STATE OF OHIO

Sewage Sludge

Chapter 3745-40 of the ADMINISTRATIVE CODE

Most Recent Revision:

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Effective December 1, 2018

Ohio Environmental Protection Agency
Division of Surface Water
Permits & Compliance Section

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**3745-40-01 Definitions.**

(A)

(1) "Aerobic digestion" means the biochemical decomposition of organic matter in sewage sludge material into carbon dioxide and water by microorganisms in the presence of oxygen.

(2) "Agronomic benefit" means agronomic benefit, as defined in section 6111.01 of the Revised Code.

(3) "Agronomic rate" means a rate of application of nutrients from any source to the land or an amount of nutrients removed by crop based on all of the following:

(a) Nutrient content of the biosolids to be applied.

(b) Nutrient needs of the current or planned crops.

(c) Nutrient holding capacity of the soil.

(4) "Anaerobic digestion" means the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of oxygen.

(5) "Animal waste" means animal excreta, bedding, wash waters, waste feed, and silage drainage.

(6) "Authorized beneficial use site" means an area of land that has been authorized by the Ohio environmental protection agency to receive class B biosolids in accordance with rule 3745-40-06 of the Administrative Code.

(7) "Available water capacity" means the capacity of soils to hold water available for use by most plants.

(B)

(1) "Bedrock" means any continuous or connected solid rock exposed at the surface of the earth or covered by soil or glacial deposits.

(2) "Beneficial use" means the placement of class B or bulk exceptional quality biosolids onto a beneficial use site through the spraying or spreading of biosolids onto the surface of the beneficial use site, the injection of biosolids below the surface of the beneficial use site, the incorporation of biosolids into the soil, for the purpose of providing an agronomic benefit, or the distribution of exceptional quality biosolids that do not satisfy the definition of bulk exceptional quality biosolids.

(3) "Beneficial use site" means an authorized beneficial use site where class B biosolids are beneficially used or an area of land where bulk exceptional quality biosolids are

beneficially used. For the purposes of this definition, an area of land is all contiguous acres at a single authorized beneficial use site or a single beneficial use site where class B or bulk exceptional quality biosolids will be beneficially used, respectively.

(4) "Beneficial use site authorization" means a written authorization in the form of a letter from the director or an authorized representative permitting the beneficial use of class B biosolids on a beneficial use site.

(5) "Beneficial use site operator" means the person who plants, grows, harvests or otherwise manages feed crops, fiber crops, food crops or pasture land on a beneficial use site.

(6) "Beneficial user" means the person who sprays or spreads onto the surface of the beneficial use site, injects below the surface of the beneficial use site, or incorporates into the soil of the beneficial use site, for the purpose of providing an agronomic benefit, class B or bulk exceptional quality biosolids.

(7) "Biosolids" means sewage sludge or mixtures containing sewage sludge that have been treated for beneficial use.

(8) "Biosolids management plan" means a plan for the treatment, disposal, transfer or storage of sewage sludge or biosolids or the beneficial use of biosolids that has been approved by the director.

[Comment: Biosolids management plans are generally used for special scenarios that may not be covered by an NPDES permit (e.g. the use of biosolids for deep-row hybrid poplar tree farming).]

(9) "Bulk exceptional quality biosolids" means exceptional quality biosolids that are not sold or given away in a container.

(C)

(1) "Child day-care center" means any place in which child care is provided for seven or more children at one time, and that is not the permanent residence of the licensee or administrator of the center.

(2) "Class B biosolids" means class B biosolids, as defined in rule 3745-40-04 of the Administrative Code.

(3) "Commercial septage" means liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives sewage from a commercial establishment.

(4) "Composite sample" means a sample that is comprised of a minimum of six grab samples, collected at such times and locations and in such a fashion, as to be representative of the facility's sewage sludge or biosolids.

(5) "Container" means an open or closed receptacle containing one metric ton or less of exceptional quality biosolids.

(6) "Cover crop" means a small grain crop, such as oats, wheat, or barley, not grown for harvest.

(7) "Crop year" means the period of time for a particular crop to be planted and harvested, or one year's time, whichever is shorter.

(8) "Cumulative pollutant loading rate" means the total amount of an inorganic pollutant that can be applied at a beneficial use site, in accordance with paragraph (D) of rule 3745-40-04 of the Administrative Code.

(D)

(1) "Dioxin" means all of the seven 2, 3, 7, 8-chlorinated dibenzo-p-dioxin congeners, ten 2, 3, 7, 8-chlorinated dibenzofuran congeners, and twelve coplanar polychlorinated biphenyl congeners in the following table:

Congeners

| CAS number | Congener |
|---|---|
| 1746-01-6 | 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin |
| 40321-76-4 | 1, 2, 3, 7, 8-pentachlorodibenzo-p-dioxin |
| 39227-28-6 | 1, 2, 3, 4, 7, 8-hexachlorodibenzo-p-dioxin |
| 57653-85-7 | 1, 2, 3, 6, 7, 8-hexachlorodibenzo-p-dioxin |
| 19408-74-3 | 1, 2, 3, 7, 8, 9-hexachlorodibenzo-p-dioxin |
| 35822-46-9 | 1, 2, 3, 4, 6, 7, 8-heptachlorodibenzo-p-dioxin |
| 3268-87-9 | 1, 2, 3, 4, 6, 7, 8, 9-octachlorodibenzo-p-dioxin |
| 51207-31-9 | 2, 3, 7, 8-tetrachlorodibenzofuran |
| 57117-41-6 | 1, 2, 3, 7, 8-pentachlorodibenzofuran |
| 57117-31-4 | 2, 3, 4, 7, 8-pentachlorodibenzofuran |
| 70648-26-9 | 1, 2, 3, 4, 7, 8-hexachlorodibenzofuran |
| 57117-44-9 | 1, 2, 3, 6, 7, 8-hexachlorodibenzofuran |
| 72918-21-9 | 1, 2, 3, 7, 8, 9-hexachlorodibenzofuran |
| 60851-34-5 | 2, 3, 4, 6, 7, 8-hexachlorodibenzofuran |
| 67562-39-4 | 1, 2, 3, 4, 6, 7, 8-heptachlorodibenzofuran |
| 55673-89-7 | 1, 2, 3, 4, 7, 8, 9-heptachlorodibenzofuran |
| 39001-02-0 | 1, 2, 3, 4, 6, 7, 8, 9-octachlorodibenzofuran |
| 32598-13-3 | 3, 3', 4, 4'-tetrachlorobiphenyl |
| 70362-50-4 | 3, 4, 4', 5-tetrachlorobiphenyl |
| 57465-28-8 | 3, 3', 4, 4', 5-pentachlorobiphenyl |
| 32598-14-4 | 2, 3, 3', 4, 4'-pentachlorobiphenyl |
| 31508-00-6 | 2', 3, 4, 4', 5-pentachlorobiphenyl |
| 65510-44-3 | 2, 3', 4, 4', 5'-pentachlorobiphenyl |
| 74472-37-0 | 2, 3, 4, 4', 5-pentachlorobiphenyl |
| 32774-16-6 | 3, 3', 4, 4', 5, 5'-hexachlorobiphenyl |

Congeners

| | |
|---|---|
| 38380-08-4 | 2, 3, 3', 4, 4', 5-hexachlorobiphenyl |
| 69782-90-7 | 2, 3, 3', 4, 4', 5'-hexachlorobiphenyl |
| 52663-72-6 | 2, 3', 4, 4', 5, 5'-hexachlorobiphenyl |
| 39635-31-9 | 2, 3, 3', 4, 4', 5, 5'-heptachlorobiphenyl |

(2) "Director" means director of the Ohio environmental protection agency.

(3) "Discharge" means discharge of any pollutant or pollutants from any point source.

(4) "Disposal" means the placement of either sewage sludge or biosolids into a landfill or an incinerator.

(5) "Distribution" means the selling or giving away of exceptional quality biosolids that do not satisfy the definition of bulk exceptional quality biosolids.

(6) "Domestic septage" means domestic septage, as defined in division (D) of section 3718.01 of the Revised Code.

(7) "Draghose" means a liquid biosolids application system where the application unit is attached to the storage unit by a long flexible hose.

(8) "Drinking water source protection area for a public water system using ground water" means the surface and subsurface area surrounding a public water system's supply wells that will provide water to the wells within five years as delineated or endorsed by the Ohio environmental protection agency under the wellhead protection program and the source water assessment and protection system.

(9) "Dry weight basis" means calculated on the basis of having been dried at one hundred five degrees Celsius (two hundred twenty-one degrees Fahrenheit) until reaching a constant mass (i.e., essentially one hundred per cent solids content).

(E)

(1) "Emergency management zone" or "EMZ" means the surface and subsurface area in the immediate vicinity of a public water system intake as delineated or endorsed by the Ohio environmental protection agency under the source water assessment and protection program within which the public water supply owner or operator has little or no time to respond to potential contamination from a spill, release, or weather related event. The standard emergency management zone boundary consists of a semi-circle that extends five hundred feet upstream of the intake and one hundred feet downstream of the intake, except as modified due to local conditions.

(2) "Exceptional quality biosolids" means exceptional quality biosolids as defined in rule 3745-40-04 of the Administrative Code.

(F)

(1) "Facility storage" means the storage of sewage sludge or biosolids at the permittee's treatment works.

(2) "Feed crops" means crops produced primarily for consumption by animals.

(3) "Feedstocks" means organic materials used in anaerobic digestion for the purpose of producing energy from methane generation, including only the following:

(a) Animal wastes.

(b) Biosolids.

(c) Energy crops (i.e. grain, hay, silage, spilled and soiled feed, and stover).

(d) Fats, oils, and greases (FOG).

(e) Food scraps.

(f) Food waste.

(g) Glycerin byproducts from bio-diesel production.

(h) Sewage sludge.

(i) Stillage byproducts from ethanol production.

(j) Yard waste.

(4) "Fiber crops" means crops such as flax and cotton that are produced primarily for the production of products and are not consumed by people or animals.

(5) "Field storage" means the storage of biosolids in a field at a beneficial use site for no more than ninety days.

(6) "Food crops" means crops consumed by people, including but not limited to, fruits, vegetable, and tobacco.

(7) "Food scraps" means any of the following:

(a) Source-separated plant materials, including stems, leaves, vines, or roots, from an agricultural process.

(b) Source-separated raw, harvested vegetables, fruits, and grains, and the paper from packaging (the packaging paper identified in this feedstock type is intended to include only those papers in which the raw, harvested vegetables, fruits, and grains are wrapped).

(c) Source-separated vegetables, fruits, and grains processed for human or animal consumption (for the purpose of this rule, processed for human or animal

consumption includes, but is not limited to, source-separated vegetables, fruits, and grains processed for human or animal consumption that have been cooked, stewed, canned, or packaged).

(d) Source-separated dairy products processed for human consumption such as, cheese, butter, milk, yogurt, eggs and cream, and meats processed for human consumption or meats subject to the federal Meat Inspection Act or meats subject to the Poultry Products Inspection Act, excluding meats from non-domestic animals, meats from slaughter houses and retail stores.

(8) "Food waste" means food that was originally grown, harvested, or produced for human or animal consumption that has been determined to no longer be viable for consumption and has been removed from the food supply due to factors such as spoilage or expiration.

(9) "Foreign/Inert matter" means wastes such as plastics, metals, ceramics or other manufactured items that remain relatively unchanged during wastewater or biosolids treatment processes.

(10) "Frequently flooded" means an area of a beneficial use site that has flooded on average more than once every two years. Frequently flooded and the months when flooding is expected shall be determined by consulting table 1 of appendix A to rule 901:10-2-14 of the Administrative Code.

(11) "Frozen ground" means ground that is impenetrable because of frozen soil moisture. Generally, frozen ground shall meet all of the following criteria:

(a) Not easily penetrated by a metal object.

(b) Not deform to show visible imprint under downward pressure.

(c) Have a temperature below thirty-two degrees Fahrenheit (zero degrees Celsius).

(G)

(1) "Grab sample" means a single representative sample or measurement collected at a specific time.

(2) "Grit" means materials~~,~~ such as sand, gravel or cinders that have a high specific gravity and are generally removed from sewage prior to secondary treatment at a treatment works.

[Comment: Grit materials are considered solid waste and should not be part of a beneficial use application. Grit materials should be disposed of within a landfill.]

(3) "Ground cover" means vegetation canopy or crop residue on agricultural land.

(H) "High potential public exposure site" means an authorized beneficial use site that the public

uses frequently. This includes, but is not limited to, a public contact site or a land reclamation site located in a populated area (e.g., a park, golf course, or a construction site located in a municipality).

(I)

(1) "Immediate incorporation" means incorporation, as defined in this paragraph, of biosolids within six hours after delivery to the authorized beneficial use site.

(2) "Incineration" means the disposal of sewage sludge or biosolids through the combustion of organic matter and inorganic matter in sewage sludge or biosolids by high temperatures in an enclosed device.

(3) "Incorporation" means the mixing of biosolids with soil on an authorized beneficial use site to a minimum depth of four inches or greater by such means as discing, plowing, or tilling.

[Comment: Both same day incorporation and immediate incorporation are defined in this rule.]

(4) "Industrial septage" means liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives sewage from an industrial establishment.

(5) "Industrial wastewater" means wastewater generated in a commercial or industrial process.

(6) "Injection" means the subsurface placement of liquid biosolids to a depth of four inches or greater into an authorized beneficial use site. Injected biosolids shall remain four inches or greater below the ground and shall not be forced to the surface of the ground.

(7) "Inner management zone" means the surface and subsurface area within a drinking water source protection area for a public water system using ground water surrounding any public water supply well that will provide water to that well within one year as delineated or endorsed by the director under the wellhead protection program and the source water assessment and protection program.

(8) "Isolation distance" means the distance to a specified object from the nearest edge of the biosolids application area.

(J) [Reserved.]

(K) [Reserved.]

