning
 - Daily monitoring of temperature, moisture content and oxygen concentration and records
 - Initial C:N ratio range of 30–45:1 if >10% foodwaste

Assumptions (windrows)

- Control efficiency = 63% (active phase only)
- Capital costs = \$2,200–\$4,500/facility
- O&M costs: vary based on throughput
 - Monitoring and records = \$5,500/yr/facility
 - Windrow management (cap) = \$500–\$123,000

Weighted Average Cost Effectiveness (16 facilities)

Throughput (tons/yr)	Emissions (Reductions) (tons/yr)		Annualized Costs Per Facility (1,000 \$)	Weighted Average Cost Effectiveness (\$/ton)	
	VOC	NH3		VOC only	VOC & NH3
< 100,000	370 (210)	80 (50)	\$8–\$38	\$2,300	\$1,900
≥ 100,000	960 (540)	210 (130)	\$67–\$131	\$600	\$500
All	BMP + compost cover			\$2,000	\$1,600

Draft Rule Requirements (cont'd)

- For operations having >25% foodwaste [(d)(4)]
 - A forced aeration system with air pollution emission control
 - At least 80% overall control efficiency for VOC and ammonia emissions, respectively
 - Demonstrate control efficiency via source testing
 - New facilities upon start-up
 - Existing facilities need to file a PC/PO

Costs of Air Pollution Control

- Costs per facility
 - Example: annual average 50,000 tons/yr throughput
 - Feedstock comprised of >25% foodwaste

Emissions (Reductions) (tons/yr)		Annualized Costs Per Facility (Million \$)	Average Cost Effectiveness (\$/ton)	
VOC	NH3		VOC only	VOC & NH3
96 (72–95)	21 (17–21)	\$0.3–\$0.6	\$3,300–\$6,800	\$2,700–\$5,500

Note: Ranges reflect the use of different air pollution emission control technologies

Other Rule Subdivisions

- Test Methods
- Recordkeeping
- Exemptions

Key Design Concepts

- Windrow management for greenwaste with up to 20% manure or 25% foodwaste
- Foodwaste in windrow composting
 - Up to 10% without initial C:N ratio
 - >10–25% with initial 30–45:1 C:N ratio
 - >25% with air pollution emission control

Input Needed

- Key composting parameters (T, MC, O2) to monitor
- Percent foodwaste, by volume, or by weight
- How to best determine the C:N ratio
- Cost, other data

Upcoming Work

- Site visits
- Socioeconomic and CEQA analyses

Schedule

- Today's Working Group
- Input requested by September 3, 2010
- Public Workshop – Late September 2010
- Additional Working Group Meetings – TBD
- Rule consideration – December 2010

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