

CHAPTER 67
STANDARDS FOR THE LAND APPLICATION OF SEWAGE SLUDGE

Chapter rescission date pursuant to Iowa Code section 17A.7: 1/1/28

567—67.1(455B) Land application of sewage sludge.

67.1(1) General. This chapter establishes standards for the land application of sewage sludge generated during the treatment of domestic sewage in a treatment works. This chapter applies to any generator, applicator, or both, and to sewage sludge applied to the land. No person shall land apply sewage sludge through any practice for which requirements are established in this chapter except in accordance with such requirements.

a. In areas that are not specifically addressed in this chapter or in 567—Chapter 68, but which are addressed in federal regulations for sewage sludge applied to land at 40 CFR Part 503 as amended through July 1, 2021, the federal regulations shall apply under this rule and are hereby adopted by reference under this chapter.

b. On a case-by-case basis, this department may impose requirements for the land application of sewage sludge in addition to or more stringent than the requirements in this chapter when necessary to protect public health and the environment from any adverse effect of a pollutant in the sewage sludge.

67.1(2) Sewage sludge generators shall ensure that the applicable requirements in this chapter are met when the sewage sludge is applied to the land.

If the sewage sludge generator determines that a person being supplied sewage sludge for land application is not complying with applicable requirements of the land application program, the generator shall work with the applicator to obtain compliance with the requirements. If subsequent compliance cannot be achieved, the generator shall not supply additional sewage sludge to the applicator.

[ARC 2482C, IAB 4/13/16, effective 5/18/16; ARC 6192C, IAB 2/9/22, effective 3/16/22]

567—67.2(455B) Exclusions. This chapter does not establish requirements for the land application of the following solid wastes.

67.2(1) Sludge generated at an industrial facility, not including sludge generated from separately treated domestic sewage at an industrial facility.

67.2(2) Hazardous sewage sludge—sewage sludge determined to be hazardous in accordance with 40 CFR Part 261.

67.2(3) Sewage sludge with a PCB concentration of 50 mg/kg or higher.

67.2(4) Incinerator ash.

67.2(5) Grit and screenings.

67.2(6) Drinking water treatment sludge.

[ARC 6192C, IAB 2/9/22, effective 3/16/22]

567—67.3(455B) Sampling and analysis. Any sewage sludge generator who intends to land apply sewage sludge shall:

67.3(1) Sample and analyze the waste to determine whether it meets the criteria for sewage sludge Class I, II, or III.

67.3(2) Analyze the waste to determine if any sources exist which may contribute significant quantities of potentially hazardous chemicals or other toxic substances. If any are found, the generator shall inform the department of their presence and shall analyze the waste for chemicals or substances in accordance with guidelines provided by the department.

67.3(3) Unless rules for specific programs under USEPA or department authority provide otherwise, or unless other methods are approved by the department for a specific situation, samples taken and analyses made to document contamination under this chapter shall be conducted in accordance with the methods described in 567—67.10(455B).

567—67.4(455B) Land application program. All sewage sludge generators wishing to land apply sewage sludge shall establish and maintain in writing a long-range program for land application of sewage sludge.

This program shall be developed for a minimum period of five years and shall be updated annually. A copy of this program shall be available at the facility for inspection by the department. At a minimum, this program shall contain the following information in detail for the next calendar year and in general terms for the following four years. The plan shall include, but not be limited to, the following:

67.4(1) An outline of the sewage sludge sampling schedule and procedures that will be followed to ensure that the sewage sludge being applied to land continues to meet the requirements.

67.4(2) A determination of the amount of land required to allow land application to be conducted in accordance with the requirements.

67.4(3) Identification of the land and application methods that will be used for land application of the sewage sludge. Those areas and application methods shall be selected as necessary to ensure that land application can be conducted in accordance with the requirements.

67.4(4) The names of the landowners and the applicators for all areas to be used for land application, and identification of any legal arrangements related to the use of these areas. The programs shall also outline any restrictions or special conditions that exist regarding the use of these areas for land application of sewage sludge.

67.4(5) An overall schedule for the land application of sewage sludge. This schedule shall indicate the areas being used, the time of year that land application will occur on each area, and the estimated application rate for each area.

67.4(6) A determination of the types and capacities of the equipment required for land application of sewage sludge in accordance with the developed application schedule. The program shall also outline how the application equipment will be made available and who will be responsible for conducting land application operations.