(L)

(1) "Land reclamation" means the returning of lands disturbed through mining operations or industrial activity to productive uses.

(2) "Landfill" means a sanitary landfill facility, as defined in rule 3745-27-01 of the Administrative Code and section 3734.02 of the Revised Code, that is licensed under section 3734.05 of the Revised Code.

(3) "Liming material" means all materials, the calcium and magnesium content of which is used to neutralize soil acidity, and includes the oxide, hydrate, carbonate, and silicate forms, as defined by rule, or combinations of those forms. Liming material includes materials such as limestone, hydrated lime, burnt lime, or marl and shell.

(4) "Liquid biosolids" means biosolids that contain free liquids as determined by the paint filter test in accordance with method 9095B of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" also known as "SW 846."

(5) "Low lying wet area" means an area of a beneficial use site where the soils are saturated and where water tends to pond.

(6) "Low potential public exposure site" means an authorized beneficial use site that the public uses infrequently. This includes, but is not limited to, agricultural land and land reclamation sites where the general public's access is restricted.

(M)

(1) "Medical care facility" means home as defined in section 3721.01 of the Revised Code, hospital as defined in section 3727.01 of the Revised Code, residential facility as defined in section 5119.34 of the Revised Code, nursing facility as defined in section 5165.01 of the Revised Code and similar facilities.

(2) "Mobile storage tank" means a container that is capable of being moved when empty to an authorized beneficial use site for the purpose of holding liquid biosolids.

(3) "Multi-year phosphate agronomic rate" means the beneficial use rate of biosolids that will provide the phosphate needs for a realistic yield goal of multiple crops to be grown at the beneficial use site, but not to exceed five calendar years of planned crops. In multi-year phosphate applications, no additional source of phosphorus is applied to the same beneficial use site in subsequent years until the applied phosphate has been removed from the beneficial use site via harvest and crop removal.

(N)

(1) "Nitrogen agronomic rate" means the beneficial use rate of biosolids that will provide the nitrogen requirements or nitrogen removal rates for a realistic yield goal of the succeeding crop to be planted at the beneficial use site. In calculating the nitrogen agronomic rate, the permittee shall subtract both of the following:

(a) The nitrogen credit to be given to the next crop, in accordance with values for previous crops.

(b) The nitrogen that will be added in other forms.

[Comment: For beneficial use sites where a grass or legume cover crop is established or will be established after beneficial use of biosolids, the biosolids may still be beneficially used at the rates to provide the nitrogen requirements or nitrogen removal rates for the succeeding crop to be planted after the grass or legume cover crop.]

(2) "Non-traditional feedstocks", "NTFs", or "alternative feedstocks" means organic materials not listed under the definition of "feedstocks" in this rule, used in anaerobic digestion for the purpose of producing energy from methane generation.

(3) "NPDES permit" means national pollutant discharge elimination system permit that has been approved and issued by the Ohio environmental protection agency.

(4) "Nuisance odor" means an emission of any gas, vapor, aerosol or combination thereof from the management of sewage sludge or biosolids, in whatever quantities, that causes, either alone or in reaction with other air contaminants, injurious effects to public health or the environment or unreasonable interference with the comfortable enjoyment of life or property.

(O) "Occupied structure" means any house, building, outbuilding, mobile home, recreational vehicle, tent, or other structure or shelter, or any portion thereof, to which any of the following applies:

(1) Is maintained as a permanent or temporary dwelling, even though the structure is temporarily unoccupied and whether or not any person is actually present.

(2) Is occupied as the permanent or temporary habitation of any person, whether or not any person is actually present.

(3) Is specially adapted for the overnight accommodation of any person, whether or not any person is actually present.

(4) At the time, any person is present or likely to be present in the structure.

(5) For mobile items such as mobile homes, recreational vehicles and tents, the mobile item is present within the applicable isolation distances prior to the commencement of beneficial use.

(P)

(1) "Pasture" means land on which animals feed directly on vegetation such as legumes, grasses, grain stubble or stover.

(2) "Pathogen" means a disease causing organism and includes, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

(3) "Permittee" means the holder of a valid NPDES permit or a biosolids management plan approved by the director.

(4) "Person" means person as defined in section 6111.01 of the Revised Code.

(5) "pH" means the logarithm of the reciprocal of the hydrogen ion concentration measured at twenty-five degrees Celsius (seventy-seven degrees Fahrenheit) or measured at another temperature and then converted to an equivalent value at twenty-five degrees Celsius (seventy-seven degrees Fahrenheit).

(6) "Phosphorus index" means the Ohio natural resources conservation service (NRCS) assessment technique for determining the relative risk of phosphorus movement from various landforms to waters of the state. Factors assessed include, but are not limited to, proximity to waters of the state, slope, soil and weather conditions, soil type, buffer strips, soil surface condition, surface and sub-surface drainage, phosphate source application rate and application method, and organic phosphorus Source Coefficient (accounting for environmentally relevant phosphorus). The phosphorus index risk assessment procedure can be found in appendix E, table 1 of rule 901:10-2-14 of the Administrative Code.

(7) "Pollutant" means an organic substance, an inorganic substance, a combination of organic and inorganic substances, or a pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could, on the basis of information available to the administrator of the United States environmental protection agency, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction)~~,~~ or physical deformations in either organisms or offspring of the organisms.

(8) "Preschool" means any public or private institution or center that provides early childhood instructional or educational services to children who are at least three years of age but less than six years of age, whether or not those services are provided in a child day-care setting. "Preschool" does not include any place that is the permanent residence of the person who is providing the early childhood instructional or educational services to the children.

(9) "Private potable water source" means the site or area from which water is obtained for the purpose of supplying water to a private water system as defined in rule 3701-28-01 of the Administrative Code, including wells, springs, cisterns, ponds, or hauled water storage.

(10) "Public contact site" means land with a high potential for contact by the public. This includes but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms and golf courses.

(11) "Public water system" means public water system as defined in rule 3745-81-01 of the Administrative Code.

(Q) [Reserved.]

(R)

(1) "Regional storage facility" means a constructed facility engineered for the storage of biosolids destined for beneficial use or sewage sludge or biosolids destined for disposal or transfer to another facility.

(2) Representative sample" means a sample of a universe or whole which can be expected to exhibit the average properties of the universe or whole.

(3) "Runoff" means rainwater, leachate, snowmelt, or other liquid that drains overland on any part of a land surface and runs off the land surface.

(S)

(1) "Same day incorporation" means incorporation, as defined in paragraph (I) of this rule, of biosolids within twenty-four hours after surface application.

(2) "Saturated soil" means all of the pore spaces in the soil are filled with water. A soil that has an available water capacity above field capacity is considered saturated.

(3) "School" means a child day-care center, a preschool, or a public or nonpublic primary school or secondary school, including any grounds, play areas, and other facilities of a preschool, or child day-care center or primary or secondary school that are regularly used by the children or students served by the preschool, child day-care center, primary school, or secondary school.

(4) "Screenings" means relatively large materials such as rags that are generally removed from sewage prior to secondary treatment at a treatment works.

[Comment: Screenings are considered solid waste and should not be part of a beneficial use application. Screenings should be disposed of within a landfill.]

(5) "Sewage" means sewage, as defined in section 6111.01 of the Revised Code.

(6) "Sewage sludge" means sewage sludge, as defined in division (Y) of section 3745.11 of the Revised Code.

(7) "Sewage sludge that has been treated" means sewage sludge that has been prepared for beneficial use or disposal, or transferred to another NPDES permitted treatment works and includes, but is not limited to, sludge that has been thickened, stabilized and dewatered.

(8) "Single-year phosphate agronomic rate" means the beneficial use rate of biosolids that will provide the phosphate needs for a realistic yield goal of the succeeding crop to be planted at the beneficial use site.

(9) "Sinkhole" means a surface depression produced when underlying material, such as carbonate bedrock, dissolves resulting in a direct conduit to ground water.

(10) "Sludge" means sludge, as defined in section 6111.01 of the Revised Code.

(11) "Sludge fee weight" means the weight of sewage sludge, in dry U.S. tons, excluding admixtures such as liming materials or bulking agents. Annual sewage sludge fees, as per paragraph (Y) of section 3745.11 of the Revised Code, are based on the reported sludge fee weight for the most recent calendar year.

(12) "Sludge management" means sludge management, as defined in section 6111.01 of the Revised Code.

(13) "Sludge materials" means sludge materials, as defined in section 6111.01 of the Revised Code.

(14) "Snow covered ground" means soil or residue lying on the soil cannot be seen because of snow cover, or soil covered by one-half inch or more of ice.

(15) "Soil phosphorus test" means a soil test procedure using the "Bray-Kurtz P1 extraction" or the "Mehlich 3 extraction" that produces an index of plant available phosphorus expressed in parts per million.

(16) "Specific oxygen uptake rate" or "SOUR" means the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in the sewage sludge or sewage sludge material.

(17) "Surface disposal" means the placement of sewage sludge or biosolids on an area of land for disposal including, but not limited to, monofills, surface impoundments, lagoons not utilized for treatment, waste piles, or dedicated disposal sites for two years or more.

[Comment: A treatment lagoon is not considered a means for disposal.]

(18) "Surface waters of the state" means surface waters of the state, as defined in rule 3745-1-02 of the Administrative Code.

(T)

(1) "Total solids" means the materials in sewage sludge or sewage sludge material that remain as residue when the sewage sludge or sewage sludge material is dried in accordance with part 2540G of the "Standard Methods for the Examination of Water and Wastewater."

(2) "Treatment works" means treatment works, as defined in section 6111.01 of the Revised Code.

(U) "Underground injection control (UIC) class V drainage well" means underground injection control (UIC) class V drainage well as defined in rule 3745-34-04 of the Administrative Code.

(V)

(1) "Vector attraction" means the characteristic of biosolids that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

(2) "Volatile solids" means the amount of the total solids in sewage sludge lost when the sewage sludge is combusted, in accordance with part 2540G of "Standard Methods for the Examination of Water and Wastewater."

(W) "Waters of the state" means waters of the state, as defined in section 6111.01 of the Revised Code.

(X) [Reserved.]

(Y) "Yard waste" means leaves, grass clippings, brush, garden waste, tree trunks, tree stumps, holiday trees, and prunings from trees or shrubs. Yard waste does not include industrial or agricultural processing waste.

(Z) [Reserved.]

(AA) Incorporation by reference. The text of the incorporated materials is not included in the rules contained in this chapter. The materials are hereby made a part of this chapter. For materials subject to change, only the version specified in this rule is incorporated. Any amendment or revision to a referenced document is not incorporated unless and until this rule has been amended to specify the new version.

(1) Availability. The materials incorporated by reference are available as follows:

(a) Code of federal regulations (C.F.R.). Information and copies may be obtained by writing to: "U.S. Government Publishing Office Bookstore, 710 North Capitol Street N.W., Washington, D.C. 20403." The full text of the C.F.R. is also available in electronic format at http://www.gpoaccess.gov/cfr/. The C.F.R. compilations are also available for inspection and copying at most public libraries and "The State Library of Ohio."

(b) Federal statutes. The full text is available in electronic format at http://www.gpo.gov/fdsys. These laws are also available for inspection and copying at most public libraries and "The State Library of Ohio."

(2) Incorporated materials.

(a) Appropriate "Federal Statutes." The statutes listed in this rule are those versions of the laws amended through July 1, 2017, including the following:

(i) Endangered Species Act, 16 U.S.C. sections 1533 to 1544.

(ii) Federal Water Pollution Control Act (commonly referred to as the "Clean Water Act"), 33 U.S.C. sections 1251 to 1387.

(iii) Meat Inspection Act, 21 U.S.C. sections 601 to 695.

(iv) Poultry Products Inspection Act, 21 U.S.C. sections 451 to 472.

(b) Appropriate "Code of Federal Regulations." As used in this chapter "33 C.F.R." means Title 33 of the Code of Federal Regulations as amended through July 1, 2017

and "40 C.F.R." means Title 40 of the Code of Federal Regulations as amended through July 1, 2017.

(c) ASTMs.

"ASTM D 4994-89" means the American society for testing and material (ASTM) standard test methods for the standard practice for recovery of viruses from wastewater sludges, as approved in 2014. ASTM test methods are generally available in public libraries or from "ASTM International, 100 Barr Harbor drive, P.O. box C700, West Conshohocken, PA 19428-2959," at 610-832-9718, or on the internet at: www.ASTM.org.

(d) Other governmental literature and methods.

(i) "Environmental Regulations and Technology - Control of Pathogens and Vector Attraction in Sewage Sludge," July 2003, EPA/625/R-92/013. This document can be found at the following United States environmental protection agency web link: https://www.epa.gov/biosolids/control-pathogens-and-vector-attraction-sewage-sludge.

[Comment: The "Environmental Regulations and Technology - Control of Pathogens and Vector Attraction in Sewage Sludge" document is also known as the "Whitehouse Document."]

(ii) "Kellogg Soil Survey Laboratory Methods Manual, Version 5.0," 2014. United States department of agriculture. This document is available on the internet at: https://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/.

(iii) "Method number 1613B" or United States environmental protection agency's method 1613B "Tetra-through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS," revised October 1994. This document may be obtained from: "National Technical Information Service No. PB93-236024, (800) 553-NITS, or Educational Resources Information Center Number W-105, (800) 443-ERIC." Method 1613B can also be obtained from the following web link: https://www.epa.gov/nscep.

(iv) "Method number 1668A" or United States environmental protection agency's "Method 1668A Interlaboratory Validation Study Report," revised March 2010. This document may be obtained from: "Office of Water Methods and Guidance Diskette 2, Office of Water Resource Center, (202) 260-7786." Method number 1668A may also be obtained from the following web link: https://www.epa.gov/nscep.

(v) "Method 8082A" or United States environmental protection agency method 8082A "PCBs by Gas Chromatography, revised February 2007." This method can be found on the internet at: https://www.epa.gov/homeland-security-research/epa-method- 8082a-sw-846-polychlorinated-biphenyls-pcbs-gas-chromatography.

