3745-40-04 **Biosolids classifications.**

[Comment: Definitions relevant to this chapter can be found in rule 3745-40-01 of the Administrative Code.]

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, federal rules and federal statutory provisions referenced in this rule, see rule 3745-40-01 of the Administrative Code.]

(A) General requirements.

(1) After the effective date of this rule, a biosolids classification shall be determined in accordance with table A-1 of this rule.

Table A-1: Biosolids classifications

Biosolids classification	Requirements for pathogen reduction	Additional requirements for fecal coliform or Salmonella sp. bacteria reduction	Requirements for vector attraction reduction	Requirements for metals concentration limits
B	Choose from pathogen reduction alternatives P-1 to P-7, in accordance with paragraphs (B)(1) to (B)(7) of this rule	Not applicable [2]	Choose from vector attraction reduction options VAR-1 to VAR-10, in accordance with paragraphs (C)(1) to (C)(10) of ths rule	Table D-1
A[1]	Choose from pathogen reduction alternatives P-8 to P-16, in accordance with paragraphs (B)(8) to (B)(16) of this rule	Applicable in accordance with paragraph (B) of this rule	Choose from vector attraction reduction options VAR-9 or VAR-10, in accordance with paragraphs (C)(9) to (C)(10) of this rule	Table D-1

Exceptional quality[1]	Choose from pathogen reduction alternatives P-8 to P-16, in accordance with paragraphs (B)(8) to (B)(16) of this rule	Applicable in accordance with paragraph (B) of this rule	Choose from vector attraction reduction options VAR-1 to VAR-8, in accordance with paragraphs (C)(1) to (C)(8) of this rule	Table D-1

Note 1: For class A or exceptional quality biosolids, the pathogen reduction alternatives in accordance with table A-1 of this rule shall be met either prior to or at the same time as meeting the vector attraction reduction requirements.

Note 2: No additional requirements for fecal coliform exist beyond the requirements to meet pathogen reduction alternative P-1.

(2) Records shall be kept in accordance with this rule and in accordance with rule 3745-40-09 of the Administrative Code.

(B) Pathogen reduction alternatives.

Class B biosolids: For class B biosolids, pathogen reduction shall be accomplished in accordance with an alternative found in paragraphs (B)(l) to (B)(7) of this rule.

Class A or exceptional quality biosolids: For class A or exceptional quality biosolids, pathogen reduction shall be accomplished when the density of fecal coliform in the sewage sludge is less than one thousand most probable number (mpn) per gram of total solids (dry weight basis) or the density of Salmonella sp. bacterial in the sewage sludge is less than three most probable number (mpn) per four grams of total solids (dry weight basis), and a pathogen reduction alternative is accomplished in accordance with an alternative found in paragraphs (B)(8) to (B)(16) of this rule. To meet the fecal coliform or Sallmonella sp. bacteria requirement, at a minimum, seven grab samples of the biosolids shall be taken and analyzed and all results shall meet the limits listed in this paragraph for the biosolids to be considered class A or exceptional quality.

Note: Pathogen Reduction Alternatives P-1 through P-7 can be used to achieve Class B Biosolids.

(1) Pathogen reduction alternative P-1: geometric mean of seven samples.

(a) Requirements for achieving pathogen reduction alternative P-1.

(i) At a minimum, seven grab samples of the biosolids that are proposed for beneficial use shall be collected. The samples of the biosolids shall be taken at various locations, so as to be representative. For larger biosolids piles, the director may require more than seven samples to be taken to ensure adequate representation.

(ii) The geometric mean of the density of fecal coliform in the biosolids samples shall be either:

(a) Less than two million most probable number (mpn) per gram of total solids (dry weight basis); or

(b) Less than two million colony forming units per gram of total solids (dry weight basis).

[Comment: The following geometric mean calculation example was taken from "Environmental Regulations and Technology - Control of Pathogens and Vector Attraction in Sewage Sludge".]

Calculating the Geometric Mean for Class B Alternative 1

- Take seven samples over a 2-week period.
- Analyze samples for fecal coliform using the membrane filter or MPN dilution method.
- Take the log (Base 10) of each result.
- Take the average (arithmetic) of the logs.
- Take the anti-log of the arithmetic average. This is the geometric mean of the results.

Example: The results of analysis of seven samples of sewage sludge are shown below. The second column of the table shows the log of each result.

	Fecal Coliform (MPN/dry gram sewage sludge)	Log
Sample 1	6.4×10^6	6.81
Sample 2	4.8×10^4	4.68
Sample 3	6.0×10^5	5.78
Sample 4	5.7×10^5	5.76
Sample 5	5.8×10^5	5.76
Sample 6	4.4×10^6	6.64
Sample 7	6.2×10^7	7.80
Average (Arithmetic)		6.18
Antilog (geometric mean)		1.5×10^6
Log standard deviation		1.00*

(iii) All samples taken for the purpose of showing compliance with this rule in regards to the limit for fecal coliform numbers must be submitted for analysis within six hours of collection.

(b) Monitoring frequency requirements for pathogen reduction alternative P-1. The permitee shall complete monitoring in accordance with paragraph (B)(1)(a) of rule 3745-40-04 of the Administrative Code prior to each hauling event, but at a maximum of once per month. If a

hauling event does not occur in a reporting period as specified in paragraph (B) of rule 3745-40-09 of the Administrative Code, monitoring is still required to be performed at least once per reporting period.

(c) Record keeping requirements for pathogen reduction alternative P-1. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Written documentation that the sewage sludge has been stabilized through an actively mixed aerobic or anaerobic process or through lime stabilization. Examples of such documentation include documenting that lime has been added to the sewage sludge, that proper mixing and aeration has occurred or calculating the mean cell residence time in a digester;

(ii) Analytical results for density of fecal coliform for each sample collected from the biosolids; and

(iii) The geometric mean calculations for the biosolids.

(2) Pathogen reduction alternative P-2: aerobic digestion.