67.4(7) A determination of the types and capacities of sludge storage structures used to ensure that the land application of sewage sludge is conducted in accordance with the land application schedule. The program shall also outline whether any additional sludge storage or handling facilities are needed.

67.4(8) A plan to construct or obtain any additional sludge storage, handling or application facilities or equipment that are required by the land application program.

[ARC 6192C, IAB 2/9/22, effective 3/16/22]

567—67.5(455B) Special definitions.

“Agronomic rate” is the whole sludge application rate designed to provide the amount of nitrogen needed by the crop grown on the land and to minimize the amount of nitrogen that passes to the groundwater.

“Annual whole sludge application rate” is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365-day period.

“Applicator” or *“sewage sludge applicator”* is any person who applies sewage sludge to the land.

“Bulk sewage sludge” is sewage sludge that is not sold or given away in a bag or other container for application to the land.

“Class I sewage sludge” is sewage sludge that meets the criteria under subrule 67.7(1).

“Class II sewage sludge” is sewage sludge that meets the criteria under subrule 67.8(1).

“Class III sewage sludge” is any sewage sludge that cannot meet either Class I sewage sludge criteria or Class II sewage sludge criteria.

“Cumulative pollutant loading rate” is the maximum amount of an inorganic pollutant that can be applied to an area of land.

“Dry weight basis” means calculated on the basis of having been dried at 105 degrees Celsius until reaching a constant mass (i.e., essentially 100 percent solids content).

“Food crops” are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

“Generator” or *“sewage sludge generator”* is any person who generates sewage sludge, who derives a material from sewage sludge, or both.

“Land with a high potential for public exposure” is land that the public uses frequently. This includes, but is not limited to, a public contact site and a reclamation site located in a populated area (e.g., a construction site located in a city).

“*Land with a low potential for public exposure*” is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest, and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

“*Person who prepares sewage sludge*” is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

“*Sewage sludge*” is solid, semisolid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or the grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

[ARC 6192C, IAB 2/9/22, effective 3/16/22]

567—67.6(455B) Permit requirements. Prior to any land application of sewage sludge, a permit must be obtained by the sewage sludge generator in accordance with the following requirements:

67.6(1) The permit for the land application of sewage sludge produced by a wastewater treatment facility that has been issued a construction permit from the department will be issued concurrently and as part of a state operation permit or NPDES permit. The issuance process and permit terms will be the same as that specified for NPDES permits in 567—Chapter 64.

67.6(2) The department will review, on a case-by-case basis, requests for a permit to land apply sewage sludge or any material derived from sewage sludge if the sewage sludge is produced outside of the state of Iowa or produced by a wastewater treatment plant that has not been issued a construction permit from the department.

[ARC 6192C, IAB 2/9/22, effective 3/16/22]

567—67.7(455B) Land application requirements for Class I sewage sludge.

67.7(1) *Class I sewage sludge criteria.* Class I sewage sludge is sewage sludge that meets the pollutant concentrations in paragraph 67.7(1)“a,” the Class A pathogen reduction requirements in paragraph 67.7(1)“b,” and the vector attraction reduction requirements in paragraph 67.7(1)“c” below.

a. Pollutant concentrations for Class I sewage sludge. The concentration of each pollutant in the sewage sludge shall not exceed the concentration for the pollutant in Table 1.

TABLE 1—POLLUTANT CONCENTRATIONS

<u>Pollutant</u>	<u>Monthly Average Concentration</u> <u>milligrams per kilogram*</u>
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800

*Dry weight basis

b. Class A pathogen requirements for Class I sewage sludge. The sewage sludge shall comply with subparagraphs 67.7(1)“b”(1) and (2) below.

(1) The sewage sludge shall comply with one of the following monitoring processes. Compliance with pathogen density shall not be based on an average value. Each individual sample result shall meet the numerical pathogen standards.

1. The density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or

2. The density of Salmonella sp. bacteria in the sewage sludge shall be less than three Most Probable Number per four grams of total solids (dry weight basis).

(2) The sewage sludge shall comply with one of the following analytical and treatment processes.

1. The temperature of the sewage sludge shall be maintained at a specific value for a period of time using one of the procedures detailed below.

- When the percent solids of the sewage sludge is 7 percent or higher, the temperature of the sewage sludge shall be 50 degrees Celsius or higher; the time period shall be 20 minutes or longer; and the temperature and time period shall be determined using Equation 1, except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.