(vi) "Methods for Chemical Analysis of Water and Wastes" or United States environmental protection agency's method 160.3 "Methods for Chemical Analysis of Water and Wastes," revised March 1983. This document can be found on the United States environmental protection agency web site at the following link: https://www.epa.gov/nscep.

(vii) "Occurrence of Pathogens in Distribution and Marketing Municipal Sludges, U.S. EPA 600/1-87-014, 1988." This document is available on the internet at: www.epa.gov/ncepihom/.

(viii) Part 9260D, "Standard Methods for the Examination of Water and Wastewater" or Kenner, B.A. and H.P. Clark, "Detection and Enumeration of Salmonella and Pseudomonas aeruginosa," journal of the water pollution control federation, vol. 46, no. 9, September 1974, pp. 2163-2171. Water environment federation, 601 Wythe street, Alexandria, VA 22314.

(ix) "Standard Methods for the Examination of Water and Wastewater," 23rd Edition, American Public Health Association, American Water Works Association and Water Environment Federation, 2017. This document is available on the internet at: www.standardmethods.org/.

(x) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" means "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, USEPA publication SW-846, revision 2, November 2004." This document is available on the internet at: www.epa.gov/sw-846/main.htm.

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**3745-40-02 Purpose, applicability, general requirements, exclusions and prohibitions.**

[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) Purpose.

(1) The purpose of this chapter is all of the following:

(a) To establish standards applicable to the treatment, storage, transfer or disposal of sewage sludge or biosolids.

(b) To establish standards applicable to the beneficial use of biosolids.

(c) To reasonably protect public health and the environment.

(d) To encourage the beneficial use of biosolids.

(e) To minimize the creation of nuisance odors.

(2) Said standards under this chapter are consistent with section 405 of the federal "Water Pollution Control Act" and regulations adopted thereunder.

(B) Applicability.

(1) Except as provided in paragraphs (B)(2) to (B)(2)(c)(v) of this rule and as noted within other rules in this chapter, this chapter is applicable to both of the following:

(a) The treatment, storage, transfer, or disposal of sewage sludge or biosolids.

(b) The beneficial use of biosolids.

(2) The director, or an authorized representative, may waive any requirement of this chapter or impose a less stringent requirement than that imposed by this chapter, provided that all of the following are abided by:

(a) The authorization to waive a requirement will not result in a less stringent requirement than required in 40 C.F.R. 503.

(b) Waiving the requirement will not adversely affect public health or the environment.

(c) The permittee has requested and received authorization from the director or an authorized representative, prior to treatment, storage, transfer or disposal of the sewage sludge or biosolids or the beneficial use of biosolids. The letter requesting authorization shall include all of the following:

(i) The specific requirement of these rules for which the waiver is being requested.

(ii) The volume of sewage sludge or biosolids affected by the waiver being

requested.

(iii) If applicable, the location, including the county, township and the latitude and longitude, where the waiver is being requested.

(iv) An explanation of why the waiver being requested will not adversely affect the public health or the environment.

(v) An explanation of why the waiver being requested is necessary.

(C) General requirements.

(1) In accordance with Chapter 3745-33 of the Administrative Code, an NPDES permit is required prior to the discharge of any pollutant to surface waters of the state.

(2) General requirements for sewage sludge.

(a) The treatment, storage, transfer, or disposal of sewage sludge shall be in compliance with this chapter and the conditions of an NPDES permit or a biosolids management plan.

(b) In accordance with rules adopted under section 3734.03 of the Revised Code and licensed under section 3734.05 of the Revised Code, sewage sludge that is disposed of in a landfill shall be in compliance with the requirements of this chapter, and rules adopted under Chapter 3734. of the Revised Code.

(c) Sewage sludge may be transferred to another treatment works provided that said treatment works has an NPDES permit or a management plan for the treatment, storage, transfer, or disposal of sewage sludge or biosolids, or for the beneficial use of biosolids.

(d) The treatment, storage, transfer or disposal of sewage sludge shall be done in a manner as to minimize odors.

(3) General requirements for biosolids.

(a) Prior to the beneficial use of biosolids, influent wastewater and septage, or sewage sludge at a treatment works shall be treated by a process such as physical screening or another method to significantly remove foreign/inert matter. Meeting this requirement may be accomplished by any of the following:

(i) Screening influent wastewater and influent septage through a bar screen with a maximum aperture of five-eighths inch (1.59 centimeters) designed to screen the average daily design flow.

(ii) Screening all biosolids through a bar screen with a maximum aperture of five-eighths inch (1.59 centimeters) prior to beneficial use.

(iii) Obtaining approval from the director for an alternative method that achieves a removal rate equal to or greater than that achieved by the screening standards in paragraph (C)(3)(a)(i) or (C)(3)(a)(ii) of this rule.

*(a)* The alternative method may be achieved by testing biosolids to ensure they contain less than one point zero per cent foreign/inert matter by weight on a "number 5 sieve" (four millimeter screen), with no more than one fourth of this matter being plastic. Samples shall be prepared in accordance with U.S. EPA's "160.3 Methods for Chemical Analysis of Water and Wastes." Foreign/inert matter content shall be determined by passing a dried, weighed sample of not less than one hundred grams of biosolids through a U.S. standard "number 5 sieve" (four millimeter). The material remaining on the screen shall be inspected and the foreign/inert matter shall be separated and weighed. The weight of the foreign/inert matter divided by the total weight of the biosolids sample and multiplied by one hundred shall be the per cent dry weight of the foreign matter content. The minimum frequency of monitoring for foreign/inert matter shall be in accordance with table B-1 of rule 3745-40-09 of the Administrative Code.

[Comment: Foreign/inert matter is considered solid waste and should not be part of a beneficial use application. Foreign/inert matter should be disposed of within a landfill. When a treatment works is cleaning out a digester or other sewage sludge treatment unit that contains sewage sludge from a time period when influent wastewater or septage was not screened, the treatment works should inspect the biosolids to determine if screening to remove foreign/inert matter is needed.]

(b) The treatment, storage, transfer, disposal, or beneficial use of biosolids shall be in compliance with this chapter and the conditions of an NPDES permit or a biosolids management plan.

(c) Biosolids that are disposed of in a landfill, in accordance with rules adopted under section 3734.03 of the Revised Code and licensed under section 3734.05 of the Revised Code shall be in compliance with the requirements of this chapter, and shall be in compliance with the rules adopted under Chapter 3734. of the Revised Code.

(d) Biosolids may be transferred to another treatment works provided that said treatment works has an NPDES permit or a biosolids management plan for the treatment, storage, transfer, or disposal of sewage sludge or biosolids, or the beneficial use of biosolids.

(e) The treatment, storage, transfer, disposal, or beneficial use of biosolids shall be done in a manner as to minimize odors.

(4) General requirements for acceptance of non-traditional or alternative feedstocks for anaerobic digestion. Non-traditional feedstocks (NTFs) shall be approved by the director prior to use in anaerobic digestion.

(a) A request for approval to accept an NTF shall be submitted on forms approved by Ohio EPA and include, at a minimum, the following, unless waived or modified in writing by Ohio EPA:

(i) The name of the treatment works where the NTF will be accepted.

(ii) The source or generator of the NTF and the current disposal method of the NTF.

(iii) A detailed description of the NTF including analytical data that identifies any known or potential parameters of concern (POC) that may cause or threaten to cause an adverse effect on the anaerobic digestion process or to public health and safety or the environment. The analytical data shall be sufficient to characterize representative conditions of the generation of the NTF. Ohio EPA may request additional analytical data after an initial review of the request for approval.

(iv) A description and flow diagram of the facility and process that generates the NTF.

(v) For each treatment works where the NTF will be accepted, the maximum amount of the NTF included in the request for approval, the frequency of acceptance, and the average amount expected at that frequency.

(vi) A copy of any material safety data sheets (MSDS) and hazardous waste determinations for the NTF.

(vii) Results of pilot scale digester studies that include, at a minimum, the following:

*(a)* A description of the operational conditions used during the study that shall simulate typical digester conditions, including mixing the NTF with other feedstocks expected to be present to determine how feedstocks may interact.

*(b)* A measure of the biodegradability of the NTF and its potential to produce methane via anaerobic digestion.

*(c)* The degree to which the NTF may inhibit methane production.

*(d)* The concentration of each POC before and after digestion.

*(e)* A determination of the potential for odor generation from the acceptance and management of the NTF.

(viii) A detailed description of any impact, including the methods that will be used to control the impacts, that may result from the following:

*(a)* Acceptance of the NTF in regard to operation of the anaerobic digester.

*(b)* Beneficial use of biosolids generated during anaerobic digestion.

*(c)* The management of odors.

(ix) A detailed description of any special management or storage requirements due to the physical, biological or chemical characteristics of the NTF.

(x) Any other information deemed necessary by Ohio EPA.

(b) A request for approval to accept an NTF that fails to provide Ohio EPA with required information may be considered defective. Ohio EPA may either request additional information or return the application to the applicant without further processing. An indication of the deficiency shall accompany the application returned.

(c) The director or an authorized representative shall not approve an NTF request submitted in accordance with this rule unless all of the following are determined:

(i) The use of the NTF is technically feasible for anaerobic digestion.

(ii) Methane production shall be maintained or improved in the anaerobic digester with the addition of NTF.

(iii) The treatment works is in substantial compliance with this chapter and all other applicable laws and regulations.

(iv) The applicant has demonstrated that the acceptance and processing of the NTF and subsequent beneficial use of biosolids will not cause or threaten to cause an adverse impact on public health and safety or the environment, or generate nuisance odors.

(v) The acceptance and processing of the NTF is unlikely to cause violations of this chapter, Chapter 6111., 3704., or 3734. of the Revised Code, or any other applicable federal or state laws or regulations.

(d) The director or an authorized representative may establish additional conditions in the approval of the NTF, including but not limited to, the following:

(i) Additional monitoring for any POCs before and after digestion.

(ii) Additional monitoring of the beneficial use of biosolids containing the digested NTF (e.g. soil, field tile runoff after rain event).

(iii) Periodic reporting of the volume of NTF accepted and the results of any required additional monitoring.

(iv) Minimizing odor generation and preventing nuisance odors.

(v) Conditions on acceptance of the NTF that address any of the following:

*(a)* Volume of the NTF to be accepted.

*(b)* Frequency of acceptance of the NTF.

*(c)* Anaerobic digester operational conditions, when the NTF is included.

*(d)* Potential interactions of the NTF with other feedstocks.

*(e)* POC concentrations in the NTF.

*(f)* Changes in the NTF generating facility or process.

*(g)* Other conditions determined by the director or an authorized representative to be necessary to protect public health or safety or the environment.

(e) The director may revoke approval of the acceptance of the NTF if any of the following have occurred:

(i) Acceptance of the NTF has caused or is causing adverse effects on the anaerobic digestion process or on public health or safety or the environment.

(ii) Acceptance of the NTF is causing a nuisance.

(iii) Acceptance of the NTF has caused or is causing violations of this chapter or any applicable state or federal laws or regulations.

(D) Exclusions. This chapter does not establish requirements for any of the following:

(1) The ash generated during incineration of sewage sludge or biosolids.

(2) The ash generated during the incineration of sewage sludge or biosolids and other wastes.

(3) Sewage sludge or biosolids co-fired in an incinerator with other wastes or for the incinerator in which sewage sludge or biosolids and other wastes are co-fired.

(4) The use or disposal of grit or screenings.

(5) Sewage sludge or biosolids, where either of the following apply:

(a) There is a concentration of polychlorinated biphenyls equal to or greater than one milligram per kilogram of total solids on a dry weight basis.

[Comment: Sewage sludge shall be analyzed in accordance with United States environmental protection agency method 8082A "PCBs by Gas Chromatography," for purposes of this exclusion.]

(b) The sewage sludge or biosolids are determined to be hazardous waste as defined in section 3734.01 of the Revised Code.

(6) Sludge, where the sludge is either of the following:

(a) Generated at an industrial facility during treatment of the facility's industrial wastewater with or without sewage present.

(b) Generated during the treatment of drinking water.

(7) The treatment, storage, transfer, beneficial use or disposal of any of the following:

(a) Domestic, commercial or industrial septage, unless septage from multiple sources is combined at a single treatment works prior to treatment, storage, transfer, disposal or beneficial use. In this case, the treatment works shall be installed in accordance with Chapter 3745-42 of the Administrative Code and operated in compliance with this chapter and the conditions of an NPDES permit.

[Comment: For the purpose of this rule, treatment works does not include vehicles used for the transportation of septage.]

(b) Grease trap waste.

(c) Final effluent.

(E) Prohibitions.

(1) The surface disposal of sewage sludge or biosolids is prohibited.

(2) Sewage sludge or class B biosolids shall not be placed on any location that is not, as applicable, authorized for beneficial use, facility storage, field storage or a regional storage facility. Locations that would not be authorized for beneficial use, facility storage, field storage or a regional storage facility include, but are not limited to, public or private roadways, parking lots and sidewalks.

(3) The distribution of biosolids that are not exceptional quality, as described in rule 3745-40-04 of the Administrative Code, is prohibited.

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**3745-40-03 NPDES permit requirements and biosolids management plan requirements.**

[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) NPDES permit requirements.

(1) Except as provided in paragraph (C) of this rule, the treatment, storage, transfer, or disposal of sewage sludge or biosolids shall be in compliance with this chapter and, as applicable, the conditions of an NPDES permit.

(2) Except as provided in paragraph (C) of this rule, the beneficial use of biosolids shall be in compliance with this chapter and, as applicable, the conditions of an NPDES permit.

(3) The director may require an NPDES permit or biosolids management plan for the beneficial use of exceptional quality biosolids.

(4) To protect public health or the environment, the director may specify in any NPDES permit any of the following:

(a) Requirements for the net volume, net weight, quality or pollutant concentration of the sewage sludge or biosolids.