(a) Requirements for achieving pathogen reduction alternative P-2: aerobic digestion. The requirements for achieving alternative P-2 include:

(i) The sewage sludge shall be agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time at a specific temperature;

(ii) The values for the mean cell residence time and temperature shall be between forty days at twenty degrees Celsius (sixty-eight degrees Fahrenheit) and sixty days at fifteen degrees Celsius (fifty-nine degrees Fahrenheit), where a minimum temperature of fifteen degrees Celsius is maintained at all times; and

[Comment: The relevant equation for the mean cell residence time and appurtenant information can be found in appendix E of "Environmental Regulations and Technology - Control of Pathogen and Vector Attraction in Sewage Sludge". To calculate the number of days of the mean cell residence time that is required for temperatures between fifteeen and twenty degrees Celsius, the following equation should be used:

Time in days = $40 \times 1.08^{(20-T)}$ (Where T is the temperature between fifteen and twenty degrees Celsius.)]

(iii) To ensure that the aerobic digester keeps the digester solids in suspension and well mixed, a positive dissolved oxygen level shall be maintained in the digester. The dissolved oxygen concentration shall be obtained and analyzed at least once per day.

(b) Recordkeeping requirements for pathogen reduction alternative P-2: aerobic digestion. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) The dissolved oxygen concentrations in each aerobic digester;

(ii) The mean cell residence time of the sewage sludge in each aerobic digester; and

(iii) The records showing the proper temperature was maintained during the mean cell residence time.

(3) Pathogen reduction alternative P-3: air drying.

(a) Requirements for achieving pathogen reduction alternative P-3: air drying. The requirements for achieving alternative P-3 include:

(i) Partially digested sewage sludge is dried on sand beds or on paved or unpaved basins for a minimum of ninety days;

(ii) The temperature of the sewage sludge is greater than zero degrees Celsius (thirty-two degrees Fahrenheit) for at least sixty days within the ninety day period; and

(iii) All leachate from the drying basins is returned to the treatment process.

(b) Recordkeeping requirements for pathogen reduction alternative P-3: air drying. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) A description of the drying bed design, including the type of media being used, the number of drying beds available, the number of drying beds in use, and the dimensions of each drying bed;

(ii) The drying time in days for each drying bed in use; and

(iii) The daily minimum temperature, for each of the ninety days.

(4) Pathogen reduction alternative P-4: anaerobic digestion.

(a) Requirements to achieve pathogen reduction alternative P-4: anaerobic digestion. The requirements for achieving alternative P-4 include:

(i) Sewage sludge shall be treated in the absence of air for a specific mean cell residence time at a specific temperature; and

(ii) The values for the mean cell residence time and the temperature shall be between fifteen days at thirty-five to fifty-five degrees Celsius (between ninety-five and one hundred thirty-one degrees Fahrenheit) and sixty days at twenty degrees Celsius (sixty-eight degrees Fahrenheit). A minimum temperature of twenty degrees Celsius shall be maintained at all times.

[Comment: The relevant equations for the mean cell residence time and appurtenant information can be found in appendix E of "Environmental Regulations and Technology-Control of Pathogen and Vector Attraction in Sewage Sludge". To calculate the number of days of the mean cell residence time required for temperatures between twenty and thirty degrees Celsius, the following equation should be used:

Time in days = 15 +3 (35-T) (Where T is the temperature between twenty and thirty-five degrees Celsius.)]

(b) Recordkeeping requirements for pathogen reduction alternative P-4: anaerobic digestion. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) The mean cell residence time of sewage sludge in each digester; and

(ii) The temperature records of sewage sludge in each digester.

(5) Pathogen reduction alternative P-5: composting.

(a) Requirements for achieving pathogen reduction alternative P-5: composting. The requirements for achieving alternative P-5 include:

(i) Operating in accordance with the requirements of Chapters 3704. and 6111. of the Revised Code, section 3745.11 of the Revised Code and rules adopted thereunder. Such treatment works shall not be subject to the requirements in rules 3745-27-40 to 3745-27-47 of the Administrative Code and Chapter 3745-37 of the Administrative Code if all the following conditions are met:

(a) The owner or operator of the treatment works is operating the treatment works in accordance with an NPDES permit issued in accordance with Chapter 6111. of the Revised Code;

(b) The owner or operator of the treatment works co-composts sewage sludge or biosolids exclusively with bulking agents or additives, as defined in rules 3745-27-01 and 3745-27-40 of the Administrative Code, or alternative bulking agents or additives that have been approved by the director or an authorized representative; and

(c) The owner or operator of the treatment works utilizes only sewage sludge, biosolids, yard waste, animal waste, food scraps, or an alternative feedstock that has been approved by the director or an authorized representative as feedstocks in the composting process where the sewage sludge and biosolids comprise fifty per cent or greater on a volume basis of the feedstocks utilized in the composting process; and

(ii) Composting that is accomplished through:

(a) In vessel composting, where:

(i) The temperature of the compost medium is maintained at forty degrees Celsius (one hundred four degrees Fahrenheit) or higher for five consecutive days throughout the entire composting medium;

(ii) For four consecutive hours during the five day period, the temperature of the composting medium must rise above fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit); and

(iii) The temperature is measured at multiple points and at a range of depths throughout the composting medium and shall be recorded at the beginning of the compost process when the minimum temperature has been reached, at least once daily, at least once per hour during the four hour period when the composting medium is above fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) and at the end of the five day period;

(b) Aerated static pile composting, where:

(i) The temperature of the composting medium is maintained at forty degrees Celsius (one hundred four degrees Fahrenheit) or higher for five consecutive days throughout the entire composting medium;

(ii) For four consecutive hours during the five day period, the temperature of the composting medium must rise above fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit);

(iii) One foot or greater of an insulation material shall be placed over the surface of the aerated static pile to ensure that the entire composting medium achieves forty degrees Celsius (one hundred four degrees Fahrenheit) or higher. Finished compost used as insulation material to cover the aerated static pile must be class A or exceptional quality biosolids; and

(iv) The temperature is measured at multiple points and at a range of depths throughout the composting medium, including the toes of the pile, and shall be recorded at the beginning of the composting process, at least once daily, at least once per hour during the four hour period that the composting medium is above fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) and at the end of the five day period; or

[Comment: It is recommended that a method be used that draws air through the composting medium rather than blowing air through the medium. Drawing air through the composting medium provides greater odor control because the compost air can be easily collected and then filtered or scrubbed.]

