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ADMINISTRATIVE  
HEARINGS

1 Pollution Control Agency

2

3 Adopted Permanent Rules Relating to Composting

4

5 Rules as Adopted

6 7035.2836 COMPOST FACILITIES.

7 Subpart 1. Scope. The requirements of subparts 4 to 7  
8 apply to the owners owner and operators operator of facilities

9 a facility used to compost solid waste, including source

10 separated compostables except as provided in part 7035.2525,

11 subpart 2. The owner or operator of a yard waste compost

12 facility must comply with subparts 2 and 3 only.

13 Subp. 2. Notification. The owner or operator of a yard  
14 waste compost facility shall submit a notification form to the

15 commissioner on a form prescribed by the commissioner before

16 beginning facility operations. The notification must include:

17 the facility location; the name, telephone number, and address

18 of the contact person; the facility design capacity; the type of

19 yard waste to be received; and the intended distribution of the

20 finished product.

21 Subp. 3. Operation requirements for yard waste compost  
22 facility.

23 A. Odors emitted from the facility shall comply with  
24 the applicable provisions of ~~chapter-7029-as-proposed-at-State~~

25 ~~Register, volume-207-pages-1795-to-1807~~ any agency odor rules.

26 B. Composted yard waste offered for use must be  
27 produced by a process that includes turning of the yard waste on

28 a periodic basis to aerate the yard waste, maintain

29 temperatures, and reduce pathogens.

30 C. Compost will not contain > greater than three

31 percent inert materials (dry weight) that are ≥ greater than or

32 equal to four millimeters as determined by the testing procedure

33 under subpart 5, item J, subitem (3).

34 D. By-products, including residuals and recyclables,

35 must be stored in a manner that prevents vector problems and



1 aesthetic degradation. Materials that are not composted must be  
2 stored and removed at least weekly.

3 E. Surface water drainage runoff must be controlled  
4 to prevent leachate ~~runoff~~ leaving the facility. Surface water  
5 drainage run-on must be diverted from the compost and storage  
6 areas.

7 F. The facility shall be constructed and operated to  
8 prevent discharge ~~into-state-waters~~ of yard waste, leachate,  
9 residuals, and the final product into waters of the state.

10 G. The facility operator shall submit an annual  
11 report to the commissioner by March 1 of each year for the  
12 preceding calendar year that includes the type and quantity, by  
13 weight or volume, of yard waste received at the compost  
14 facility; the quantity, by weight or volume, of compost  
15 produced; an average of the inert test results; the quantity, by  
16 weight or volume, of compost removed from the facility; and a  
17 market description.

18 Subp. 4. Design requirements for solid waste compost  
19 facility. The owner or operator of a compost facility shall  
20 submit an engineering design report to the commissioner for  
21 approval with the facility permit application. The engineering  
22 report must comply with the design requirements in items A to G.

23 A. ~~Specifications-for-site-preparation-must-be~~  
24 ~~included-in-the-report.~~ Site preparations must include clearing  
25 and grubbing for the compost operating and storage areas,  
26 building locations, topsoil stripping, excavations, berm  
27 construction, drainage control structures, leachate collection  
28 system, access roads, screening, fencing, and other special  
29 design features.

30 B. Access to the facility must be controlled by a  
31 perimeter fence and gate or enclosed structures.

32 C. Surface water drainage must be diverted around and  
33 away from the site operating area. A drainage control system,  
34 including changes in the site topography, ditches, berms,  
35 sedimentation ponds, culverts, energy breaks, and erosion  
36 control measures, ~~must be-designed, constructed, operated, and~~

1 ~~maintained-according-to~~ comply with part 7035.2855, subpart 3,  
2 items C to E.

3 D. The composting, curing, and storage areas for  
4 immature compost must be located on a liner capable of  
5 minimizing migration of waste or leachate into the subsurface  
6 soil, groundwater, and surface water. The liner must have a  
7 permeability no greater than  $1 \times 10^{-7}$  centimeters per second  
8 and, if constructed of natural soils, be at least two feet thick.  
9 The liner must ~~be-designed, constructed, operated, and~~  
10 ~~maintained-according-to~~ comply with part 7035.2855, subparts 3,  
11 item A; 4; and 5.