(b) The manner or frequency of the treatment, storage, transfer or disposal of sewage sludge or biosolids.

(c) The manner or frequency of the beneficial use of the biosolids.

(d) Schedules of compliance.

(e) Permit conditions that do any of the following:

(i) Minimize the creation of nuisance odors.

(ii) Implement treatment, storage, transfer or disposal of the sewage sludge or biosolids.

(iii) Implement the beneficial use of biosolids.

(iv) Authorize the beneficial use of class B biosolids in specific counties at sites authorized in accordance with rule 3745-40-06 of the Administrative Code.

(v) Require the filing of periodic reports on the amounts, composition and quality of the sewage sludge or biosolids.

(vi) Establish a procedure to approve feedstocks.

(vii) Establish an odor management plan that details the measures that will be

implemented to minimize odor generation and prevent nuisance odors.

(viii) Develop standard operating procedures for any of the following that apply:

*(a)* Pathogen reduction alternative sampling.

*(b)* Vector attraction reduction alternative sampling.

*(c)* Beneficial use of biosolids at beneficial use sites with tile drainage.

*(d)* Use of draghose application systems at beneficial use sites.

*(e)* Use of mobile storage tanks at beneficial use sites.

*(f)* Any other requirement that the director or an authorized representative deems necessary for the protection of public health and the environment or to minimize the creation of odors and prevent nuisance odors.

(f) Permit conditions that are more stringent than the requirements in this chapter because of site specific concerns or unique factors relevant to the treatment, storage, transfer or disposal of sewage sludge or biosolids, the beneficial use of biosolids, or the permittee's operation or maintenance of the disposal system or beneficial use.

(B) Special requirements for land reclamation sites. The beneficial use at a land reclamation site shall conform to both of the following:

(1) Be in accordance with an approved biosolids management plan as described in paragraph (C) of this rule.

(2) For any land reclamation site that is under the jurisdiction of the Ohio department of natural resources, division of mineral resources management, have a land reclamation plan, approved by the Ohio department of natural resources, division of mineral resources management, where this approval is obtained by the applicant and submitted to the director prior to the delivery of the biosolids to any land reclamation site.

(C) Biosolids management plan requirements.

(1) If an NPDES permit is not required, the director may allow the treatment, storage, transfer or disposal of sewage sludge or biosolids in accordance with an approved biosolids management plan.

(2) If an NPDES permit is not required, the director may allow the beneficial use of biosolids in accordance with an approved biosolids management plan.

(3) The director may require any person who is not a permittee to obtain a biosolids management plan prior to the beneficial use of biosolids.

(4) A biosolids management plan shall include all of the following:

(a) An expiration date five years from the effective date of the biosolids management plan.

(b) A detailed narrative on forms approved by the director that include all of the following:

(i) A detailed description of the method or methods used for the treatment, storage, transfer or disposal of sewage sludge or biosolids and, as applicable, the beneficial use of biosolids.

(ii) Information on how any site specific management practices to prevent runoff will be maintained.

(iii) The intended beneficial use, including the documented rationale for the rate at which the biosolids will be beneficially used.

(iv) A list of counties in which biosolids will be beneficially used at sites authorized in accordance with rule 3745-40-06 of the Administrative Code.

(v) A list of feedstocks, if applicable.

(vi) A spill contingency plan that includes emergency contact information, types and locations of equipment that will be used to clean a spill, procedures for preventing discharges to waters of the state, and notification protocol.

(vii) An odor management plan that details the measures that will be implemented to minimize odor generation and prevent nuisance odors.

(viii) Standard operating procedures for any of the following that apply:

*(a)* Pathogen reduction alternative sampling.

*(b)* Vector attraction reduction alternative sampling.

*(c)* Beneficial use of biosolids at beneficial use sites with tile drainage.

*(d)* Use of draghose application systems at beneficial use sites.

*(e)* Use of mobile storage tanks at beneficial use sites.

*(f)* Any other requirement that the director or an authorized representative deems necessary for the protection of public health and the environment or to minimize the creation of odors and prevent nuisance odors.

[Comment: A biosolids management plan application includes permit to install form A, permit to install form C1, antidegradation addendum, and any additional written information the director or an authorized representative deems necessary. These forms can be found on the Ohio environmental protection agency web site at the following link: http://epa.ohio.gov/dsw/sludge/biosolid/LiveTabId/137941.]

(5) An application for renewal of a biosolids management plan shall be submitted one hundred eighty days prior to the expiration date of the plan. As long as a renewal application is submitted one hundred eighty days prior to the expiration date of the biosolids management plan, the permittee may continue to operate under the current

plan until a new biosolids management plan is approved or denied.

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

[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) A biosolids classification shall be determined in accordance with table A-1 of this rule.

(a) For 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, except the vector attraction reduction requirements in paragraphs (C)(6) to (C)(8) 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-16, in accordance with paragraphs (B)(1) to (B)(16) of this rule | Not applicable. No additional requirements for fecal coliform exist beyond the requirements to meet pathogen reduction alternative P-1 | Choose from vector attraction reduction options VAR-1 to VAR-10, in accordance with paragraphs (C)(1) to (C)(10) of this rule | Table D-1 of this rule, and as applicable table D-3 of this rule |
| Exceptional quality | 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 of this rule and table D-3 of this rule |

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

Administrative Code and maintained for as minimum of five years.

(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)(16) of this rule.

Exceptional quality biosolids: For 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. bacteria 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. The pathogen reduction alternative shall be met either prior to, or at the same time as meeting the vector attraction reduction requirement in paragraphs (C)(1) to (C)(8) of this rule. To meet the fecal coliform or Salmonella sp. bacteria requirement, the sampling results shall be representative of the biosolids leaving the treatment works. At a minimum, seven grab samples of the biosolids shall be taken and analyzed at least once per reporting period and all results shall meet the limits listed in this paragraph for the biosolids to be considered exceptional quality.

(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 sewage sludge that are proposed for authorized beneficial use shall be collected. The samples of the sewage sludge shall be taken at various locations, so as to be representative. 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 sewage sludge samples shall be either of the following:

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

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

[Comment: Seven samples shall be taken over a two-week period or in accordance with the standard operating procedure developed under paragraph (C) of rule 3745-40-09 of the Administrative Code. Example calculations may be found in "Environmental Regulations and Technology - Control of Pathogens and Vector Attraction in Sewage Sludge."]

(b) Monitoring frequency requirements for pathogen reduction alternative P-1. The

permittee shall complete monitoring in accordance with paragraphs (B)(1)(a) to (B)(1)(a)(ii) of rule 3745-40-04 of the Administrative Code and at the frequencies specified in paragraph (B) of rule 3745-40-09 of the Administrative Code.

(c) Record keeping requirements for pathogen reduction alternative P-1. All of 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 sewage sludge.

(iii) The geometric mean calculations for the sewage sludge.

(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 both of the following:

(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.

[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 fifteen and twenty degrees Celsius (between fifty-nine and sixty-eight degrees Fahrenheit), the following equation shall be used:

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

(b) Recordkeeping requirements for pathogen reduction alternative P-2: aerobic digestion. Both of 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 the sewage sludge in each aerobic digester.

(ii) 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 all of the following:

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

[Comment: Partially digested sewage sludge means sewage sludge that has been partially stabilized through either an aerobic or anaerobic process.]

(ii) The average ambient air temperature is greater than zero degrees Celsius (thirty-two degrees Fahrenheit) for at least sixty consecutive days within the ninety-day period.

(iii) The sewage sludge shall be exposed to the atmosphere for at least sixty consecutive days within the ninety-day period.

[Comment: When sewage sludge is covered by snow or being dewatered inside a geotextile bag, it is not considered to be exposed to the atmosphere.]

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

(b) Recordkeeping requirements for pathogen reduction alternative P-3: air drying. All of 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 partially stabilized through an aerobic or anaerobic process.

(ii) Written documentation that the sewage sludge has been stabilized through an actively mixed aerobic or anaerobic process.

(iii) 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.

(iv) The drying time in days for each drying bed in use.

(v) 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 both of the following:

(i) Sewage sludge or biosolids shall be treated in the absence of air for a specific mean cell residence time at a specific temperature. The sewage sludge or biosolids may be commingled with bulking agents or additives, as defined in rule 3745-560-02 of the Administrative Code, and feedstocks. Bulking agents, additives, or feedstocks shall be introduced prior to, or during the anaerobic digestion process. An alternative feedstock shall be authorized by the director or an authorized representative in accordance with rule 3745-40-02 of the Administrative Code.

(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 (sixty-eight degrees Fahrenheit) 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 (between sixty-eight and ninety-five degrees Fahrenheit), 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. All of 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.

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

(iii) The weight or volume and general counties of origin of all feedstocks, bulking agents and additives utilized in the anaerobic digestion process.

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

(a) Requirements for achieving pathogen reduction alternative P-5: class B composting. The requirements for achieving alternative P-5 include both of the following:

(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 there under. Such treatment works shall not be subject to the requirements in Chapter 3745-560 of the Administrative Code if all of 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 composts sewage sludge or biosolids exclusively with bulking agents or additives, as defined in rule 3745-560-02 of the Administrative Code.

*(c)* The owner or operator of the treatment works utilizes only sewage sludge, biosolids, yard waste, animal waste, food scraps, food waste or an alternative feedstock that has been approved by the director or an authorized representative as feedstocks in the composting process.

(ii) Composting that is accomplished through any of the following:

*(a)* In vessel composting, where all of the following apply:

*(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).

*(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 all of the following apply:

*(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 exceptional quality biosolids.

*(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.

[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 all of the following apply:

*(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-four hours after the turning or mixing of the windrow is complete.

*(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.

[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.]

(b) Recordkeeping requirements for pathogen reduction alternative P-5: composting. All of 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 general counties of origin of all feedstocks, bulking agents and additives utilized in the composting process.

(iii) For in-vessel composting, both of the following:

*(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.

*(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.

(iv) For aerated static pile composting, both of the following:

*(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.

*(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.

(v) For windrow composting, all of the following:

*(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.

*(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.

*(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 all of the following:

(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 achieves the minimum pH of twelve. The pH shall be measured at several locations to ensure that the pH is raised throughout the sewage sludge.

(iii) Utilizing best management procedures 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 all of the following:

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

(iii) Records showing the amount of lime material that was added and when it was 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 sewage sludge. Field experience has shown that the authorized 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 treatment works, 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, sewage sludge that will be treated to generate biosolids for beneficial use shall be treated in a process that is equivalent to a process to significantly reduce pathogens, as determined by the director.

(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.

(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 the following:

(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 (one hundred twenty-two degrees Fahrenheit) 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 as follows:

$D = 131{,}700{,}000/10^{0.1400T}$ (where D equals time in days and T equals temperature in degrees Celsius).

[Comment: The times and temperatures in table B-1 of this rule provide 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 (one hundred twenty-two degrees Fahrenheit) 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 times and temperatures in table B-2 of this rule provide 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 in degrees Celsius | Temperature in degrees Fahrenheit | Duration in days | Duration in hours | Duration in minutes | Duration in seconds |
|---|---|---|---|---|---|
| 50 | 122 | 14 | -- | -- | -- |
| 52 | 125.6 | 7 | -- | -- | -- |

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

| | | | | | |
|---|---|---|---|---|---|
| 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.

[Comment: Times and temperatures in table B-3 of this rule provide 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 (one hundred twenty-two degrees Fahrenheit) 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 as follows:

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

[Comment: The times and temperatures in table B-4 of this rule provide 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. All of 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.

(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 all of the following:

(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) Sufficient mixing to ensure that the entire mass of sewage sludge comes into contact with the lime and achieves the minimum pH of twelve. The pH shall be measured at several locations to ensure that the pH is raised throughout the sewage sludge.

(iii) 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.

(iv) Ensuring that at the end of the seventy-two-hour 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. All of 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 lime material that was added and when it was added, expressed in dry tons.

(vi) A description of how the pH and temperature are maintained throughout the sewage sludge.

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

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

(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 there under. Such treatment works is not subject to the requirements of Chapter 3745-560 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 rule 3745-560-02 of the Administrative Code, or alternative bulking agents or additives that have been approved by the director or an authorized representative.

*(c)* The owner or operator of the treatment works utilizes only sewage sludge, biosolids, animal waste, food scraps, food waste or an alternative feedstock that has been approved by the director or an authorized representative as feedstocks in the composting process.

(ii) Composting that is accomplished through any of the following methods:

*(a)* In-vessel composting, where both of the following conditions are met:

*(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.

*(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 all of the following conditions are met:

*(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 help 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 exceptional quality biosolids.

*(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.

[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 all of the following conditions are met:

*(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 mixings 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.

*(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.

[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.]

(b) Recordkeeping requirements for pathogen reduction alternative P-10: composting. All of 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 general counties 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.

*(b)* Fifteen days for windrow composting.

(v) If windrow composting was utilized, both of the following:

*(a)* Records documenting the compost pile was turned or mixed at least five times during the fifteen-day period.

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

(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. All of 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 per cent solids of the dried sewage sludge.

(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 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).

(b) Recordkeeping requirements for pathogen reduction alternative P-12: thermophilic aerobic digestion. All of 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 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.

(iii) 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. All of 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 beta ray dosage.

(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. All of the following records shall be maintained and submitted to the director or an authorized representative with the annual report:

(i) Documentation of the gamma ray isotope uses.

(ii) The gamma ray dosage.

(iii) Ambient room temperature records.

(iv) 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.

(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. A device shall be used to monitor the temperatures to ensure that the temperature of the sewage sludge does not fall below seventy degrees Celsius (one hundred fifty-eight degrees Fahrenheit) during the thirty-minute period.

(b) Recordkeeping requirements for alternative P-15: pasteurization. Both of 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 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.

(a) Requirements for achieving pathogen reduction alternative P-16. To achieve alternative P-16, sewage sludge that will be treated to generate biosolids for beneficial use shall be treated in a manner that is equivalent to a process to further reduce pathogens, as determined by the director.