(c) Windrow composting, where:

[Comment: It is recommended that treatment works allow sewage sludge or biosolids to compost for a minimum of fourteen days for in-vessel composting, twenty-one days for static aerated pile composting, or thirty days for windrow composting to reduce volatile solids in the sewage sludge or biosolids. Sewage sludge or biosolids that are composted for the minimum amount of time by rule may still be odorous. Composting is generally considered complete when the temperature of the compost returns to ambient

temperatures.]

(i) The temperature of the windrow of composting medium shall be maintained at forty degrees Celsius (one hundred four degrees Fahrenheit) or higher for a minimum of five consecutive days, except during active turning or mixing of the windrow;

(ii) For four consecutive hours during the five day period, the temperature of the composting medium must rise above fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit);

(iii) The windrow of composting medium shall be turned or mixed during the five day period so that the entire compost medium has maintained a temperature of forty degrees Celsius (one hundred four degrees Fahrenheit) for a minimum of five days. The turning or mixing shall be done by a machine that moves the core of the composting material to the outside of the windrow and moves the outside compost material into the core of the windrow;

(iv) The temperature of the windrow shall be at or above forty degrees Celsius (one hundred four degrees Fahrenheit) within twenty-hours after the turning or mixing of the windrow is complete; and

(v) The temperature is measured at multiple points and at a range of depths throughout the composting medium, including the toes of the pile, and shall be recorded at the beginning of the composting process, at least once daily, at least once per hour during the four hour period that the composting medium is above fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) and at the end of the five day period.

(b) Recordkeeping requirements for pathogen reduction alternative P-5: composting. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) A description of the composting method, including where the temperature shall be measured;

(ii) The weight or volume and county of origin of all feedstocks, bulking agents and additives utilized in the composting process;

and

(iii) For in-vessel composting:

(a) The daily temperature records for each vessel at each sample location that documents that the sewage sludge was maintained at a temperature of forty degrees Celsius (one hundred four degrees Fahrenheit) for five days; and

(b) The hourly readings for each vessel at each sample location showing that the temperature exceeded fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) for four consecutive hours; or

(iv) For aerated static pile composting:

(a) The daily temperature records for each aerated static pile at each sample location that documents that the sewage sludge was maintained at a temperature of forty degrees Celsius (one hundred four degrees Fahrenheit) for five days; and

(b) The hourly readings for each aerated static pile at each sample location showing that the temperature exceeded fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) for four consecutive hours; or

(v) For windrow composting:

(a) The daily temperature records for each windrow at each sample location that documents that the sewage sludge was maintained at a temperature of forty degrees Celsius (one hundred four degrees Fahrenheit) for five days; and

(b) Hourly readings for each windrow at each sample location showing that the temperature exceeded fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) for four consecutive hours; and

(c) Records that indicate the day and the time of day each windrow was turned or mixed.

(6) Pathogen reduction alternative P-6: lime treatment.

(a) Requirements for achieving pathogen reduction alternative P-6: lime treatment. The requirements for achieving alternative P-6 include:

(i) Adding sufficient lime to the sewage sludge to raise the pH to twelve

after two hours of contact;

(ii) Sufficient mixing to ensure that the entire mass of sewage sludge comes into contact with the lime and undergoes the increase in pH. The pH shall be measured at several locations to ensure that the pH is raised throughout the sewage sludge; and

(iii) Incorporating measures to minimize odors.

(b) Recordkeeping requirements for pathogen reduction alternative P-6: lime treatment. Records shall be maintained and submitted to the director or an authorized representative with the annual report that include:

(i) A description of how the pH is monitored throughout the sludge and how the lime is mixed into the sludge;

(ii) Records that initially document the pH of the sewage sludge once lime has been added and then documents the pH again two hours after the addition of the lime; and

(iii) Records of the amount of lime added, expressed in dry tons.

[Comment: A variety of lime stabilization processes are currently in use. The effectiveness of any lime stabilization process for controlling pathogens depends on maintaining the pH at levels that reduce microorganisms in the biosolids. Field experience has shown that the beneficial use of lime stabilized material after the pH has dropped below 10.5 may, in some cases, create odor problems. Therefore, it is recommended that biosolids beneficial use take place while the pH remains elevated. If this is not possible, and odor problems develop, alternate management practices in the field, including injection or incorporation or top dressing the beneficially used biosolids with additional lime, shall be performed. Alternate management practices, if the biosolids have not yet left the wastewater treatment plant, may include adding additional lime to maintain the elevated pH or additional treatment through drying or composting.]

(7) Pathogen reduction alternative P-7: equivalent process to significantly reduce pathogens.

(a) Requirements for achieving pathogen reduction alternative P-7: equivalent process to significantly reduce pathogens. To achieve alternative P-7, a permittee shall apply for and obtain an equivalency recommendation from the pathogen equivalency committee of the United States environmental protection agency.

(b) Recordkeeping requirements for pathogen reduction alternative P-7:

equivalent process to significantly reduce pathogens. The records of the operating parameters or pathogen levels, as necessary to demonstrate the process equivalent to a process to significantly reduce pathogens, shall be maintained and submitted to the director or an authorized representative with the annual report.

Note: Pathogen Reduction Alternatives P-8 through P-16 can be used to achieve Class A Biosolids.

(8) Pathogen reduction alternative P-8: time and temperature regime.

(a) Requirements for achieving pathogen reduction alternative P-8: time and temperature regime. The requirements for achieving alternative P-8 include maintaining a temperature in the sewage sludge at a specific value for a specific time period, in accordance with paragraphs (B)(8)(a)(i) to (B)(8)(a)(iv) of this rule.

(i) When the per cent solids of the sewage sludge is seven per cent or higher, the temperature of the sewage sludge shall be fifty degrees Celsius or higher, the time period shall be twenty minutes or longer and the temperature and time period shall be determined using equation number one, except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid. Equation number one is:

$D = 131{,}000{,}000/10^{0.1400T}$ (Where D equals time in days and T equals temperature in degrees Celsius.)

[Comment: The time and temperature table below provides common durations for common temperatures, relevant to the requirements of paragraph (B)(8)(a)(i) of this rule.]