- When the percent solids of the sewage sludge is 7 percent or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 50 degrees Celsius or higher; the time period shall be 15 seconds or longer; and the temperature and time period shall be determined using Equation 1.

- When the percent solids of the sewage sludge is less than 7 percent and the time period is at least 15 seconds, but less than 30 minutes, the temperature and time period shall be determined using Equation 1.

Equation 1:

$$D = 131,700,000/10^{0.1400t}$$

Where D = time in days; t = temperature in degrees Celsius.

- When the percent solids of the sewage sludge is less than 7 percent; the temperature of the sewage sludge is 50 degrees Celsius or higher; and the time period is 30 minutes or longer, the temperature and time period shall be determined using Equation 2.

Equation 2:

$$D = 50,070,000/10^{0.1400t}$$

Where D = time in days; t = temperature in degrees Celsius.

2. The sewage sludge shall meet all of the following requirements:

- The pH of the sewage sludge shall be raised to above 12 and shall remain above 12 for 72 hours;
- The temperature of the sewage sludge shall be above 52 degrees Celsius for 12 hours or longer during the period that the pH of the sewage sludge is above 12; and

- At the end of the 72-hour period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50 percent.

3. Sewage sludge treated in other known processes shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses and viable helminth ova. The density of enteric viruses in the sewage sludge after pathogen treatment shall be less than one plaque-forming unit per four grams of total solids (dry weight basis). The density of viable helminth ova in the sewage sludge after pathogen treatment shall be less than one per four grams of total solids (dry weight basis). Once the process has been demonstrated to achieve the required pathogen reduction, the process must be operated under the same conditions that were used during the demonstration.

4. Sewage sludge treated by unknown processes or by processes operating at conditions less stringent than the operating conditions at which the sewage sludge could qualify as Class I under other alternatives shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses and viable helminth ova. The density of enteric viruses in the sewage sludge shall be less than one plaque-forming unit per four grams of total solids (dry weight basis). The density of viable helminth ova in the sewage sludge shall be less than one per four grams of total solids (dry weight basis).

5. Sewage sludge shall be treated in one of the Processes to Further Reduce Pathogens (PFRP) described in 567—67.11(455B).

6. Sewage sludge shall be treated in a process that is equivalent to a Process to Further Reduce Pathogens (PFRP), as determined by the department.

c. Vector attraction reduction requirements for Class I sewage sludge. The sewage sludge shall meet one of the following vector attraction reduction requirements.

- (1) The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38 percent.
- (2) Digest a portion of the previously anaerobically digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 degrees Celsius. If, at the end of the 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.
- (3) Digest a portion of the previously aerobically digested sewage sludge that has 2 percent solids or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 degrees Celsius. If, at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 15 percent, vector attraction reduction is achieved.
- (4) The specific oxygen uptake rate (SOUR) for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20 degrees Celsius.
- (5) Sewage sludge shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 40 degrees Celsius and the average temperature of the sewage sludge shall be higher than 45 degrees Celsius.
- (6) The pH of sewage sludge shall be raised to 12 or higher, measured at 25 degrees Celsius, by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 2 hours and then at 11.5 or higher for an additional 22 hours.
- (7) The percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials.
- (8) The percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.
- (9) Sewage sludge shall be injected below the surface of the land and no significant amount of the sewage sludge shall be present on the land surface within one hour after the sewage sludge is injected.
- (10) Sewage sludge applied to the land surface or placed on a surface disposal site shall be incorporated into the soil within six hours after application to or placement on the land.

67.7(2) Management practices for Class I sewage sludge. Class I sewage sludge may be land-applied in conformance with the following rules:

- a.* Class I sewage sludge may be applied to a lawn or a home garden.
- b.* Sewage sludge shall be applied to the land at an annual whole sludge application rate that is equal to or less than the agronomic nitrogen uptake rate, unless otherwise specified by the department.
- c.* An information sheet shall be provided to the person who receives sewage sludge sold or given away in a container for application to the land. The label or information sheet shall contain the following information:

- (1) The name and address of the sewage sludge generator.
- (2) A statement that application of the sewage sludge to the land is prohibited except in accordance with the instructions on the information sheet.
- (3) The annual application rate for the sewage sludge.