(b) Recordkeeping requirement for pathogen reduction alternative P-16: equivalent process to further reduce pathogens. Both of 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) Operating parameters or pathogen levels, as necessary, to demonstrate that the process equivalent to a process to further reduce pathogens has been achieved.

(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.

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 after or at the same time as meeting pathogen reduction requirements in paragraphs (B)(8) to (B)(16) of this rule 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: Calculations for determining the volatile solids reduction may be found in "Environmental Regulations and Technology, Control of Pathogens and Vector Attraction in Sewage Sludge."]

(b) Recordkeeping requirements for vector attraction reduction option VAR-1: thirty-eight per cent volatile solids reduction. Both of 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.

(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 cannot be met for an anaerobically digested sewage sludge, vector attraction reduction can be demonstrated by both of the following:

(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).

(ii) Showing that 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. All of 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.

(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 cannot be met for an aerobically digested sewage sludge, vector attraction reduction can be demonstrated by both of the following:

(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).

(ii) Showing that 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. All of 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.

(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 (between fifty and 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) SOUR testing shall be conducted in accordance with the standard operating procedure developed under paragraph (C) of rule 3745-40-09 of the Administrative Code. The standard operating procedure for SOUR testing shall take into account the variability in flow rates and performance of the digester. SOUR tests shall be run routinely so that sufficient data are available to indicate average performance. To compensate for variability the arithmetic mean of a minimum of seven successive SOUR tests taken over a two-week period shall give a SOUR of less than or equal to 1.5 milligrams of oxygen per hour per gram of total solids. At a minimum, SOUR testing shall be completed at the frequency required by table B-1 of rule 3745-40-09 of the Administrative Code.

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

(i) Dissolved oxygen readings for each sewage sludge sample taken every minute over a fifteen-minute interval.

(ii) Calculations and temperature records showing that each 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.

(iv) The SOUR calculations for each test.

[Comment: A SOUR calculation worksheet is available online at: http://epa.ohio.gov/dsw/sludge/biosolid.aspx#137944357-compliance-tools]

(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. Both of 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.

(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: lime treatment.

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

(iii) The number of dry tons of the lime 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 sewage sludge 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 per cent solids 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. Both of 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.

(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 sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than ninety per cent based on the per cent solids 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 a decrease in per cent solids.

(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 authorized beneficial use site.

(a) Requirements for achieving vector attraction option VAR-9: biosolids are injected below the surface of the authorized beneficial use site. Biosolids shall be injected below the surface of the authorized beneficial use site, where no significant amount of biosolids shall be present on the surface of the authorized beneficial use site within one hour after the sewage sludge is injected.

(b) Recordkeeping requirements for vector attraction reduction option VAR-9: biosolids are injected below the surface of the authorized beneficial use site. The certification statement, as required by rule 3745-40-09 of the Administrative Code, from the beneficial user 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. Biosolids shall be incorporated into the soil within six hours of delivery to the authorized beneficial use site, unless otherwise specified by the director.

(b) Recordkeeping requirements for vector attraction reduction option VAR-10: immediate incorporation of biosolids. The certification statement from the beneficial user 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 of this rule then all monitoring results must show pollutant levels below the pollutant ceiling concentrations listed in table D-1 of this rule. Monitoring results cannot 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 40 C.F.R. part 503.

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

(a) If beneficial use of class B 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 applied at the authorized beneficial use site in accordance with this chapter.

(b) If class B biosolids subject to the cumulative pollutant loading rates have been beneficially used at the authorized beneficial use site since July 20, 1993, and the cumulative amount of each pollutant beneficially used at the authorized beneficial use site since that date is known, the cumulative amount of each pollutant applied at the authorized beneficial use site shall be used to determine the additional amount of each pollutant that can be applied at the authorized beneficial use site in

accordance with this chapter.

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

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

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

(b) The name, address, telephone number and NPDES permit number of the generator of the class B 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 |

Table D-2: Pollutant cumulative pollutant load rates.

| | |
|---|---|
| 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 |

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**3745-40-05 Notice and necessary information requirements for biosolids.**

(A) Notice and necessary information requirements for permittees. A permittee shall provide the initial person who receives class B or bulk exceptional quality biosolids information including, but not limited to all of the following:

(1) The name, address, telephone number and NPDES permit number of the permittee.

(2) The following statement: "The material you are receiving is or contains class B or exceptional quality (EQ) [select one option] biosolids that have been treated to meet the requirements in Chapter 3745-40 of the Administrative Code."

(3) The concentration of total Kjeldahl nitrogen, ammonia nitrogen, total phosphorus and total potassium of the biosolids in milligrams per kilogram, dry weight basis.

(4) The concentration of pollutants, as identified in paragraph (D) of rule 3745-40-04 of the Administrative Code in milligrams per kilogram, dry weight basis.

(5) The pathogen reduction alternative, as identified in paragraph (B) of rule 3745-40-04 of the Administrative Code, and the vector attraction reduction option, as identified in paragraph (C) of rule 3745-40-04 of the Administrative Code, that has been satisfied.

(6) A statement that the biosolids shall be further treated, stored, transferred, disposed of or beneficially used in accordance with this chapter.

(B) Notice and necessary information requirements for beneficial users. Any person who beneficially uses class B or bulk exceptional quality biosolids shall provide the beneficial use site operator a crop-year report for each beneficial use site. In the event that more than one type of feed crop, fiber crop, food crop~~,~~ or pasture is grown on a single beneficial use site where multiple beneficial use rates are used, a crop year report shall be submitted for each separate crop area. At a minimum, the crop-year report shall include all of the following information:

"On [fill in the date or dates biosolids were beneficially used on the beneficial use site], biosolids from [fill in name of treatment works], Ohio environmental protection agency permit [fill in NPDES permit number], were beneficially used on [fill in Ohio environmental protection agency number for the beneficial use site for class B biosolids, or street address or latitude and longitude of the beneficial use site for bulk exceptional quality biosolids] located in [fill in township and county where beneficial use occurred]. Biosolids are a by-product of wastewater treatment:

(1) An analysis of the biosolids showed the following concentrations [provide concentration in per cent or milligrams per kilogram, dry weight basis]:

(a) Kjeldahl nitrogen.

(b) Ammonia nitrogen.

(c) Total phosphorous.

(d) Total potassium.

(2) The beneficial use rates where [provide application rate in pounds per acre or kilograms per hectare, dry weight basis]:

(a) Available nitrogen.

(b) Phosphate.

(c) Potash.

The above information is supplied as a requirement of the Ohio environmental protection agency, division of surface water, which can be reached at 1-877-644-2001."

(C) In order to protect public health or the environment, the director or an authorized representative may require any person who distributes biosolids or material containing biosolids to provide the initial person receiving the biosolids or material containing biosolids with additional information concerning the contents of the biosolids.

| | |
|---|---|
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**3745-40-06 Beneficial use site authorizations for class B biosolids.**

(A) Authorization for a beneficial use site. Prior to the beneficial use of class B biosolids, a permittee shall obtain written notice of authorization to beneficially use class B biosolids at a proposed beneficial use site from the director or an authorized representative pursuant to the permittee's NPDES permit or approved biosolids management plan.

(1) The permittee shall submit a notice of beneficial use site application to beneficially use class B biosolids on one or more proposed beneficial use sites in any county approved for beneficial use in the permittee's NPDES permit or biosolids management plan.

(a) Notice of beneficial use site application requests shall be submitted on forms approved by the director at least forty-five days prior to the expected date of beneficial use.

(b) At a minimum, a notice of beneficial use site application request shall contain all of the following:

(i) The permittee's name, address, telephone number, NPDES permit number or biosolids management plan number, contact person and signed certification statement.

(ii) The name, address, contact information and signed certification statement for the owner of each site.

(iii) The name, address, contact information and signed certification statement for the beneficial use site operator of each site.

(iv) The name, address, contact information and signed certification statement for the beneficial user for each site.

(v) The beneficial use site information required by the notice of beneficial use site application forms including, but not limited to all of the following:

*(a)* The beneficial use site location, acreage of the proposed site, and type of beneficial use to be performed.

*(b)* Soil monitoring results, crop information, soil types including hydrologic soil group, flooding frequency class and ground slope.

*(c)* As applicable, the location of surface waters of the state, sinkholes or underground injection control class V drainage wells, occupied structures, schools, medical care facilities, potable water supplies and water systems on each proposed beneficial use site and within one thousand feet of the site.

*(d)* The location of field tiles on each proposed beneficial use site, if any.

*(e)* The potential location of biosolids stockpile areas with applicable isolation

distances.

*(f)* The history of beneficial use at each proposed beneficial use site, including past beneficial use of class B and bulk exceptional quality biosolids, manure and commercial fertilizer for the previous five years.

*(g)* Maps that show the soil types, flooding frequency, site entrance and applicable isolation distances.

*(h)* A copy of the most recent soil test results.

*(i)* Any other information requested by the director or an authorized representative.

(2) At a minimum, the isolation distances and site specific requirements contained in paragraphs (C) and (D) of rule 3745-40-08 of the Administrative Code shall be considered to determine the suitability of a site for the beneficial use of biosolids.

(3) The director or an authorized representative shall notify the permittee in writing as to whether the site is authorized for the beneficial use of class B biosolids pursuant to the permittee's NPDES permit or approved biosolids management plan. A site authorization may include conditions to protect public health and the environment and to prevent creation of nuisance odors.

(4) Ohio EPA shall maintain a map that includes each site authorized for the beneficial use of class B biosolids and make the map available on Ohio EPA's website.

(B) Biosolids shall be beneficially used at a site in accordance with this chapter, the permittee’s NPDES permit or approved biosolids management plan, and the conditions stated in the notice of authorization of the specific beneficial use site.

(C) Authorization to beneficially use biosolids at a site shall be valid for only the treatment works that are owned by the same permittee who signs the beneficial use site authorization application form approved by the director.

[Comment: For example, a municipality that has two different NPDES permitted treatment works would be authorized to beneficially use biosolids from either treatment works at a single beneficial use site.]

(D) Authorized beneficial use site transfer. Any permittee who wishes to transfer an authorized beneficial use site from one treatment works to another shall make the request in writing on forms approved by the director and obtain written notice from the director or an authorized representative that the transfer is authorized prior to beneficial use at the authorized beneficial use site.

(E) Amending an authorized beneficial use site. Prior to amending the acreage for a currently authorized beneficial use site or reducing an isolation distance from an occupied structure, a permittee shall request the change in writing on forms approved by the director, provide additional information if requested by the director or an authorized representative, and shall receive written notice from the director or an authorized representative that the amendment

to the beneficial use site acreage or reduction of the isolation distance is authorized.

(F) Re-certification of beneficial use site criteria. The permittee shall certify that prior to beneficial use, each authorized beneficial use site was evaluated for changes at or near the authorized beneficial use site.

(1) Prior to the beneficial use of biosolids at an authorized beneficial use site, the permittee shall evaluate the site for any changes that have occurred at the site or near the site that may affect the site restrictions. Changes to evaluate shall include, but not be limited to all of the following:

(a) The addition of occupied structures, schools, private potable water sources within three hundred feet, or medical care facilities within one thousand feet of the site.

(b) The addition or change in the sanitary isolation distance of a public water system, the emergency management zone of a public water system, the inner management zone of a community or non-transient, non-community public water system, or a drinking water well for a transient, non-community public water system.

(c) The addition of, or change in, subsurface tile drainage.

(d) Changes in the food crops grown at the site.

(e) Change of site owner, beneficial use site operator, or beneficial user.

(2) If no changes have occurred at or near the authorized beneficial use site since the site was authorized, the permittee shall certify that no changes were made on the annual sludge report or other report specified by Ohio EPA.

(3) If any changes have occurred at or near the authorized beneficial use site since the site was authorized, the permittee shall comply with the applicable site restrictions in this chapter of the Administrative Code and report the changes on the annual sludge report or other report specified by Ohio EPA.

| | |
|---|---|
| Replaces: | 3745-40-06 |
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**3745-40-07 Requirements for the field storage of biosolids and regional facility storage.**

(A) Biosolids shall be stored in a manner that is protective of human health and the environment and shall not impact waters of the state or create nuisance odors.

(B) Prohibitions. If utilizing vector attraction reduction options nine (VAR-9) or ten (VAR-10), the field storage of class B biosolids is prohibited.

(C) Except as provided in rule 3745-40-10 of the Administrative Code, no person shall store class B biosolids at a site that has not been authorized by the director or an authorized representative for beneficial use in accordance with rule 3745-40-06 of the Administrative Code.

(D) Isolation distance requirements.

(1) The isolation distances listed in table D-1 of this rule shall be maintained for the field storage of class B and bulk exceptional quality biosolids.

Table D-1: Isolation distance requirements that shall be maintained from the location of class B and bulk exceptional quality biosolids.

| Isolation distance requirement: | To be maintained from: | For biosolids classification: |
|---|---|---|
| Three feet | Bedrock | Class B and bulk exceptional quality |
| One hundred feet | Surface waters of the state | Class B and bulk exceptional quality |
| Three hundred feet | A sinkhole or a UIC class V drainage well | Class B and bulk exceptional quality |
| Three hundred feet | An occupied structure or school | Class B |
| Three hundred feet | A private, potable water source | Class B |
| One thousand feet | A medical care facility | Class B |

(2) The director or an authorized representative may allow a reduction in isolation distance for an occupied structure that is located adjacent to field storage area at an authorized beneficial use site, provided such a request is made from both the structure owner and, if applicable, the resident of the occupied structure. A request for an isolation distance reduction shall be made on forms approved by the director.

(3) In addition to the isolation distance requirements in table D-1 of this rule, no person shall store class B biosolids in any of the following ways:

(a) Within either of the following areas pertaining to public water systems:

(i) Within the sanitary isolation distance a public water system shall maintain for a drinking water supply well as established in rule 3745-9-04 of the Administrative Code.

(ii) Within the following areas defined in table D-2 of this rule.