Table B-1: Time and temperature table for paragraph (B)(8)(a)(i) of this rule.

Temperature in degrees Celsius	Temperature in degrees Fahrenheit	Duration in days	Duration in hours	Duration in minutes
50	122	14	--	--
52	125.6	7	--	--

54	129.2	4	--	--
56	132.8	2	--	--
58	136.4	--	24	--
60	140	--	13	--
62	143.6	--	7	--
64	147.2	--	4	--
66	150.8	--	2	--
68	154.4	--	--	57
70	158	--	--	30
72	161.6	--	--	20
74	165.2	--	--	20
76	168.8	--	--	20
78	172.4	--	--	20
80	176	--	--	20
82	179.6	--	--	20
84	183.2	--	--	20
Above 84	Above 183.2	--	--	20

(ii) When the per cent solids of the sewage sludge is seven per cent 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 fifty degrees Celsius or higher, the time period shall be fifteen seconds or longer and the temperature and time period shall be determined using equation number one;

[Comment: The time and temperature table below provides common durations for common temperatures, relevant to the requirements of paragraph (B)(8)(a)(ii) of this rule.]

Table B-2: Time and temperature table for paragraph (B)(8)(a)(ii) of this rule.

Temperature	Temperature	Duration in	Duration in	Duration in	Duration in

in degrees Celsius	in degrees Fahrenheit	days	hours	minutes	seconds
50	122	14	--	--	--
52	125.6	7	--	--	--
54	129.2	4	--	--	--
56	132.8	2	--	--	--
58	136.4	1	--	--	--
60	140	--	13	--	--
62	143.6	--	7	--	--
64	147.2	--	4	--	--
66	150.8	--	2	--	--
68	154.4	--	--	57	--
70	158	--	--	30	--
72	161.6	--	--	16	--
74	165.2	--	--	9	--
76	168.8	--	--	5	--
78	172.4	--	--	3	--
80	176	--	--	2	--
82	179.6	--	--	--	38
84	183.2	--	--	--	20
Above 84	Above 183.2	--	--	--	15

(iii) When the per cent solids of the sewage sludge is less than seven per cent and the time period is at least fifteen seconds, but less than thirty minutes, the temperature and time period shall be determined using equation number one; or

[Comment: Time and temperature table below provides common durations for common temperatures, relevant to the requirements

of paragraph (B)(8)(a)(iii) of this rule.]

Table B-3: Time and temperature table for paragraph (B)(8)(a)(iii) of this rule.

Temperature in degrees Celsius	Temperature in degrees Fahrenheit	Duration in days	Duration in hours	Duration in minutes	Duration in seconds
70	158	--	--	30	--
72	161.6	--	--	15	--
74	165.2	--	--	9	--
76	168.8	--	--	5	--
78	172.4	--	--	3	--
80	176	--	--	2	--
82	179.6	--	--	--	38
84	183.2	--	--	--	20
Above 84	Above 183.2	--	--	--	15

(iv) When the per cent solids of the sewage sludge is less than seven per cent, the temperature of the sewage sludge is fifty degrees Celsius or higher, and the time period is thirty minutes or longer, the temperature and time period shall be determined using equation number two. Equation number two is:

$D = 50{,}070{,}000/10^{0.1400T}$ (Where D equals time in days and T equals temperature in degrees Celsius.

[Comment: The time and temperature table below provides common durations for common temperatures, relevant to the requirements in paragraph (B)(8)(a)(iv) of this rule.]

Table B-4: Time and temperature table for paragraph (B)(8)(a)(iv) of this rule.

Temperature in degrees Celsius	Temperature in degrees Fahrenheit	Duration in days	Duration in hours	Duration in minutes
50	122	5	--	--

52	125.6	3	--	--
54	129.2	2	--	--
56	132.8	--	18	--
58	136.4	--	10	--
60	140	--	5	--
62	143.6	--	3	--
64	147.2	--	2	--
66	150.8	--	--	42
68	154.4	--	--	30
70	158	--	--	30
72	161.6	--	--	30
74	165.2	--	--	30
76	168.8	--	--	30
78	172.4	--	--	30
80	176	--	--	30
82	179.6	--	--	30
84	183.2	--	--	30
Above 84	Above 183.2	--	--	30

(b) Recordkeeping requirements for pathogen reduction alternative P-8: time and temperature regime. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Analytical results for density of fecal coliform bacteria expressed as the most probable number (mpn) per gram of total solids in dry weight basis, or the density of Salmonella sp. bacteria expressed as mpn per four grams of total solids in dry weight basis;

(ii) The sewage sludge temperature;

(iii) The duration, in days, hours, minutes and seconds, as applicable, that the temperature was maintained; and

(iv) Analytical results for per cent solids of the sewage sludge or biosolids treated in the process.

(9) Pathogen reduction alternative P-9: high pH and high temperature process.

(a) Requirements for achieving pathogen reduction alternative P-9: high pH and high temperature process. The requirements for achieving alternative P-9 include:

(i) Ensuring that the pH of the sewage sludge is raised to above twelve and remains above twelve for at least seventy-two hours;

(ii) Ensuring that the temperature of the sewage sludge is above fifty-two degrees Celsius (one hundred twenty five and six tenths degrees Fahrenheit) for at least twelve hours during the period that the pH is above twelve; and

(iii) Ensuring that at the end of the seventy-two hours period during which the pH of the sewage sludge is above twelve, that the sewage sludge is air dried to a per cent solids of greater than fifty per cent.

(b) Recordkeeping requirements for pathogen reduction alternative P-9: high pH and high temperature process. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Analytical results for density of fecal coliform bacteria expressed as the most probable number (mpn) per gram of total solids in dry weight basis, or the density of Salmonella sp. bacteria expressed as mpn per four grams of total solids in dry weight basis;

(ii) Records of the sewage sludge pH at start-up, at twenty-four hours, at forty-eight hours and at seventy-two hours;

(iii) The hourly sewage sludge temperature for the twelve hours that the temperature is required to be maintained;

(iv) The per cent solids of the sewage sludge after air drying;

(v) Records showing the amount of alkaline material that was added and when it was added, expressed in dry tons; and

(vi) A narrative description of how the pH and temperature are maintained throughout the entire mass of biosolids.