67.7(3) Frequency of monitoring for Class I sewage sludge.

- a.* The frequency of monitoring for the pollutants listed in Table 1, the pathogen density requirements, and the vector attraction reduction requirements shall be the frequency stated in Table 2.

TABLE 2—FREQUENCY OF MONITORING

Amount of sewage sludge per 365-day period dry weight basis	Monitoring Frequency
Greater than 0 but less than 290 metric tons (or 320 English tons)	once per year

Amount of sewage sludge per 365-day period dry weight basis	Monitoring Frequency
Equal to or greater than 290 but less than 1,500 metric tons (320 to 1,653 English tons)	once per quarter (4 times per year)
Equal to or greater than 1,500 but less than 15,000 metric tons (1,653 to 16,535 English tons)	once per 60 days (6 times per year)
Equal to or greater than 15,000 metric tons (or 16,535 English tons)	once per month (12 times per year)

b. After the sewage sludge has been monitored for two years, the department may reduce the frequency of monitoring, but in no case shall the frequency of monitoring be less than once per year when sewage sludge is applied to the land.

67.7(4) Record keeping for Class I sewage sludge.

a. Both the generator and bulk sludge applicator of Class I sewage sludge shall develop the following information and shall retain the information for five years:

- (1) The concentration of each pollutant listed in Table 1 in the sewage sludge.
- (2) The following certification statement: "I certify, under penalty of law, that the Class I sewage sludge requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."
- (3) A description of how the Processes to Further Reduce Pathogens requirements (PFRP) are met.
- (4) A description of how one of the vector attraction reduction requirements is met.
- (5) A description of how the management practices are met for each site.

b. Treatment works with a design flow rate of 1 million gallons per day or greater and treatment works that serve 10,000 people or more shall submit the above information to the EPA, using EPA's NPDES eReporting Tool (NeT), by February 19 of each year for the previous calendar year.

[ARC 6192C, IAB 2/9/22, effective 3/16/22]

567—67.8(455B) Land application requirements for Class II sewage sludge.

67.8(1) Class II sludge criteria. Class II sewage sludge is sewage sludge that meets the pollutant concentrations in paragraph 67.8(1) "a," the pathogen reduction standards in paragraph 67.8(1) "b," and the vector attraction reduction requirements in paragraph 67.8(1) "c" below.

a. *Pollutant concentrations for Class II sewage sludge.* The concentration of any pollutant in the sewage sludge shall not exceed the ceiling concentration for the pollutant in Table 3.

TABLE 3—CEILING CONCENTRATIONS

<u>Pollutant</u>	<u>Ceiling Concentration milligrams per kilogram*</u>
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500

*Dry weight basis

b. Pathogen reduction requirements for Class II sewage sludge. The sewage sludge shall meet one of the following three alternatives.

(1) Seven samples of the sewage sludge shall be collected at the time the sewage sludge is disposed, and the geometric mean of the density of fecal coliform shall be less than 2,000,000 Most Probable Number per gram of total solids (dry weight basis).

(2) Sewage sludge shall be treated in one of the Processes to Significantly Reduce Pathogens (PSRP) described in 567—67.11(455B).

(3) Sewage sludge shall be treated in a process that is equivalent to a Process to Significantly Reduce Pathogens (PSRP), as determined by the department.

c. Vector attraction reduction requirements for Class II sewage sludge. The sewage sludge shall meet one of the following vector attraction reduction requirements.

(1) The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38 percent.

(2) Digest a portion of the previously anaerobically digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 degrees Celsius. If, at the end of the 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.

(3) Digest a portion of the previously aerobically digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 degrees Celsius. If, at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 15 percent, vector attraction reduction is achieved.

(4) The specific oxygen uptake rate (SOUR) for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20 degrees Celsius.

(5) Sewage sludge shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 40 degrees Celsius and the average temperature of the sewage sludge shall be higher than 45 degrees Celsius.

(6) The pH of sewage sludge shall be raised to 12 or higher, measured at 25 degrees Celsius, by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 2 hours and then at 11.5 or higher for an additional 22 hours.

(7) The percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials.

(8) The percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.

(9) Sewage sludge shall be injected below the surface of the land and no significant amount of the sewage sludge shall be present on the land surface within one hour after the sewage sludge is injected.