Table D-2: Setback requirements for public water systems.

| Type of public water system | Setback |
|---|---|
| Community or non-transient, non-community public water system | The inner management zone; if the drinking water source protection area is underlain by karst or fractured bedrock and has been determined to be highly susceptible to contamination, the setback shall be extended to include the entire drinking water source protection area. |
| Transient, non-community public water system using ground water | Three hundred feet from the water supply well |

(iii) Within the emergency management zone for a public water system using surface water. Where no emergency management zone has been delineated or endorsed by the Ohio environmental protection agency, the isolation distance shall consist of a circle with a radius of one thousand five hundred feet from the intake.

(b) Within a low lying wet area or on soils frequently flooded.

[Comment: "Frequently flooded" and "low lying wet area" are defined in rule 3745-40-01 of the Administrative Code.]

(c) Where the slope is greater than fifteen per cent.

(E) The maximum amount of class B or bulk exceptional quality biosolids to be delivered shall conform to both of the following:

(1) For any beneficial use site, shall not exceed the amount required to meet the calculated agronomic rate for the beneficial use site and any contiguous beneficial use site.

(2) For any land reclamation site, shall be in accordance with paragraph (B) of rule 3745-40-03 of the Administrative Code.

(F) For class B or bulk exceptional quality biosolids that are stockpiled or stored at the beneficial use site, all of the following conditions apply:

(1) A permit to install, in accordance with Chapter 3745-42 of the Administrative Code, shall be obtained from the director prior to storage of liquid biosolids.

(2) The field storage of class B or bulk exceptional quality biosolids at any beneficial use site shall be in accordance with table F-1 of this rule.

Table F-1: Field storage requirements.

| Biosolids classification | Number of days of field storage | Is field storage allowed? |
|---|---|---|
| Class B and bulk exceptional quality | Less than or equal to ninety days | Yes |
| Class B and bulk exceptional quality | Greater than ninety days | No. The field storage of biosolids for more than ninety days is prohibited. |

(3) For class B or bulk exceptional quality biosolids stored at a beneficial use site, the date of first delivery of the biosolids to the beneficial use site and the date that beneficial use of the biosolids is completed shall be recorded.

(4) Surface water diversions and other best management practices shall be utilized when there is field storage of class B or bulk exceptional quality biosolids at any beneficial use site. Surface water diversions include, but are not limited to, silt fences installed to catch any solids in runoff, or temporary berms installed to divert runoff away from the biosolids. These measures are not necessary for the temporary transfer of biosolids from a delivery vehicle to a beneficial use vehicle on the same day the biosolids are delivered to the beneficial use site.

(5) If biosolids cannot be beneficially used within ninety days after delivery to the beneficial use site, the biosolids shall be returned to the treatment works at which the biosolids were generated, taken to a landfill for disposal, taken to another treatment works or regional storage facility provided said treatment works or regional storage facility has an NPDES permit for the treatment, storage, transfer or disposal of biosolids, or taken to another beneficial use site where the biosolids shall be beneficially used the same day that the biosolids were removed from the previous beneficial use site.

(G) Regional storage facility requirements. A regional storage facility is required when class B or bulk exceptional quality biosolids will be stored for more than ninety days at any location other than the generating treatment facility.

(1) A permit to install, in accordance with Chapter 3745-42 of the Administrative Code, shall be obtained from the director prior to the construction of a regional storage facility.

(2) An NPDES permit shall be obtained prior to any treatment of biosolids at a regional storage facility.

(3) No person shall take any of the following actions:

(a) Store biosolids at a regional storage facility for more than two years without proper authorization from the director or an authorized representative.

(b) Unless in accordance with an NPDES permit, mix class B biosolids from two or more

different treatment works not owned by the same permittee at a regional storage facility.

(c) Locate a regional storage facility within the isolation distances listed in table D-1 of this rule.

(d) Locate a regional storage facility within a drinking water source protection area for a community public water system using ground water.

(e) Locate a regional storage facility where there is a potential for an unpermitted discharge to waters of the state.

(f) Store biosolids at a regional storage facility in a manner that is not protective of human health and the environment, impacts waters of the state or creates nuisance odors.

(H) To protect public health or the environment or to minimize the creation of nuisance odors, the director or an authorized representative may do any of the following:

(1) Decrease the maximum time the biosolids may be stored at a beneficial use site or regional storage facility.

(2) Prohibit the storage of biosolids at a beneficial use site or regional storage facility.

(3) Require other measures to protect public health and the environment, or to minimize the creation of nuisance odors.

| | |
|---|---|
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| | |
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**3745-40-08 Requirements for the beneficial use of biosolids: general requirements, prohibitions, isolation distance requirements, site specific requirements, and additional site restrictions for the beneficial use of class B biosolids.**

[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) Any biosolids distributed for beneficial use (e.g.for landscaping or gardening) shall be exceptional quality biosolids, as defined in rule 3745-40-04 of the Administrative Code.

(2) Except as provided in paragraphs (A)(3) and (A)(7) of this rule, class B or bulk exceptional quality biosolids shall be beneficially used at the calculated agronomic rate at a beneficial use site. The agronomic rate shall be calculated prior to beneficial use and be the most limiting factor derived from the following:

(a) For soils with soil phosphorus test results less than or equal to forty parts per million Bray-Kurtz P1 extraction or fifty-eight parts per million Mehlich III extraction, the most limiting factor of the following:

(i) The nitrogen agronomic rate.

(ii) A phosphate beneficial use rate of two hundred fifty pounds per acre or less.

(iii) A phosphate beneficial use rate between two hundred fifty pounds per acre and five hundred pounds per acre if both of the following criteria are met:

*(a)* No additional phosphate application shall be made at the beneficial use site for a minimum of three calendar years.

*(b)* All biosolids are injected or are incorporated within twenty-four hours of beneficial use.

(b) For soils with soil phosphorus test results greater than forty parts per million Bray-Kurtz P1 extraction or fifty-eight parts per million Mehlich III extraction and less than or equal to one hundred parts per million Bray-Kurtz P1 extraction or one hundred thirty parts per million Mehlich III extraction, the most limiting factor of the following:

(i) The nitrogen agronomic rate.

(ii) A multi-year phosphate agronomic rate.

(c) For soils with soil phosphorus test results greater than one hundred parts per million Bray-Kurtz P1 extraction or one hundred thirty parts per million Mehlich III extraction, beneficial use shall be completed in accordance with the phosphorus

index.

(3) For all beneficial use sites, beneficial use of class B or bulk exceptional quality biosolids may be completed in accordance with the phosphorus index.

(4) Except as provided in paragraph (A)(2)(a)(iii) of this rule, the phosphate agronomic rate shall be limited to two hundred fifty pounds per acre.

(5) For all beneficial use sites, the agronomic rate calculations shall include all sources of nitrogen and phosphate such as commercial fertilizer or manure in addition to class B or bulk exceptional quality biosolids.

(6) Special requirement regarding liquid class B or liquid bulk exceptional quality biosolids. The beneficial use of liquid class B or bulk exceptional quality biosolids shall be at or below the agronomic rate for the reasonably expected yield goal of planned crops or crop rotation, or at or below the available water capacity of the upper eight inches of soil, whichever is less at the time of beneficial use.

(7) Special requirement regarding land reclamation sites. The agronomic rate may be exceeded during land reclamation projects using biosolids provided the beneficial use is in accordance with paragraph (B) of rule 3745-40-03 of the Administrative Code.

(B) Prohibitions and restrictions.

(1) Pollutant ceiling concentrations. No person shall beneficially use biosolids if the concentration of any pollutant in the biosolids exceeds the ceiling concentration limits for the pollutants established in rule 3745-40-04 of the Administrative Code.

(2) Frozen or snow covered ground. No person shall beneficially use class B or bulk exceptional quality biosolids on frozen or snow-covered ground.

[Comment: If biosolids can be injected or incorporated, then the beneficial use site is not frozen.]

(3) Saturated soil. No person shall beneficially use class B or bulk exceptional quality biosolids on the surface of a beneficial use site when the top two inches of soil are saturated.

(4) Precipitation prohibitions and restrictions for hydrologic soil groups A, B, and C.

[Comment: Information on Ohio hydrologic soil groups can be found on the United States department of agriculture, natural resources conservation services web site at the following link: www.oh.nrcs.usda.gov/technical/soils/.]

(a) Except as provided in paragraph (B)(4)(b) of this rule, no person shall beneficially use class B or bulk exceptional quality biosolids during a precipitation event, or when the forecast indicates that there is at least a fifty per cent chance that 0.5 inches of rain will occur within twenty-four hours after beneficial use. The forecast consulted shall be for the municipality nearest where the beneficial use site is located and shall be printed out or otherwise recorded and kept on file for each beneficial use event.

[Comment: Information on hourly forecasts may be located at the national oceanic and atmospheric administration's website: www.weather.gov by entering a zip code or city, state in the box where indicated, selecting "Go" and selecting the "Hourly Weather Forecast" under "More Information."]

(b) Class B or bulk exceptional quality biosolids may be beneficially used when the forecast indicates that there is at least a fifty per cent chance that 0.5 inches of rain will occur within twenty-four hours after beneficial use if either of the following occur:

(i) The biosolids are injected.

(ii) The biosolids are immediately incorporated and the forecast does not indicate that there is at least a fifty per cent chance that 0.5 inches of rain will occur within six hours after beneficial use.

(5) Precipitation prohibitions and restrictions for hydrologic soil group D soils.

(a) Except as provided in paragraphs (B)(5)(b) to (B)(5)(b)(ii) of this rule, no person shall beneficially use class B or bulk exceptional quality biosolids during a precipitation event or when the forecast indicates that there is at least a fifty per cent chance that 0.25 inches of rain will occur within twenty-four hours after beneficial use. The forecast consulted shall be for the municipality nearest where the beneficial use site is located and shall be printed out or otherwise recorded and kept on file for each beneficial use event.

[Comment: Information on hourly forecasts may be located at the national oceanic and atmospheric administration's website: www.weather.gov by entering a zip code or city, state in the box where indicated, selecting "Go" and selecting the "Hourly Weather Forecast" under "More Information."]

(b) Class B or bulk exceptional quality biosolids may be beneficially used when the forecast indicates that there is at least a fifty per cent chance that 0.25 inches of rain will occur within twenty-four hours after beneficial use for any hydrologic soil group (HSG) D soils if any of the following occur:

(i) The biosolids are injected.

(ii) The biosolids are immediately incorporated and the forecast does not indicate that there is at least a fifty per cent chance that 0.25 inches of rain will occur within six hours after beneficial use.

(6) No person shall beneficially use class B or bulk exceptional quality biosolids if such beneficial use is likely to adversely affect a threatened or endangered species listed under section four of the Endangered Species Act or pursuant to section 1531.25 of the Revised Code or the species' designated critical habitat.

(C) Isolation distance requirements.

(1) Except as provided in paragraph (C)(2) of this rule, no person shall beneficially use class

B or bulk exceptional quality biosolids within the following isolation distances listed in table C-1 of this rule.

Table C-1: Isolation distance requirements

| | Surface application isolation distance requirements (feet) | Injected or immediately incorporated isolation distance requirements (feet) | Applicable biosolids classification |
|---|---|---|---|
| Bedrock | 3 | 3 | Class B or bulk exceptional quality |
| Surface waters of the state | 33 | 33 | Class B or bulk exceptional quality |
| Sinkhole or UIC class V drainage | 300 without a grass buffer; 100 with a grass buffer | 300 without a grass buffer; 100 with a grass buffer | Class B or bulk exceptional quality |
| Occupied structure or school | 300 | 100 | Class B |
| Private potable water source | 300 | 100 | Class B |
| Medical care facility | 1000 | 300 | Class B |

[Comment: For more information on sinkholes and different classes of UIC injection wells, see Chapter 3745-34 of the Administrative Code.]

(2) No person shall beneficially use class B biosolids in any of the following areas:

(a) Within the sanitary isolation distance a public water system shall maintain for a drinking water supply well, as established in rule 3745-9-04 of the Administrative Code.

(b) Within an emergency management zone for a public water system using surface water. Where no emergency management zone has been delineated or endorsed by the Ohio environmental protection agency, the isolation distance shall consist of a circle with a radius of one thousand five hundred feet from the intake.

(c) Within the following areas, as defined in table C-2 of this rule:

Table C-2

| Type of public water system | Isolation distance |
|---|---|
| Community or non-transient, non-community public water system | The inner management zone; if the drinking water source protection area is underlain by |

Table C-2

| | |
|---|---|
| | karst or fractured bedrock and has been determined to be highly susceptible to contamination, the setback shall be extended to include the entire drinking water source protection area |
| Transient, non-community public water system | Three hundred feet from a drinking water supply well |

(3) The director or an authorized representative may allow a reduction in isolation distance for those occupied structures that are located adjacent to an authorized beneficial use site, provided such a request is made from both the structure owner and, if applicable, the resident of the occupied structure. A request for an isolation distance reduction shall be made on forms approved by the director.

(D) Site specific requirements. Any person who beneficially uses class B or bulk exceptional quality biosolids shall meet the following site specific requirements, as applicable:

(1) Beneficial use sites that are frequently flooded. No person shall beneficially use class B or bulk exceptional quality biosolids at a beneficial use site that is frequently flooded, as defined in rule 3745-40-01 of the Administrative Code, so that the class B or bulk exceptional quality biosolids enter surface waters of the state, except as provided in an NPDES permit issued under Chapter 6111. of the Revised Code. Beneficial use of class B or bulk exceptional quality biosolids at a beneficial use site shall be limited to same day incorporation or injection on areas of beneficial use sites that are frequently flooded during periods when flooding is expected.

(2) Ground slope and ground cover. No person shall beneficially use class B or bulk exceptional quality biosolids at food crop, feed crop, fiber crop, or cover crop land over fifteen per cent slope or at pasture land or vegetation land over twenty per cent slope unless one of the following activities is performed:

(a) Same day incorporation or injection with operations done on the contour.