(10) Pathogen reduction alternative P-10: composting.

(a) Requirements for achieving pathogen reduction alternative P-10: composting. The requirements for achieving alternative P-10 include:

(i) Operating in accordance with the requirements of Chapters 3704. and 6111. of the Revised Code, section 3745.11 of the Revised Code and any rules adopted thereunder. Such treatment works is not subject to the requirements of rules 3745-27-40 and 3745-27-47 of the Administrative Code and Chapter 3745-37 of the Administrative Code if all the following conditions are met:

(a) The owner or operator of the treatment works is operating the treatment works in accordance with an NPDES permit issued in accordance with Chapter 6111. of the Revised Code;

(b) The owner or operator of the treatment works co-composts sewage sludge or biosolids exclusively with bulking agents or additives, as defined in rules 3745-27-01 and 3745-27-40 of the Administrative Code, or alternative bulking agents or additives that have been approved by the director or an authorized representative; and

(c) The owner or operator of the treatment works utilizes only sewage sludge, biosolids, yard waste, animal waste, food scraps, or an alternative feedstock that has been approved by the director or an authorized representative as feedstocks in the composting process where the sewage sludge and biosolids comprise fifty per cent or greater on a volume basis of the feedstocks utilized in the composting process; and

(ii) Composting that is accomplished through:

(a) In-vessel composting, where:

(i) The temperature of the composting medium is maintained at fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) or higher for seventy-two hours throughout the entire composting medium; and

(ii) The temperature is measured at multiple points and at a range of depths throughout the composting medium and shall be recorded, at a minimum, at the beginning of the composting process, at twenty-four hours, at forty-eight hours and at seventy-two hours;

(b) Aerated static pile composting, where:

(i) The temperature of the composting medium is maintained at fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) or higher for seventy-two consecutive hours throughout the entire composting medium;

(ii) One foot or greater of an insulation material is placed over the surface of the aerated static pile to ensure that the entire composting medium achieves fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) or higher. Finished compost can be used as an insulation material to cover the aerated static pile provided it is class A or exceptional quality biosolids; and

(iii) The temperature is measured at multiple points and at a range of depths throughout the composting medium including the toes of the piles, and is recorded, at a minimum, at the beginning of the composting process and at twenty-four, forty-eight and seventy-two hours at a minimum; or

[Comment: It is recommended that a method be used that draws air through the composting medium rather than blowing air through the medium. Drawing air through the composting medium provides greater odor control because the air can be easily collected and then filtered or scrubbed.]

(c) Windrow composting, where:

[Comment: To reduce volatile solids, it is recommended that in-vessel composting be conducted for a minimum of fourteen days, that static, aerated pile composting be conducted for a minimum of twenty-one days and that windrow composting be conducted for a minimum of thirty days. Sewage sludge or biosolids that are composted for the minimum amount of times may still be odorous.]

(i) The temperature of the composting medium is maintained at fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) or higher for a minimum of fifteen consecutive days, except during active turning or mixing of the windrow;

(ii) The windrow of composting medium is turned or mixed at seventy-two hour intervals during the fifteen day period, where the minimum number of turnings or mixing is five;

(iii) The turning or mixing is done by a machine that moves the core of the compost material to the outside of the windrow and moves the outside compost material into the core of the windrow;

(iv) The core temperature of the windrow is at or above fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) within twenty-four hours after each turning or mixing of the windrow is complete; and

(v) The temperature shall be measured in the core of the windrow at various locations along the length of the windrow. Temperatures shall be recorded at the same time daily, at a minimum, throughout the fifteen day period.

(b) Recordkeeping requirements for pathogen reduction alternative P-10: composting. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Analytical results for density of fecal coliform bacteria expressed as the most probable number (mpn) per gram of total solids in dry weight basis, or the density of Salmonella sp. bacteria expressed as mpn per four grams of total solids in dry weight basis;

(ii) A description of the composting method, including where the temperature was measured;

(iii) The weight or volume and county of origin of all feedstocks, bulking agents and additives utilized in the composting process;

(iv) Records documenting the temperature maintained at or above fifty-five degrees Celsius (one hundred thirty-one degrees Fahrenheit) for each sampling location:

(a) Three days for either in-vessel or static, aerated pile composting; or

(b) Fifteen days for windrow composting; and

(v) If windrow composting was utilized, records documenting the compost pile was turned or mixed at least five times during the fifteen day period.

(11) Pathogen reduction alternative P-11: heat drying.

(a) Requirements for achieving pathogen reduction alternative P-11: heat drying. The requirements for achieving alternative P-11 include drying the sewage sludge by direct or indirect contact with hot gases to increase the sewage sludge to a per cent solids content of at least ninety per cent, where either the temperature of the sewage sludge particles exceeds eighty degrees Celsius (one hundred seventy-six degrees Fahrenheit) or the wet bulb temperature of the gas in contact with the sewage sludge as the sewage sludge leaves the dryer exceeds eighty degrees Celsius (one hundred seventy-six degrees Fahrenheit).

(b) Recordkeeping requirements for pathogen reduction alternative P-11: heat drying. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Analytical results for density of fecal coliform bacteria expressed as the most probable number (mpn) per gram of total solids in dry weight basis, or the density of Salmonella sp. bacteria expressed as mpn per four grams of total solids in dry weight basis;

(ii) The moisture content of the dried sewage sludge; and

(iii) Records documenting that the temperature of the sewage sludge particles or the wet bulb temperature of exit gas exceeds eighty degrees Celsius (one hundred seventy-six degrees Fahrenheit).

(12) Pathogen reduction alternative P-12: thermophilic aerobic digestion.

(a) Requirements for achieving pathogen reduction alternative P-12: thermophilic aerobic digestion. The requirements for achieving alternative P-12 include:

(i) Agitating the liquid sewage sludge with air or oxygen to maintain aerobic conditions, where the mean cell residence time is ten days and the temperature, which is measured at least once per day, is between fifty-five and sixty degrees Celsius (one hundred

thirty-one degrees to one hundred forty degrees Fahrenheit); and

(ii) Maintaining a positive dissolved oxygen concentration in each digester, where the concentration is to be measured daily.