12 E. Liquid in contact with waste, immature compost,  
13 and residuals must be diverted to a leachate collection and  
14 treatment system. The leachate collection and treatment system  
15 must ~~be-designed, constructed, operated, and maintained~~  
16 ~~according-to~~ comply with part 7035.2855, subpart 3, item B, and  
17 the applicable portions of part 7035.2815, subpart 9, items B to  
18 K. ~~The-commissioner-may-require-the-facility-owner-or-operator~~  
19 ~~to-monitor-the-collected-leachate.~~

20 F. The facility must be designed for collection of  
21 residuals and must provide for the final transportation and  
22 proper disposal of residuals.

23 G. The facility must be designed and operated to  
24 control odors in compliance with the applicable provisions of  
25 ~~chapter-7029-as-proposed-at-State-Register, volume-20, pages~~  
26 ~~1795-to-1807~~ any agency odor rules.

27 Subp. 5. Operation requirements for solid waste compost  
28 facility. The owner or operator of a compost facility shall  
29 submit an operation and maintenance manual to the commissioner  
30 for approval with the facility permit application. The manual  
31 must include a personnel training program plan, a leachate  
32 management plan, and a compost sampling plan and must comply  
33 with the operation requirements in items A to L.

34 A. All access points must be secured when the  
35 facility is not open for business or when no authorized  
36 personnel are on site.

1 B. The personnel training program plan must be  
2 ~~submitted with the manual. The plan must~~ address the  
3 requirements of part 7035.2545, subparts 3 and 4, and the  
4 specific training needed to operate a compost facility in  
5 compliance with this subpart and subparts 6 and 7.

6 C. All wastes delivered to the facility must be  
7 confined to a designated delivery area and processed or removed  
8 at least once a week to prevent nuisances such as odors, vector  
9 intrusion, and aesthetic degradation.

10 D. All salvageable and recyclable materials must be  
11 containerized or stored and removed from the facility in a  
12 manner that prevents nuisances such as odors, vector intrusion,  
13 and aesthetic degradation.

14 E. All compost residuals must be stored to prevent  
15 nuisances such as odors, vector intrusion, and aesthetic  
16 degradation. The residuals must be removed and properly  
17 disposed of at least once a week.

18 F. The leachate management plan must describe how the  
19 facility will store, reuse, or dispose of collected leachate.  
20 If leachate is to be recirculated into the compost, it must be  
21 added prior to initiating the PFRP process described in item I.

22 G. Odors emitted by the facility must comply with the  
23 ~~any applicable provisions of chapter 7029 as proposed at State~~  
24 ~~Register, volume 20, pages 1795 to 1807~~ agency odor rules.

25 H. ~~If the storage area contains any particulate~~  
26 ~~matter that may be the subject of wind dispersion,~~ The owner or  
27 operator must cover or otherwise manage the waste to control  
28 wind dispersion of any particulate matter.

29 I. Compost must be produced by a process to further  
30 reduce pathogens (PFRP). The temperature and retention time for  
31 the material being composted must be monitored and recorded each  
32 working day. Three acceptable methods of a PFRP are described  
33 in subitems (1) to (3):

34 (1) The windrow method for reducing pathogens  
35 consists of an unconfined composting process involving periodic  
36 aeration and mixing. Aerobic conditions must be maintained

1 during the compost process. A temperature of 55 degrees Celsius  
2 must be maintained in the windrow for at least three weeks. The  
3 windrow must be turned at least once every three to five days.

4 (2) The static aerated pile method for reducing  
5 pathogens consists of an unconfined composting process involving  
6 mechanical aeration of insulated compost piles. Aerobic  
7 conditions must be maintained during the compost process. The  
8 temperature of the compost pile must be maintained at 55 degrees  
9 Celsius for at least seven days.