(b) The field is established and managed in contour strips with alternate strips in cover crop, pasture, or vegetation.

(3) Soil monitoring requirements. If soil monitoring results for either soil phosphorus or soil pH are more than three years old, the soil shall be retested prior to the class B or bulk exceptional quality biosolids being delivered to a beneficial use site for beneficial use. Composite soil samples shall be taken for both of the following:

(a) Soil phosphorus. Prior to the beneficial use of class B or bulk exceptional quality biosolids, the soil phosphorus level shall be monitored utilizing either the Bray-Kurtz P1 extraction or Mehlich III extraction method.

(b) Soil pH. Minimum soil pH for the beneficial use of class B biosolids shall be 5.5. If the soil pH at a beneficial use site is less than 5.5, sufficient liming material shall be added such that the class B biosolids and soil mixture pH is calculated to reach 5.5

or greater.

(4) Soil sampling collection procedure. If soil samples are required by paragraph (D)(3) of this rule, the samples shall be taken in accordance with the following requirements:

(a) A composite sample shall represent fifteen to twenty acres of area that is uniform in soil series, slope, drainage, erosion, and nutrient application (including biosolids).

(b) Soil grab samples shall be taken seventy-five to one hundred feet apart with a minimum of fifteen grab samples in a composite sample.

(c) Soil grab samples shall be taken to a plow depth, or within the top eight inches of soil.

(d) Low spots or other unusual areas such as biosolids or liming material stockpiling areas, and fertilizer spills shall not be included in composite samples and shall be sampled separately.

(e) For row crops, samples shall be taken between rows.

(f) For establishing grass pasture crops, samples shall be collected to the rooting zone (three to four inches).

(g) All grab samples shall be broken up and mixed thoroughly before the sample is composited.

(h) Soil samples collected to analyze for soil phosphorus shall be collected prior to spring planting.

[Comment: Further information regarding sampling procedures and test methodology may be found in Ohio state university's factsheet AGF-513 at: https://ohioline.osu.edu/factsheet/AGF-513.]

(5) Beneficial use sites with subsurface tile drainage.

(a) For beneficial use sites with subsurface tile drainage, all field outlets shall be visually monitored before, during and after beneficial use of liquid class B or liquid bulk exceptional quality biosolids at the beneficial use site and the results of that monitoring shall be recorded. Daily visual monitoring shall continue until biosolids are assimilated into the beneficial use site and are no longer likely to discharge to waters of the state. Methods or devices to stop or capture subsurface drain flow shall be accessible. If liquid class B or liquid bulk exceptional quality biosolids reach the subsurface drain outlet to surface waters of the state, the beneficial use of liquid biosolids shall cease and the flow shall be stopped or captured. Use of drain outlet plugs or other devices shall be recorded.

(b) For beneficial use of liquid class B or liquid bulk exceptional quality biosolids at beneficial use sites with subsurface tile drainage, all of the following criteria shall be followed:

(i) Beneficial use rates shall be less than or equal to 0.5 inches or thirteen thousand gallons per acre per beneficial use event.

(ii) A tool shall be used that can disrupt or close the preferential flow paths in the soil using horizontal fracturing, or the surface of the soil shall be tilled three to five inches deep to a seedbed condition to soak up the liquid class B or liquid bulk exceptional quality biosolids and keep it out of preferential flow channels.

(iii) If injection is used, liquid class B or liquid bulk exceptional quality biosolids shall only be injected deep enough to cover the biosolids with soil. The soil shall be tilled at least three inches below the depth of injection prior to or at the time of beneficial use.

(iv) For beneficial use sites where tillage is not an option, all tile outlets from the beneficial use site are to be plugged and all tile stops are to be closed prior to or at the same time as beneficial use.

(c) A standard operating procedure shall be developed by the beneficial user or permittee for beneficial use sites with tile drainage to address paragraphs (D)(4)(a) and (D)(4)(b) of this rule.

(E) Additional site restrictions for the beneficial use of class B biosolids:

(1) Food crops with harvested parts that touch the biosolids or soil mixture and are on the surface of the authorized beneficial use site shall not be harvested for fourteen months after the beneficial use of class B biosolids.

(2) Food crops with harvested parts below the surface of the authorized beneficial use site shall not be harvested for twenty months after the beneficial use of class B biosolids when the biosolids remained on the surface of the authorized beneficial use site for four months or longer prior to incorporation into the soil.

(3) Food crops with harvested parts below the surface of the authorized beneficial use site shall not be harvested for thirty-eight months after the beneficial use of class B biosolids when the class B biosolids remained on the surface of the authorized beneficial use site for less than four months prior to incorporation into the soil.

(4) All other food crops, feed crops, and fiber crops shall not be harvested for thirty days after the beneficial use of class B biosolids.

(5) Animals shall not be allowed to graze on the authorized beneficial use site for thirty days after the beneficial use of class B biosolids.

(6) Turf or other vegetation grown for landscaping purposes that is grown on an authorized beneficial use site where class B biosolids are beneficially used shall not be harvested for one year after the beneficial use of class B biosolids when the harvested turf or other vegetation is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the director.

(7) Public access to a high potential public exposure site shall be restricted for one year after the beneficial use of class B biosolids.

(8) Public access to a low potential public exposure site shall be restricted for thirty days after

the beneficial use of class B biosolids.

(9) The mixing of class B biosolids from different treatment works at an authorized beneficial use site is prohibited, unless in accordance with paragraph (C) of rule 3745-40-06 of the Administrative Code.

(10) Drag hoses and mobile storage tanks shall not be utilized at authorized beneficial use sites until a standard operating procedure has been developed under paragraph (C) of rule 3745-40-09 of the Administrative Code and a permit to install, if applicable, is obtained.

| | |
|---|---|
| Replaces: | 3745-40-08 |
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**3745-40-09 Approved sampling methods, monitoring frequency requirements, record retention and annual reporting requirements.**

[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) Approved sampling methods.

(1) Except as provided in paragraph (A)(2) of this rule, a permittee shall collect and analyze, as applicable, representative samples of biosolids in accordance with table A-1 of this rule, or any other method as approved under 40 C.F.R. 503. The following methods or methods listed in 40 C.F.R. Part 136 shall be used to analyze samples of biosolids and are adopted by reference in this chapter.

Table A-1: Approved methods for sampling.

| Sample | Approved method |
|---|---|
| Enteric viruses | ASTM D4994 |
| Fecal coliform | Part 9221E. or part 9222D., "Standard Methods for the Examination of Water and Wastewater" |
| Foreign/inert matter | U.S. EPA 160.3 "Methods for Chemical Analysis of Water and Wastes" |
| Helminth ova | Yanko, W.A. "Occurrence of Pathogens in Distribution and Marketing Municipal Sludges" |
| Inorganic pollutants | "EPA SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" |
| Salmonella sp. bacteria | Part 9260D., "Standard Methods for the Examination of Water and Wastewater" or Kenner, B.A. and H.P. Clark, "Detection and Enumeration of Salmonella and Pseudomonas aeruginosa." |
| Specific oxygen uptake rate | Part 2710B., "Standard Methods for the Examination of Water and Wastewater" |
| Total, fixed, and volatile solids | Part 2540G., "Standard Methods for the Examination of Water and Wastewater" |

(2) The director may approve alternative sampling methods to those listed in table A-1 of this rule provided the permittee submits a copy of the alternative sampling method being proposed and any necessary support documentation to the director for consideration prior to any sampling being done.

(B) Monitoring frequency requirements. For any NPDES permit issued by the director, monitoring frequencies shall be in accordance with this paragraph. In addition to the

following monitoring frequencies, the director may require additional monitoring to protect public health or the environment:

(1) Total solids.

(a) Each day when sewage sludge or biosolids are removed from the treatment works for disposal, a representative composite sample of the sewage sludge or biosolids, as applicable, shall be collected and analyzed for total solids.

(b) Each day when biosolids are removed from the treatment works for beneficial use, a representative composite sample of the biosolids shall be collected and analyzed for total solids.

(2) Transfer to another treatment works. Each day when sewage sludge or biosolids are transferred to another treatment works, the total volume of sewage sludge or biosolids removed for transfer shall be documented.

(3) Pathogen reduction. To ensure that pathogen reduction requirements are met prior to beneficial use, monitoring shall occur for pathogen reduction prior to beneficial use.

(a) Monitoring for pathogen reduction shall be performed as necessary to show compliance with all processing requirements and, at a minimum, in accordance with table B-1 of this rule.

(b) If beneficial use does not occur in a reporting period, the number of samples collected and reported for pathogen reduction shall be increased during the next beneficial use event to include the missed monitoring periods, unless all previously accumulated sewage sludge has been removed and disposed of via a landfill, though incineration or by transfer to another treatment works.

[Comment:– For example, for a treatment works that would be required to monitor their sewage sludge on a quarterly basis, but only has one annual beneficial use event, and that relies on fecal coliform monitoring to meet pathogen reduction, four separate sets of seven fecal coliform samples with the appropriate four separate geometric mean calculations would be required.]

(4) Vector attraction. To ensure that vector attraction requirements are met prior to beneficial use, monitoring shall occur for vector attraction reduction prior to beneficial use.

(a) Monitoring for vector attraction reduction shall be performed as necessary to show compliance with all processing requirements and, at a minimum, in accordance with table B-1 of this rule.

(b) Monitoring for vector attraction reduction is not required when vector attraction reduction options VAR-9 or VAR-10, in accordance with rule 3745-40-04 of the Administrative Code, are utilized.

(5) Metals and nutrients.

(a) The following is a list of parameters that shall be monitored for prior to beneficial use in accordance with the frequencies in table B-1 of this rule:

(i) Metals:

*(a)* Arsenic.

*(b)* Cadmium.

*(c)* Copper.

*(d)* Lead.

*(e)* Mercury.

*(f)* Molybdenum.

*(g)* Nickel.

*(h)* Selenium.

*(i)* Zinc.

(ii) Nutrients:

*(a)* Ammonia nitrogen.

*(b)* Total kjeldahl nitrogen.

*(c)* Total phosphorus or other phosphorus testing authorized by Ohio EPA.

*(d)* Total potassium.

(b) For any NPDES permit or biosolids management plan issued by the director, minimum frequency of monitoring for metals and nutrients shall be in accordance with table B-1 of this rule. This monitoring shall occur even if beneficial use does not occur during a reporting period, or the number of samples collected and reported shall be increased prior to the next beneficial use event to account for the reporting period in which beneficial use did not occur, unless all previously accumulated sewage sludge has been removed and disposed of via a landfill, through incineration or by transfer to another treatment works.

(c) For any NPDES permit or biosolids management plan issued by the director that does not include sampling requirements for total phosphorus or total potassium, the minimum frequency of monitoring for total phosphorus or total potassium shall be in accordance with table B-1 of this rule.

Table B-1: Minimum frequency of monitoring required for the beneficial use of biosolids based on amount of sewage sludge generated per calendar year.

| Amount of sewage sludge generated (dry U.S. tons per calendar year) | Minimum frequency of required monitoring |
|---|---|
| Greater than zero but less than three hundred twenty | Once per year |
| Greater than or equal to three hundred twenty but less than one thousand six hundred fifty | Once per quarter |
| Greater than or equal to one thousand six hundred fifty but less than sixteen thousand five hundred | Once every two months |
| Greater than or equal to sixteen thousand five hundred | Once per month |

(6) Dioxin monitoring requirements.

(a) To protect public health or the environment, the director may require monitoring for dioxin for any treatment works, to do both of the following:

(i) To determine whether a significant increase is occurring in the dioxin concentration.

(ii) To assist in identifying the source of any such significant increase.

(b) If monitoring for dioxin is required, the treatment works shall monitor for dioxin in sewage sludge, such that all of the following requirements are met:

(i) All analyses for dioxin in sewage sludge that are required by this rule are performed by a laboratory equipped to provide accurate results.

(ii) All test results for dioxin are submitted to the appropriate Ohio environmental protection agency district office and the Ohio environmental protection agency central office.

(iii) The 2, 3, 7, 8-TCDD total toxicity equivalence of the dioxin in sewage sludge, calculated from the twenty-nine dioxin congeners defined in rule 3745-40-01 of the Administrative Code, shall be reported as part of the permittee's monthly operating report.

(iv) All dioxin in sewage sludge monitoring results shall be retained by the permittee for a minimum of five years and shall be submitted to the Ohio environmental protection agency upon request. The results shall include all of the following:

*(a)* Total class concentrations of the dibenzo-p-dioxins and dibenzofurans in parts per trillion.

*(b)* Concentrations of the twenty-nine individual congeners in parts per trillion.

*(c)* Calculation of the 2, 3, 7, 8-TCDD total toxicity equivalence in parts per trillion.

(v) Both of the following analytical methods shall be used for the analysis of dioxin in sewage sludge:

*(a)* United States environmental protection agency method number 1613B, 1994 shall be used for the seven 2, 3, 7, 8 chlorinated dibenzo-p-dioxin congeners and ten 2, 3, 7, 8 chlorinated dibenzofuran congeners.

*(b)* United States environmental protection agency method number 1668A (U.S. EPA number 821/C-97-005821/C-97-005) shall be used for the twelve coplanar polychlorinated biphenyl congeners.

(vi) Non-detected values shall be reported as one half of the detection limit.

(vii) The toxicity equivalence factors (TEF) listed in table B-2 of this rule shall be used in the calculation of the 2, 3, 7, 8-TCDD total toxicity equivalence.