(b) Recordkeeping requirements for pathogen reduction alternative P-12: thermophilic aerobic digestion. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Analytical results for density of fecal coliform bacteria expressed as the most probable number (mpn) per gram of total solids in dry weight basis, or the density of Salmonella sp. bacteria expressed as mpn per four grams of total solids in dry weight basis;

(ii) The dissolved oxygen concentration in each digester;

(iii) Records documenting the temperature was maintained at fifty-five to sixty degrees Celsius (one hundred thirty-one degrees to one hundred forty degrees Fahrenheit) in each digester; and

(iv) Records documenting the mean cell residence time was met in each digester.

(13) Pathogen reduction alternative P-13: beta ray irradiation.

(a) Requirements for achieving pathogen reduction alternative P-13: beta ray irradiation. To achieve alternative P-13, the sewage sludge shall be irradiated with beta rays from an accelerator at dosages of at least one megarad at room temperature (approximately twenty degrees Celsius or sixty-eight degrees Fahrenheit).

(b) Recordkeeping requirements for pathogen reduction alternative P-13: beta ray irradiation. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Analytical results for the density of fecal coliform bacteria expressed as the most probable number (mpn) or the number of colony forming units;

(ii) The beta ray dosage; and

(iii) The ambient room temperature records.

(14) Pathogen reduction alternative P-14: gamma ray irradiation.

(a) Requirements for achieving pathogen reduction alternative P-14: gamma ray irradiation. To achieve alternative P-14, the sewage sludge shall be irradiated with gamma rays from certain isotopes, such as \60\cobalt and \137\cesium, at dosages of at least one megarad at room temperature (approximately twenty degrees Celsius or sixty-eight degrees Fahrenheit).

(b) Recordkeeping requirements for pathogen reduction alternative P-14: gamma ray irradiation. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Analytical results for density of fecal coliform bacteria expressed as the most probable number (mpn) per gram of total solids in dry weight basis, or the density of Salmonella sp. bacteria expressed as mpn per four grams of total solids in dry weight basis;

(ii) Documentation of the gamma ray isotope uses;

(iii) The gamma ray dosage; and

(iv) Ambient room temperature records.

(15) Pathogen reduction alternative P-15: pasteurization.

(a) Requirements for achieving pathogen reduction alternative P-15: pasteurization. To achieve alternative P-15, the temperature of the sewage sludge shall be maintained at seventy degrees Celsius (one hundred fifty-eight degrees Fahrenheit) or higher for thirty minutes or longer and tracked constantly.

(b) Recordkeeping requirements for alternative P-15: pasteurization. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Analytical results for density of fecal coliform bacteria expressed as the most probable number (mpn) per gram of total solids in dry weight basis, or the density of Salmonella sp. bacteria expressed as mpn per four grams of total solids in dry weight basis; and

(ii) Records documenting that the temperature was maintained at or above seventy degrees Celsius (one hundred fifty-eight degrees Fahrenheit) or higher for at least thirty minutes throughout the sewage sludge.

(16) Pathogen reduction alternative P-16: equivalent process to further reduce

pathogens. Requirements for achieving pathogen reduction alternative P-16: thermophilic aerobic digestion.

(a) To achieve alternative P-16, a permittee shall apply for and obtain an equivalency recommendation from the pathogen equivalency committee of the United States environmental protection agency.

(b) Recordkeeping requirement for pathogen reduction alternative P-16: equivalent process to further reduce pathogens. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Analytical results for density of fecal coliform bacteria expressed as the most probable number (mpn) per gram of total solids in dry weight basis, or the density of Salmonella sp. bacteria expressed as mpn per four grams of total solids in dry weight basis; and

(ii) Operating parameters or pathogen levels, as necessary, to demonstrate that the process equivalent to a process to further reduce pathogens has been achieved.

Note: In conjunction with an applicable Pathogen Reduction Alternative, Vector Attraction Reduction Alternatives VAR-1 through VAR-8 can be used to achieve Exceptional Quality Biosolids.

In conjunction with an applicable Pathogen Reduction Alternative, Vector Attraction Reduction Alternatives VAR-9 or VAR-10 can be used to achieve Class A Biosolids.

In conjunction with an applicable Pathogen Reduction Alternative, Vector Attraction Reduction Alternatives VAR-1 through VAR-10 can be used to achieve Class B Biosolids.

(C) Vector attraction reduction options.

Class B biosolids. In addition to the applicable pathogen reduction requirements and the pollutant concentration limits for metals in this rule, a vector attraction reduction option in accordance with paragraphs (C)(1) to (C)(10) of this rule shall

be met in order to achieve class B biosolids.

Class A biosolids. In addition to the applicable pathogen reduction requirements and the pollutant concentration limits for metals in this rule, a vector attraction reduction option in accordance with paragraphs (C)(9) or (C)(10) of this rule shall be met to achieve class A biosolids.

Exceptional quality biosolids. In addition to the applicable pathogen reduction requirements and the pollutant concentration limits for metals in this rule, a vector attraction reduction option in accordance with paragraphs (C)(1) to (C)(8) of this rule shall be met to achieve exceptional quality biosolids.

(1) Vector attraction reduction option VAR-1: thirty-eight per cent volatile solids reduction.

(a) Requirements for achieving vector attraction reduction option VAR-1: thirty-eight per cent volatile solids reduction. To achieve option VAR-1, the mass of volatile solids in the sewage sludge shall be reduced by a minimum of thirty-eight per cent.

[Comment: Equation 31 below is from "Environmental Regulations and Technology, Control of Pathogens and Vector Attraction in Sewage Sludge" and can be used to calculate the volatile solids reduction.]

$$FVSR = \frac{VS_f - VS_b}{VS_f - (VS_f \cdot VS_b)} \qquad (31)$$

Where:

FVSR = Fractional Volatile Solids Reduction

VS_f = fractional volatile solids feed before treatment (often referred to as VSin)

VS_b = fractional volatile solids after treatment (often referred to as VSout)

To convert FVSR to percent volatile solids reduction, multiply FVSR x 100.