(10) Sewage sludge applied to the land surface or placed on a surface disposal site shall be incorporated into the soil within six hours after application to or placement on the land.

67.8(2) Management practices for Class II sewage sludge. Class II sewage sludge may be land applied in conformance with the following:

a. Class II sewage sludge shall not be applied to a lawn or a home garden.

b. Land application sites accepting Class II sewage sludge not meeting pollutant concentrations listed in Table 1 of subrule 67.7(1) are subject to the cumulative pollutant loading rates listed in Table 4.

TABLE 4—CUMULATIVE POLLUTANT LOADING RATES

<u>Pollutant</u>	<u>Cumulative Pollutant kilograms per hectare</u>	<u>Loading Rate pounds per acre</u>
Arsenic	41	36
Cadmium	39	34
Copper	1500	1335
Lead	300	267

<u>Pollutant</u>	<u>Cumulative Pollutant kilograms per hectare</u>	<u>Loading Rate pounds per acre</u>
Mercury	17	15
Nickel	420	373
Selenium	100	89
Zinc	2800	2490

c. Sewage sludge shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under section 4 of the Endangered Species Act or its designated critical habitat.

d. Sewage sludge shall be applied to the land at an annual whole sludge application rate that is equal to or less than the agronomic nitrogen uptake rate, unless otherwise specified by the department.

e. The sewage sludge shall be applied only to soils classified as acceptable throughout the top 5 feet of soil profile. The sewage sludge shall not be applied to soils classified as sand, loamy sand and silt. The acceptability of a soil shall be determined using the USDA soil classifications.

f. Land application sites shall have soil pH maintained above 6.0, unless (1) crops prefer soils with lower pH conditions, (2) the sludge meets the pollution concentrations contained in Table 1, or (3) the site does not exceed calcium carbonate equivalent levels according to sound farm management practices. If the soil pH is below 6.0, it is acceptable to use agricultural lime to increase the pH to an acceptable level.

g. If the sewage sludge is applied to land on which the soil loss exceeds the soil loss limits established by the county soil conservation district, the sewage sludge shall be injected on the contour or shall be applied to the surface and mechanically incorporated into soil within 48 hours of application. The sewage sludge shall not be applied to ground having greater than 9 percent slope unless approved by the department.

h. Sewage sludge application on frozen or snow-covered ground should be avoided, unless special precautions are taken such as proven farm management practices to avoid runoff. If application on frozen or snow-covered ground is necessary, it shall be limited to land areas of less than 5 percent slope unless approved by the department.

i. Sewage sludge shall not be applied to the land that is 35 feet or less from an open waterway. If sewage sludge is applied within 200 feet, but no closer than 35 feet, of a stream, lake, sinkhole or tile line surface intake located downgradient of the land application site, it shall be injected or applied to the surface and mechanically incorporated into the soil within 48 hours of application unless approved by the department.

j. If the sewage sludge is applied to land subject to flooding more frequently than once in ten years, the sludge shall be injected or shall be applied to the surface and mechanically incorporated into the soil within 48 hours. Information on which land is subject to flooding more frequently than once in ten years is available from the department.

k. Sewage sludge shall not be applied within 200 feet of an occupied residence or any well. Distances may be reduced to a minimum of 35 feet with the written agreement of both the owner and occupant and an approved farm management plan which addresses soil erodibility, harvest residuals, buffer strips, and other sound farm management practices. The farm management plan shall be approved by the local soil conservation district commission in accordance with rules implementing Iowa Code sections 161A.42 to 161A.51.

l. Food crops with harvested parts that touch the sewage sludge/soil mixture and that are totally above the land surface shall not be harvested for 14 months after application of sewage sludge.

m. Food crops, feed crops and fiber crops shall not be harvested for 30 days after application of sewage sludge.

n. Animals shall not be allowed to graze on the land for 30 days after application of sewage sludge.

o. Turf grown on land where sewage sludge is applied shall not be harvested for one year after application of the sewage sludge when the harvested turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the department.

p. Public access to land with a high potential for public exposure shall be restricted for one year after application of sewage sludge.

q. Public access to land with a low potential for public exposure shall be restricted for 30 days after application of sewage sludge.

r. When required by the director, groundwater monitoring wells and surface monitoring points shall be installed and a monitoring program implemented. Samples must be analyzed by a laboratory which is equipped and competent to perform the tests required by the director. The results shall be forwarded to the department on a stipulated schedule.

s. The sewage sludge generator shall provide the notice and necessary information to comply with the requirements to the sewage sludge applicator and landowner.

t. The sewage sludge applicator shall provide written notice, prior to the initial application of sewage sludge, to the department. The notice shall include:

(1) The location, by legal description, of the land application site and the landowner.