10 (3) The enclosed vessel method for reducing  
11 pathogens consists of a confined compost process involving  
12 mechanical mixing of compost under controlled environmental  
13 conditions. The retention time in the vessel must be at least  
14 24 hours with the temperature maintained at 55 degrees Celsius.  
15 A stabilization period of at least seven days must follow the  
16 enclosed vessel retention period. Temperature in the compost  
17 pile must be maintained at least at 55 degrees Celsius for three  
18 days during the stabilization period.

19 J. The owner or operator must ~~perform-compost~~  
20 ~~sampling-according-to~~ comply with the compost sampling and  
21 testing plan approved by the commissioner. Proposed changes to  
22 sampling equipment or procedures must be submitted to the  
23 commissioner for review and approval. Testing must be conducted  
24 ~~as-frequently-as~~ when each batch of compost matures. The  
25 ~~commissioner-may-decrease-or-increase-the-parameters-to-be~~  
26 ~~analyzed-for-or-the-frequency-of-analysis-based-on-monitoring~~  
27 ~~data-and-changes-in-the-waste-stream-or-processing-by-the~~  
28 ~~facility-~~ The plan must ~~comply-with~~ include the sampling and  
29 testing requirements in subitems (1) to (6).

30 (1) The compost maturity must be determined using  
31 testing protocol described in the sampling plan. "Mature" means  
32 more than 60 percent decomposition has been achieved as  
33 determined by an ignition-loss analysis and one test method  
34 approved by the commissioner including, but not limited to, the  
35 following:

36 Test Method Maturity Standard

- 1
- 2 (a) Carbon/nitrogen ratio - In the range of 10:1 to 20:1
- 3 U.S. EPA Method 9060A:
- 4 Total Organic Carbon and
- 5 Dumas
- 6
- 7 (b) Dewar Self-Heating Temperature rise above
- 8 Method ambient in C°, range of
- 9 0° - 20° Celsius
- 10
- 11 (c) Respiration Rate, <2-5 (mg. CO<sub>2</sub>-C/g
- 12 CO<sub>2</sub> Analysis compost carbon-day)
- 13
- 14 (d) U of M Z-test - The weight of the worms
- 15 Soil and Crop Research in the cellulose treatment
- 16 on Municipal Solid Waste increases and that of the
- 17 Class I Compost worms in the noncellulose
- 18 Utilization in Minnesota, treatment remains the
- 19 April 10, 1994 same
- 20
- 21 (e) Cress Seed Germination - Germination index in the
- 22 Recommended Test Methods, range of 1.0 - 0.8
- 23 The Composting Council
- 24
- 25

26 (2) ~~Once~~ Each batch of compost that has been  
 27 determined to be mature, must be analyzed for the metal  
 28 contaminants listed in subpart 6, item A, subitem (1), must-be  
 29 analyzed-for using the U.S. EPA test methods in EPA SW-846. The  
 30 level-of PCBs in the compost must be determined. ~~PCBs must be~~  
 31 extracted using either method 3540 or 3550 and analyzed with  
 32 method 8080 ~~or another method approved by the commissioner.~~

33 (3) ~~Once~~ The amount of inert material in each  
 34 batch of compost that has been determined to be mature, ~~the~~  
 35 inert-content shall must be determined using testing protocol  
 36 described in the sampling plan. Inert content greater than four  
 37 millimeters shall be determined by passing four replicates of  
 38 250 cc oven-dried (70 degrees Celsius) samples of compost  
 39 through a four millimeter sieve. Material remaining on the  
 40 sieve shall be visually inspected and inerts, including glass,  
 41 metal, and plastic, shall be separated and weighed. The weight  
 42 of the separated ~~foreign-matter~~ inert material divided by the  
 43 weight of the total sample, multiplied by 100, shall be the  
 44 percent dry weight of the ~~foreign-matter~~ inert material content.

45 (4) The mature compost must be analyzed for the  
 46 following parameters using the testing protocol described in the  
 47 sampling plan:

- 47 (a) pH;
- 48 (b) moisture content;

1 (c) particle size;

2 (d) NPK ratio; and

3 (e) soluble salt content.