(b) Recordkeeping requirements for vector attraction reduction option VAR-1: thirty-eight per cent volatile solids reduction. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) The volatile solids concentration of the raw sewage sludge and the final sewage sludge and the location of each sample taken; and

(ii) The calculations showing that thirty-eight per cent volatile solids

reduction was achieved.

(2) Vector attraction reduction option VAR-2: bench scale anaerobic digestion.

(a) Requirements for achieving vector attraction reduction option VAR-2: bench scale anaerobic digestion. When the thirty-eight per cent volatile solids reduction requirement in paragraph (C)(1)(a) of this rule can not be met for an anaerobically digested sewage sludge, vector attraction reduction can be demonstrated by:

(i) Digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench scale unit for at least forty additional days at a temperature between thirty and thirty-seven degrees Celsius (eighty-six to ninety-eight degrees Fahrenheit); and

(ii) Showing that when at the end of the forty days the volatile solids in the sewage sludge at the beginning of that period is reduced by less than seventeen per cent.

(b) Recordkeeping requirements for vector attraction reduction option VAR-2: bench scale anaerobic digestion. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) A description of the bench scale digester;

(ii) The time in days that the sample was further digested in the bench scale digester;

(iii) Daily temperature records; and

(iv) The volatile solids concentration of the sewage sludge before and after the bench scale digestion.

(3) Vector attraction reduction option VAR-3: bench scale aerobic digestion.

(a) Requirements for achieving vector attraction reduction option VAR-3: bench scale aerobic digestion. When the thirty-eight per cent volatile solids reduction requirement in paragraph (C)(1)(a) of this rule can not be met for an aerobically digested sewage sludge, vector attraction reduction can be demonstrated by:

(i) Digesting a portion of the previously digested sewage sludge that has a per cent solids of two per cent or less aerobically in the laboratory in a bench-scale unit for thirty additional days at twenty degrees Celsius (sixty-eight degrees Fahrenheit); and

(ii) Showing that when at the end of the thirty days the volatile solids in the sewage sludge at the beginning of that period is reduced by less than fifteen per cent.

(b) Recordkeeping requirements for vector attraction reduction option VAR-3: bench scale aerobic digestion. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) A description of the bench scale digester;

(ii) The time in days that the sample was further digested in the bench scale digester;

(iii) Daily temperature records; and

(iv) The volatile solids concentration of the sewage sludge before and after the bench scale digestion.

(4) Vector attraction reduction option VAR-4: specific oxygen uptake rate (SOUR) test.

(a) Requirements for achieving vector attraction reduction option VAR-4: specific oxygen uptake rate (SOUR) test. To achieve option VAR-4, the specific oxygen uptake rate for sewage sludge that is treated in an aerobic process at temperatures between ten and thirty degrees Celsius (eighty-six degrees Fahrenheit), 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 twenty degrees Celsius (sixty-eight degrees Fahrenheit). The temperature of the sewage sludge to be tested shall be maintained at the same temperature as it was in the digester.

(b) Recordkeeping requirements for vector attraction reduction option VAR-4: specific oxygen uptake rate (SOUR) test. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Dissolved oxygen readings for sewage sludge sample over fifteen minute intervals;

(ii) Temperature records showing that the test was corrected to twenty degrees Celsius (sixty-eight degrees Fahrenheit);

[Comment: To adjust the specific oxygen uptake rate to twenty degrees Celsius, use the following equation:]

$$\text{Sour}_{\text{20-degrees Celsius}} = \text{Sour}_{\text{T-degrees Celsius}} \times \Theta^{(20-T)}$$

(Where T is the temperature of the sewage sludge when the SOUR test was started; and
Where $\Theta = 1.05$ if $T > 20$ degrees Celsius; or
Where $\Theta = 1.07$ if $T < 20$ degrees Celsius)

(iii) Total solids for the sewage sludge sample; and

(iv) The SOUR calculations.

(5) Vector attraction reduction option VAR-5: aerobic process time and temperature treatment.

(a) Requirements for achieving vector attraction reduction option VAR-5: aerobic process time and temperature regime. Sewage sludge shall be treated in an aerobic process for fourteen days or longer. During that time, the temperature of the sewage sludge shall be higher than forty degrees Celsius (one hundred four degrees Fahrenheit) and the average temperature of the sewage sludge shall be higher than forty-five degrees Celsius (one hundred thirteen degrees Fahrenheit).

(b) Recordkeeping requirements for vector attraction reduction option VAR-5: aerobic process time and temperature regime. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) The sewage sludge detention time in the aerobic digester or composting process; and

(ii) Temperature records showing that the average temperature was above forty-five degrees Celsius (one hundred thirteen degrees Fahrenheit) and the minimum temperature was above forty degrees Celsius (one hundred four degrees Fahrenheit) for fourteen consecutive days.

(6) Vector attraction reduction option VAR-6: alkaline treatment.

(a) Requirements for achieving vector attraction reduction option VAR-6: alkaline treatment. The pH of sewage sludge shall be raised to twelve or higher by alkaline addition and, without the addition of more alkali, shall remain at twelve or higher for two hours and then remain at 11.5 or higher for an additional twenty-two hours.

(b) Recordkeeping requirements for vector attraction reduction option VAR-6: alkaline treatment. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) A narrative description of how the pH was monitored throughout the material for the applicable time period;

(ii) Records indicating how the pH was maintained at or above twelve for two hours and at or above 11.5 for twenty four hours; and

(iii) The number of dry tons of the alkaline material that was added.

(7) Vector attraction reduction option VAR-7: greater than or equal to seventy-five per cent solids.

(a) Requirements for achieving vector attraction reduction option VAR-7: greater than or equal to seventy-five per cent solids. The per cent solids of biosolids that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than seventy-five per cent based on the moisture content and total solids prior to mixing with other materials.

(b) Recordkeeping requirements for vector attraction reduction option VAR-7: greater than or equal to seventy-five per cent solids. The following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Results of per cent solids tests; and

(ii) Records showing that the sewage sludge has been stabilized.

(8) Vector attraction reduction option VAR-8: greater than or equal to ninety per cent solids.