(2) The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if appropriate) of the sewage sludge generator and the applicator.

67.8(3) Frequency of monitoring for Class II sewage sludge.

a. The frequency of monitoring for the pollutants listed in Table 3, the pathogen density requirements, and the vector attraction reduction requirements shall be at the frequency stated in Table 5.

TABLE 5—FREQUENCY OF MONITORING

Amount of sewage sludge per 365-day period dry weight basis	Monitoring Frequency
Greater than 0 but less than 290 metric tons (or 320 English tons)	once per year
Equal to or greater than 290 but less than 1,500 metric tons (320 to 1,653 English tons)	once per quarter (4 times per year)
Equal to or greater than 1,500 but less than 15,000 metric tons (1,653 to 16,535 English tons)	once per 60 days (6 times per year)
Equal to or greater than 15,000 metric tons (or 16,535 English tons)	once per month (12 times per year)

b. After the sewage sludge has been monitored for two years, the department may reduce the frequency of monitoring, but in no case shall the frequency of monitoring be less than once per year when sewage sludge is applied to the land.

67.8(4) Record keeping for Class II sewage sludge.

a. Both the generator and applicator of Class II sewage sludge shall develop the following information and shall retain the information for five years:

(1) The concentration of each pollutant listed in Table 3 in the sewage sludge.

(2) The following certification statement: “I certify, under penalty of law, that the Class II sewage sludge requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.”

(3) A description of how the Processes to Significantly Reduce Pathogens (PSRP) requirements are met.

(4) A description of how the vector attraction reduction requirements are met.

(5) A description of how the management practices for Class II sewage sludge are met for each site.

(6) The location and area of each site.

(7) The date and time and amount of sewage sludge applied to each site.

(8) If subjected to cumulative loading limits, the amount and cumulative amount of each pollutant listed in Table 4 of paragraph 67.8(2)“*b*” in the sewage sludge applied to each site.

(9) The amount of sewage sludge (i.e., metric tons) applied to each site.

b. Treatment works with a design flow rate of 1 million gallons per day or greater and treatment works that serve 10,000 people or more shall submit the above information to the EPA, using EPA's NPDES eReporting Tool (NeT), by February 19 of each year for the previous calendar year. In addition, a supplemental sewage sludge report that includes the land application information listed in subparagraphs 67.8(4) "a" (6) to (9) shall be submitted to the department by the same due date.

[ARC 6192C, IAB 2/9/22, effective 3/16/22]

567—67.9(455B) Class III sewage sludge.

67.9(1) Class III sewage sludge is any sewage sludge that cannot meet either Class I sewage sludge criteria or Class II sewage sludge criteria.

67.9(2) Class III sewage sludge shall not be utilized for beneficial use for land application as specified in the chapter.

67.9(3) Class III sewage sludge shall be disposed according to the surface disposal subpart of the 40 CFR Part 503 regulation and 567—103.6(455B) or the incineration subpart of the 40 CFR Part 503 regulation.

567—67.10(455B) Sampling and analytical methods.

67.10(1) General. Representative samples of sewage sludge that are applied to the land shall be collected and analyzed. Methods listed below shall be used to analyze samples of sewage sludge and calculation procedures shall be used to calculate the percent of volatile solids reduction for sewage sludge.

67.10(2) Enteric viruses. ASTM D4994-19, "Standard Practice for Recovery of Viruses From Wastewater Sludges," ASTM International, West Conshohocken, PA, 2019, www.astm.org.

67.10(3) Fecal coliform. SM 9221 E-2011 or SM 9222 D-2011, "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, Washington, D.C.; EPA Method 1680: Fecal Coliforms in Sewage Sludge (Biosolids) by Multiple-Tube Fermentation using Lauryl Tryptose Broth (LBT) and EC Medium, EPA-821-R-14-009, September 2014; EPA Method 1681: Fecal Coliforms in Sewage Sludge (Biosolids) by Multiple-Tube Fermentation using A-1 medium, EPA-821-R-06-013, July 2006.