4 (5) The sampling plan must contain techniques for  
5 collecting and processing the samples required in subitems (1)  
6 to (4), including:

7 (a) ~~specifications-of~~ the training and  
8 experience qualifications of persons who collect samples;

9 (b) ~~a-description-of~~ equipment used to  
10 collect, process, and store samples;

11 (c) ~~identification-of~~ sampling equipment  
12 cleaning procedures and other actions taken to prevent sample  
13 contamination;

14 (d) ~~identification-of~~ the location or  
15 locations where samples are collected;

16 (e) ~~a-description-of~~ procedures used to  
17 collect grab samples;

18 (f) ~~a-description-of~~ procedures used to  
19 process grab samples to form composite samples;

20 (g) ~~a-description-of~~ chain-of-custody and  
21 sample storage procedures; and

22 (h) ~~identification-of~~ compost sampling  
23 quality assurance and quality control measures.

24 (6) The sampling plan must describe how the test  
25 results from the samples required in subitems (1) to (4) will be  
26 utilized to define the compost at distribution, and must include:

27 (a) a description of the batch process,  
28 statistical average, or other method used to classify the  
29 compost, and assign it physical and chemical properties; and

30 (b) a description of the method used to  
31 calculate the cumulative and annual pollutant loading rates for  
32 Class II compost.

33 K. An annual report ~~in-accordance~~ complying with part  
34 7035.2585 must be submitted to the commissioner by March 1 of  
35 each year for the preceding calendar year. A record of the  
36 following information must be maintained at the facility

1 and reported included in the annual report:

2 (1) the quantity of source-separated compostables  
3 or solid waste delivered to the facility;

4 (2) the quantity and general material breakdown  
5 of recyclables and rejects removed from the waste;

6 (3) the sources and quantities of other materials  
7 used in the compost process, such as nutrient or bulking agents;

8 (4) a summary of temperature and retention time  
9 for all compost produced verifying that the process, set out in  
10 item I, to further reduce pathogens is being met ~~according to~~  
11 ~~item-F~~;

12 (5) the quantity and classification of all  
13 compost produced;

14 (6) a summary of all lab ~~analysis~~ analyses  
15 conducted according to the ~~approved~~ sampling plan approved under  
16 item J;

17 (7) a record of each Class II compost  
18 distribution, including the following:

19 (a) a copy of the information sheet or label  
20 accompanying all Class II compost distributions according to  
21 subpart 7;

22 (b) the name of the compost user and a legal  
23 description of the application site location, including the  
24 quantity of compost and acreage over which it was distributed;

25 (c) copies of the letters of notification to  
26 the local governments; and

27 (d) a copy of the United States Geological  
28 Survey map of the application site and the surrounding areas  
29 showing contours and surface waters.

30 L. If, for any reason, the facility becomes  
31 inoperable, the owner or operator of the facility must notify  
32 the commissioner within 48 hours and implement the contingency  
33 action plan developed under part 7035.2615.

34 Subp. 6. Compost classification. Compost produced at a  
35 solid waste compost facility must be classified as Class I or  
36 Class II compost based on the criteria outlined in items A and



1 B. Compost test results shall be used to classify the compost  
2 according to the approved sampling plan under subpart 5, item J,  
3 the maturity standard in subpart 5, item J, subitem (1), and the  
4 PFRP requirement in subpart 5, item I.

5 A. Class I compost must meet the following criteria:

6 (1) Class I compost cannot exceed the contaminant  
7 concentrations in milligram per kilogram on a dry weight basis  
8 as listed in the following table or Code of Federal Regulations,  
9 title 40, ~~sections 503.10 to 503.18~~ section 503.13(b)(3), as  
10 amended, with the exception of mercury, which cannot exceed  
11 contaminant concentrations of five milligrams per kilogram.