(a) Requirements for achieving vector attraction reduction option VAR-8: greater than or equal to ninety per cent solids. The per cent solids of biosolids that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than ninety per cent based on the moisture content and total solids prior to mixing with

other materials until the biosolids are beneficially used. Measures shall be taken to prevent odors and proper storage shall be provided to avoid an increase in moisture content.

(b) Recordkeeping requirements for vector attraction reduction option VAR-8: greater than or equal to ninety per cent solids. The results of the per cent solids tests on a dry weight basis shall be maintained and submitted to the director or an authorized representative with the annual report.

(9) Vector attraction reduction option VAR-9: biosolids are injected below the surface of the beneficial use site.

(a) Requirements for achieving vector attraction option VAR-9: biosolids are injected below the surface of the beneficial use site. Biosolids shall be injected below the surface of the beneficial use site, where:

(i) No significant amount of the sewage sludge shall be present on the surface of the beneficial use site within one hour after the sewage sludge is injected; and

(ii) When the sewage sludge that is injected below the surface of the beneficial use site is class A with respect to pathogens, the sewage sludge shall be injected below the surface of the beneficial use site within eight hours after being discharged from the pathogen treatment process.

(b) Recordkeeping requirements for vector attraction reduction option VAR-9: biosolids are injected below the surface of the beneficial use site. The certification statement from the applier shall be maintained and submitted to the director or an authorized representative with the annual report.

(10) Vector attraction reduction option VAR-10: immediate incorporation of biosolids.

(a) Requirements for vector attraction reduction option VAR-10: immediate incorporation of biosolids. The requirements for achieving VAR-10 are:

(i) Biosolids shall be incorporated into the soil within six hours after beneficial use, unless otherwise specified by the director;

(ii) Biosolids shall not be stored at the field; and

(iii) When biosolids that are incorporated into the soil are class A biosolids with respect to pathogens, the biosolids shall be beneficially used within eight hours after being discharged from

the pathogen treatment process.

(b) Recordkeeping requirements for vector attraction reduction option VAR-10: immediate incorporation of biosolids. The certification statement from the applier shall be maintained and submitted to the director or an authorized representative with the annual report.

(D) Metals concentration limits.

(1) No person shall beneficially use biosolids if any monitoring result indicates that a pollutant concentration exceeds the pollutant ceiling concentration listed in table D-1 of this rule.

[Comment: If more than one monitoring event occurs for the pollutants listed in table D-1, then all monitoring results must show pollutant levels below the pollutant ceiling concentrations listed in table D-1. Monitoring results can not be averaged to show that pollutant levels are below the pollutant ceiling concentrations listed in table D-1 of this rule.]

(2) If a monitoring result indicates that a pollutant exceeds the pollutant ceiling concentrations listed in table D-1 of this rule, a permittee shall either dispose of the sewage sludge within a landfill or return the sewage sludge to the initial stage of the sewage sludge treatment train. If the permittee returns the sewage sludge to the sewage sludge treatment train, monitoring shall be repeated and the results must indicate that pollutants do not exceed the pollutant ceiling concentrations listed in table D-1 of this rule before biosolids are removed from the treatment works for beneficial use.

(3) No person shall beneficially use biosolids at an authorized beneficial use site subject to the cumulative pollutant loading rates established in table D-2 of this rule if any of the cumulative pollutant loading rates in table D-2 of this rule have been reached at the authorized beneficial use site.

(4) The pollutant ceiling concentrations, cumulative pollutant loading rates, and pollutant reporting period average concentrations for biosolids shall, as applicable, not exceed the concentrations listed in table D-1, table D-2 and table D-3 of this rule or as required by part 503 of 40 C.F.R.

(5) Before bulk biosolids subject to the cumulative pollutant loading rates in this rule are beneficially used at an beneficial use site in Ohio, the person who proposes to apply the bulk biosolids shall contact the Ohio environmental protection agency division of surface water to determine whether bulk biosolids subject to the cumulative pollutant loading rates in this rule have been beneficially used at the beneficial use site since July 20, 1993.

(a) If beneficial use of bulk biosolids subject to the cumulative pollutant loading rates has not occurred since July 20, 1993, the cumulative

amount for each pollutant listed in this rule may be beneficially used at the beneficial use site in accordance with this chapter.

(b) If bulk biosolids subject to the cumulative pollutant loading rates have been beneficially used at the beneficial use site since July 20, 1993, and the cumulative amount of each pollutant beneficially used at the beneficial use site since that date is known, the cumulative amount of each pollutant beneficially used at the beneficial use site shall be used to determine the additional amount of each pollutant that can be beneficially used at the beneficial use site in accordance with this chapter.

(c) If bulk biosolids subject to the cumulative pollutant loading rates have been beneficially used at the authorized site since July 20, 1993, and the cumulative amount of each pollutant beneficially used at the beneficial use site since that date is not known, an additional amount of each pollutant shall not be beneficially used at the beneficial use site.

(6) Any person who beneficially uses bulk biosolids subject to the cumulative pollutant loading rates in this rule to a beneficial use site in Ohio shall provide written notice to the appropriate Ohio environmental protection agency district office prior to initial application of bulk biosolids to the beneficial use site. The Ohio environmental protection agency shall retain and provide access to the notice. The notice shall include the following:

(a) The location of the beneficial use site by either street address or latitude and longitude; and

(b) The name, address, telephone number and NPDES permit number of the generator of the bulk biosolids.

Table D-1: Pollutant ceiling concentration limits.

Pollutant	Pollutant ceiling concentration limit (milligrams per kilogram dry weight basis)
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75

Nickel	420
Selenium	100
Zinc	7500

Table D-2: Pollutant cumulative pollutant load rates.

Pollutant	Pollutant cumulative pollutant load rates (pounds per acre)
Arsenic	36.6
Cadmium	34.8
Copper	1339.9
Lead	267.9
Mercury	15.2
Nickel	375.1
Selenium	89.3
Zinc	2500.4

Table D-3: Pollutant reporting period average concentration limits.

Pollutant	Pollutant reporting period average concentration limit (milligrams per kilogram dry weight basis)
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800

Replaces: 3745-40-04

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_____

Certification

_____

Date

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