67.10(4) Helminth ova. Yanko, W., "Occurrence of Pathogens in Distribution and Marketing Municipal Sludges," U.S. Environmental Protection Agency, Washington, D.C., EPA/600/1-87/014 (NTIS PB88154273), 1988.

67.10(5) Inorganic pollutants.

a. *Metals.* "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, 3rd Edition, Final Updates V (2015), www.epa.gov/hw-sw846/sw-846-compendium.

b. *Nonmetals.* For nonmetals not identified elsewhere in this chapter, methods approved at 40 CFR Part 136, as amended through August 28, 2017.

67.10(6) Salmonella sp. bacteria. SM 9260 B-2011, "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, Washington, D.C.; EPA Method 1682: *Salmonella* in Sewage Sludge (Biosolids) by Modified Semisolid Rappaport-Vassiliadis (MSRV) Medium, EPA-821-R-06-14, July 2006; or Kenner, B.A. and H.P. Clark, "Detection and Enumeration of *Salmonella* and *Pseudomonas aeruginosa*," J. Water Pollution Control Federation, 46(9):2163-2171, 1974.

67.10(7) Specific oxygen uptake rate. SM 2710 B-2011, "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, Washington, D.C.

67.10(8) Total, fixed, and volatile solids. SM 2540 G-2011, "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, Washington, D.C.

67.10(9) Percent volatile solids reduction calculation. "Environmental Regulations and Technology - Control of Pathogens and Vectors in Sewage Sludge," EPA-625/R-92/013, July 2003.

[ARC 6192C, IAB 2/9/22, effective 3/16/22]

567—67.11(455B) Pathogen treatment processes.

67.11(1) Processes to significantly reduce pathogens (PSRP).

a. *Aerobic digestion.* Sewage sludge is agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 40 days at 20 degrees Celsius and 60 days at 15 degrees Celsius.

b. *Air drying.* Sewage sludge is dried on sand beds or on paved or unpaved basins. The sewage sludge dries for a minimum of three months. During two of the three months, the ambient average daily temperature is above zero degrees Celsius.

c. *Anaerobic digestion.* Sewage sludge is treated in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 35 to 55 degrees Celsius and 60 days at 20 degrees Celsius.

d. *Composting.* Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the sewage sludge is raised to 40 degrees Celsius or higher and remains at 40 degrees Celsius or higher for five days. For four hours during the five days, the temperature in the compost pile exceeds 55 degrees Celsius.

e. *Lime stabilization.* Sufficient lime is added to the sewage sludge to raise the pH of the sewage sludge to 12 after two hours of contact.

67.11(2) *Processes to further reduce pathogens (PFRP).*

a. *Composting.* Using either the within-vessel composting method or the static aerated pile composting method, the temperature of the sewage sludge is maintained at 55 degrees Celsius or higher for three days.

Using the windrow composting method, the temperature of the sewage sludge is maintained at 55 degrees Celsius or higher for 15 days or longer. During the period when the compost is maintained at 55 degrees Celsius or higher, there shall be a minimum of five turnings of the windrow.

b. *Heat drying.* Sewage sludge is dried by direct or indirect contact with hot gases to reduce the moisture content of the sewage sludge to 10 percent or lower. Either the temperature of the sewage sludge particles exceeds 80 degrees Celsius or the wet bulb temperature of the gas in contact with the sewage sludge as the sewage sludge leaves the dryer exceeds 80 degrees Celsius.

c. *Heat treatment.* Liquid sewage sludge is heated to a temperature of 180 degrees Celsius or higher for 30 minutes.

d. *Thermophilic aerobic digestion.* Liquid sewage sludge is agitated with air or oxygen to maintain aerobic conditions and the mean cell residence time of the sewage sludge is ten days at 55 to 60 degrees Celsius.

e. *Beta ray irradiation.* Sewage sludge is irradiated with beta rays from an accelerator at dosages of at least 1.0 megarad at room temperature (ca. 20 degrees Celsius).

f. *Gamma ray irradiation.* Sewage sludge is irradiated with gamma rays from certain isotopes, such as Cobalt 60 and Cesium 137, at room temperature (ca. 20 degrees Celsius).

g. *Pasteurization.* The temperature of the sewage sludge is maintained at 70 degrees Celsius or higher for 30 minutes or longer.

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These rules are intended to implement Iowa Code section 455B.174.

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