12	Contaminant	Concentration (mg/kg)
13		
14	Arsenic (As)	41
15	Cadmium (Cd)	39
16	Copper (Cu)	1,500
17	Lead (Pb)	300
18	Mercury (Hg)	5
19	Molybdenum (Mo)	18
20	Nickel (Ni)	420
21	Selenium (Se)	100
22	PCB	6
23	Zinc (Zn)	2,800
24		

25 (2) Class I compost must not contain > greater  
26 than three percent inert materials (dry weight) ≥ greater than  
27 or equal to four millimeters as determined by tests according to  
28 the approved sampling plan under subpart 5, item J, subitems (1)  
29 to (5).

30 B. Class II compost consists of any compost that  
31 fails to meet the Class I standards and meets the criteria in  
32 subitems (1) and (2):

33 (1) Class II compost must meet the following  
34 pollutant loading rates and have a PCB concentration that does  
35 not exceed six milligrams per kilogram.

36	Pollutant	Cumulative Pollutant Loading Rate	
37		(lbs/acre)	(kg/hectare)
38	Arsenic	37	41
39	Cadmium	34	39
40	Copper	1,338	1,500
41	Lead	267	300
42	Mercury	5	5
43	Molybdenum	16	18
44	Nickel	374	420
45	Selenium	89	100
46	Zinc	2,497	2,800

47  
48 Pollutant Annual Pollutant Loading Rate  
49 (for a containerized compost)

	(lbs/acre)	(kg/hectare)
1 Arsenic	1.8	2
2 Cadmium	1.7	1.9
3 Copper	66.8	75
4 Lead	13.3	15
5 Mercury	0.25	0.25
6 Molybdenum	0.5	0.5
7 Nickel	18.7	21
8 Selenium	4.5	5
9 Zinc	124.6	140

11  
12 (2) Class II compost must not contain > greater  
13 than four percent inert materials (dry weight)  $\geq$  greater than or  
14 equal to four millimeters as determined by tests according to  
15 the approved sampling plan under subpart 5, item J, subitems (3)  
16 and (5).

17 Subp. 7. Compost distribution and end use. The owner or  
18 operator of a solid waste compost facility shall submit a  
19 compost distribution plan to the commissioner for approval with  
20 the facility permit application. The plan must comply with the  
21 ~~distribution~~ requirements in items A to C.

22 A. Compost distributed or marketed as a fertilizer,  
23 specialty fertilizer, soil amendment, or plant amendment, as  
24 defined in Minnesota Statutes, section 18C.005, must be  
25 registered with the Minnesota Department of Agriculture.

26 B. The allowable end uses for the compost must be  
27 listed and described in the plan.

28 C. Class I compost may be distributed for  
29 unrestricted use. Class II compost may be distributed on a  
30 restricted basis. The commissioner or a compost operator  
31 trained as required in subpart 5, item B, shall determine the  
32 appropriate distribution for a Class II compost used in land  
33 application. Compost proposed to be distributed for end uses  
34 other than land application may be distributed with the  
35 commissioner's approval or as part of the approved facility  
36 compost distribution plan under this subpart. All Class II  
37 compost distributed must be accompanied by an information sheet  
38 or label describing the compost product and its physical and  
39 chemical quality, including at least the following information:

- 40 (1) the name and address of the generator;  
41 (2) a statement from the generator certifying

1 that the compost meets the Class II classification standards  
2 under subpart 6, item B, and providing the standards;

3 (3) a list of best management practices to use  
4 when applying the compost;

5 (4) the annual or cumulative application rate  
6 calculated according to the testing and reporting methods  
7 approved under subpart 5, item J, subitem (6);

8 (5) the compost maturity tested and reported  
9 according to subpart 5, item J, subitem (1);

10 (6) the compost inert content tested and reported  
11 according to subpart 5, item J, subitem (3); and

12 (7) a statement of the compost parameter values  
13 tested and reported according to subpart 5.

14

15 INSTRUCTION TO REVISOR. The revisor shall change references in  
16 Minnesota Rules from part 7035.2835 to part 7035.2836.

17 REPEALER. Minnesota Rules, part 7035.2835, is repealed.