Table B-2: Toxicity equivalent factors.

| Congener | Toxicity equivalent factor |
|---|---|
| 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin | 1.0 |
| 1, 2, 3, 7, 8-pentachlorodibenzo-p-dioxin | 0.5 |
| 1, 2, 3, 4, 7, 8-hexachlorodibenzo-p-dioxin | 0.1 |
| 1, 2, 3, 6, 7, 8-hexachlorodibenzo-p-dioxin | 0.1 |
| 1, 2, 3, 7, 8, 9-hexachlorodibenzo-p-dioxin | 0.1 |
| 1, 2, 3, 4, 6, 7, 8-heptachlorodibenzo-p-dioxin | 0.01 |
| 1, 2, 3, 4, 6, 7, 8, 9-octachlorodibenzo-p-dioxin | 0.001 |
| 2, 3, 7, 8-tetrachlorodibenzofuran | 0.1 |
| 1, 2, 3, 7, 8-pentachlorodibenzofuran | 0.05 |
| 2, 3, 4, 7, 8-pentachlorodibenzofuran | 0.5 |
| 1, 2, 3, 4, 7, 8-hexachlorodibenzofuran | 0.1 |
| 1, 2, 3, 6, 7, 8-hexachlorodibenzofuran | 0.1 |
| 1, 2, 3, 7, 8, 9-hexachlorodibenzofuran | 0.1 |
| 2, 3, 4, 6, 7, 8-hexachlorodibenzofuran | 0.1 |
| 1, 2, 3, 4, 6, 7, 8-heptachlorodibenzofuran | 0.01 |
| 1, 2, 3, 4, 7, 8, 9-heptachlorodibenzofuran | 0.01 |
| 1, 2, 3, 4, 6, 7, 8, 9-octachlorodibenzofuran | 0.001 |
| 3, 3', 4, 4'-tetrachlorobiphenyl | 0.0001 |
| 3, 4, 4', 5-tetrachlorobiphenyl | 0.0001 |
| 3, 3', 4, 4', 5-pentachlorobiphenyl | 0.1 |
| 2, 3, 3', 4, 4'-pentachlorobiphenyl | 0.0001 |

Table B-2: Toxicity equivalent factors.

| | |
|---|---|
| 2, 3', 4, 4', 5-pentachlorobiphenyl | 0.0001 |
| 2', 3, 4, 4', 5-pentachlorobiphenyl | 0.0001 |
| 2, 3, 4, 4', 5-pentachlorobiphenyl | 0.0005 |
| 3, 3', 4, 4', 5, 5'-hexachlorobiphenyl | 0.01 |
| 2, 3, 3', 4, 4', 5-hexachlorobiphenyl | 0.0005 |
| 2, 3, 3', 4, 4', 5'-hexachlorobiphenyl | 0.0005 |
| 2, 3', 4, 4', 5, 5'-hexachlorobiphenyl | 0.00001 |
| 2, 3, 3', 4, 4', 5, 5'-heptachlorobiphenyl | 0.0001 |

(viii) If the sample shows results above three hundred parts per trillion total toxicity equivalence, all beneficial use or distribution of the biosolids shall cease.

(C) Record retention requirements. Record retention is required by all of the following people:

(1) The permittee of exceptional quality biosolids. In addition to the recordkeeping requirements in rule 3745-40-04 of the Administrative Code, the permittee who prepares exceptional quality biosolids for the purpose of beneficial use or distribution shall develop the following information, shall retain the following information for a minimum of five years at the treatment works, and shall make all of the following information available to the director or an authorized representative upon request:

(a) The results of all analyses as required in paragraph (B) of rule 3745-40-09 of the Administrative Code.

(b) The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with pathogen reduction alternative [insert one of the pathogen reduction alternatives in paragraphs (B)(8) to (B)(16) of rule 3745-40-04 of the Administrative Code] in rule 3745-40-04 of the Administrative Code and vector attraction reduction alternative [insert one of the vector attraction reduction alternatives in paragraphs (C)(1) to (C)(8) of rule 3745-40-04 of the Administrative Code] in rule 3745-40-04 of the Administrative Code was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(c) A narrative description, in the form of a standard operating procedure, of how the pathogen reduction alternative being utilized meets the applicable requirements of the pathogen reduction alternative, in accordance with paragraphs (B)(8) to (B)(16) of rule 3745-40-04 of the Administrative Code and a narrative description, in the form of a standard operating procedure, of how the vector attraction reduction

alternative being utilized meets the applicable requirements of the vector attraction reduction alternative, in accordance with paragraphs (C)(1) to (C)(8) of rule 3745-40-04 of the Administrative Code. The standard operating procedure shall include the following, at a minimum, when applicable:

(i) Sample collection or monitoring locations.

(ii) The frequency at which sample collection or monitoring is to occur.

(iii) Sample collection or monitoring procedures.

(iv) Sample storage and preservation procedures.

(v) Sample or monitoring analysis procedures, including any calculations required for sample or monitoring analysis.

(vi) A description of how pathogen reduction is being met, either prior to, or at the same time as meeting the vector attraction reduction requirements in accordance with paragraph (A)(1)(a) of rule 3745-40-04 of the Administrative Code.

(d) An example of the notice and necessary information that is provided to each initial recipient of the biosolids.

(e) A copy of the information required to be maintained in accordance with paragraph (C)(2) of this rule.

(f) If the permittee is distributing exceptional quality biosolids, contact information for each person who receives the exceptional quality biosolids.

(2) The beneficial user of bulk exceptional quality biosolids. The person who beneficially uses bulk exceptional quality biosolids shall develop the following information, shall retain the following information for a minimum of five years, and shall make all of the following information available to the director or an authorized representative upon request:

(a) The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the storage requirements of rule 3745-40-07 of the Administrative Code, and the beneficial use requirements of rule 3745-40-08 of the Administrative Code, was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(b) Records showing that the bulk exceptional quality biosolids were not stored for more than ninety days at any beneficial use site, in accordance with table F-1 of rule

3745-40-07 of the Administrative Code.

(c) If applicable, a copy of the tile drainage operating procedure developed in accordance with paragraph (D)(4) of rule 3745-40-08 of the Administrative Code and a copy of the drag line and mobile storage tank standard operating procedure developed in accordance with paragraph (E)(10) of rule 3745-40-08 of the Administrative Code.

(d) Records showing that the beneficial use requirements in rule 3745-40-08 of the Administrative Code have been met at each beneficial use site including, but not limited to, all of the following:

(i) The soil phosphorous levels for each beneficial use site.

(ii) The agronomic rate calculations for each beneficial use site.

(iii) If a multi-year phosphate agronomic rate is utilized, the period of time for with the rate was calculated.

(iv) Forecast or actual precipitation data in accordance with paragraphs (B)(4) and (B)(5) of rule 3745-40-08 of the Administrative Code.

(v) If applicable, the monitoring records for all beneficial use sites with subsurface tile drainage in accordance with paragraph (D)(4) of rule 3745-40-08 of the Administrative Code.

(e) A description of how the agronomic rate is met at each beneficial use site including, but not limited to, all of the following:

(i) Nutrient concentrations of the biosolids.

(ii) Soil phosphorus test results.

(iii) Soil types.

(iv) Crop types.

(v) Expected crop yield.

(vi) Crop nitrogen requirements.

(vii) All sources of nitrogen and phosphate such as commercial fertilizer or manure in addition to biosolids.

(viii) Phosphorus index calculations if applicable.

(ix) How the beneficial use application equipment is calibrated.

[Comment: An agronomic rate calculation worksheet with instructions is available at: http://epa.ohio.gov/dsw/sludge/biosolid.aspx#137944357-compliance-tools. The instructions include available references to determine soil types, crop yields, and

phosphorus index guidance.]

(f) The date the bulk exceptional quality biosolids were beneficially used on each beneficial use site and the quantity of bulk exceptional quality biosolids (in dry tons) that were beneficially used on each beneficial use site on that date.

(g) A copy of the information provided to the beneficial use site operator in accordance with paragraph (B) of rule 3745-40-05 of the Administrative Code.

(3) The permittee of class B biosolids. In addition to the recordkeeping requirements in rule 3745-40-04 of the Administrative Code, the permittee who prepares class B biosolids for the purpose of beneficial use shall develop the following information, shall retain the following information for a minimum of five years at the treatment works, and shall make all of the following information available to the director or an authorized representative upon request:

(a) The results of all analyses as required in paragraph (B) of rule 3745-40-09 of the Administrative Code.

(b) The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the class B pathogen reduction requirements in rule 3745-40-04 of the Administrative Code and the vector attraction reduction requirement in [insert one of the vector attraction reduction options in rule 3745-40-04 of the Administrative Code, Option VAR-1 to Option VAR-8 if one of those requirements is met] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(c) A narrative description, in the form of a standard operating procedure, of how the pathogen reduction alternative being utilized meets the applicable requirements of the pathogen reduction alternative, in accordance with paragraphs (B)(1) to (B)(7) of rule 3745-40-04 of the Administrative Code and, if applicable, a narrative description, in the form of a standard operating procedure, of how the vector attraction reduction alternative being utilized meets the applicable requirements of the vector attraction reduction alternative, in accordance with paragraphs (C)(1) to (C)(8) of rule 3745-40-04 of the Administrative Code. The standard operating procedure shall include all of the following at a minimum, when applicable:

(i) Sample collection or monitoring locations.

(ii) The frequency at which sample collection or monitoring is to occur.

(iii) Sample collection or monitoring procedures.

(iv) Sample storage and preservation procedures.

(v) Sample or monitoring analysis procedures, including any calculations required for sample or monitoring analysis.

(d) An example of the notice and necessary information that is provided to the beneficial user, land owner, and farm operator.

(e) A copy of the application for an authorization for a beneficial use site and the Ohio environmental protection agency beneficial use site authorization letter for each beneficial use site that is utilized for beneficial use.

(f) A copy of the information required to be maintained in accordance with paragraph (C)(4) of this rule.

(4) The beneficial user of class B biosolids. The person who beneficially uses class B biosolids shall develop the following information, shall retain the following information for a minimum of five years, and shall make all of the following information available to the director or an authorized representative upon request:

(a) The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the storage requirements of rule 3745-40-07 of the Administrative Code, the beneficial use requirements of rule 3745-40-08 of the Administrative Code, and the vector attraction reduction requirement in [insert either vector attraction reduction option 9 or 10 from paragraph (C) of rule 3745-40-04 of the Administrative Code, if applicable] rule 3745-40-04 of the Administrative Code, was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(b) Records showing that the class B biosolids were not stored for more than ninety days at the beneficial use site, in accordance with table F-1 of rule 3745-40-07 of the Administrative Code.

(c) If applicable, a copy of the tile drainage operating procedure developed in accordance with paragraph (D)(4) of rule 3745-40-08 of the Administrative Code and a copy of the drag line and mobile storage tank standard operating procedure developed in accordance with paragraph (E)(10) of rule 3745-40-08 of the Administrative Code.

(d) Records showing that the beneficial use requirements in rule 3745-40-08 of the Administrative Code have been met at each beneficial use site including, but not limited to, all of the following:

(i) The soil pH for each beneficial use site.

(ii) The soil phosphorous levels for each beneficial use site.

(iii) The agronomic rate calculations for each beneficial use site.

(iv) If a multi-year phosphate agronomic rate is utilized, the period of time for which the rate was calculated.

(v) Forecast or actual precipitation data in accordance with paragraphs (B)(4) and (B)(5) of rule 3745-40-08 of the Administrative Code.

(vi) If applicable, the monitoring records for all beneficial use sites with subsurface tile drainage in accordance with paragraph (D)(4) of rule 3745-40-08 of the Administrative Code.

(vii) The sign placement records for all authorized beneficial use sites in accordance with paragraph (D) of rule 3745-40-11 of the Administrative Code.

(e) A description of how the agronomic rate is met at each beneficial use site including, but not limited to, all of the following:

(i) Nutrient concentrations of the biosolids.

(ii) Soil phosphorus test results.

(iii) Soil types.

(iv) Crop types.

(v) Expected crop yield.

(vi) Crop nitrogen requirements.

(vii) All sources of nitrogen and phosphate such as commercial fertilizer or manure in addition to biosolids.

(viii) Phosphorus index calculations, if applicable.

(ix) How the beneficial use application equipment is calibrated.

[Comment: An agronomic rate calculation worksheet with instructions is available at: http://epa.ohio.gov/dsw/sludge/biosolid.aspx#137944357-compliance-tools. The instructions include available references to determine soil types, crop yields and phosphorus index guidance.]

(f) If applicable, a narrative description of how the vector attraction reduction requirements in either paragraph (C)(9) or (C)(10) of rule 3745-40-04 of the Administrative Code are met at each beneficial use site. At a minimum, this description shall include the following:

(i) If VAR-9 is being performed in accordance with paragraph (C)(9) of rule 3745-40-04 of the Administrative Code, a description of both of the following:

*(a)* The equipment utilized to inject the biosolids.

*(b)* How the beneficial user ensures that there is not a significant amount of the biosolids present on the surface of the authorized beneficial use site.

(ii) If VAR-10 is being performed in accordance with paragraph (C)(10) of rule 3745-40-04 of the Administrative Code, a description of all of the following:

*(a)* The date and time the sewage sludge was delivered to the authorized beneficial use site.

*(b)* The date and time class B biosolids were incorporated into the soil of the authorized beneficial use site.

*(c)* The equipment utilized to incorporate the biosolids.

*(d)* How the beneficial user ensures that the biosolids are mixed with soil to a minimum depth of four inches or greater on the authorized beneficial use site.

(g) The date class B biosolids were beneficially used at each authorized beneficial use site and the quantity of class B biosolids (in dry tons) that were beneficially used at each authorized beneficial use site on that date.

(h) A copy of the information provided to the beneficial use site operator in accordance with paragraph (B) of rule 3745-40-05 of the Administrative Code;

(5) The permittee who generates class B biosolids subject to cumulative pollutant loading rates. In addition to the recordkeeping requirements in rule 3745-40-04 of the Administrative Code, the permittee who prepares class B biosolids that are subject to cumulative pollutant loading rates, for the purpose of beneficial use, shall develop the following information, shall retain the following information for a minimum of five years at the treatment works, and shall make all of the following information available to the director or an authorized representative upon request:

(a) The results of all analyses as required in paragraph (B) of rule 3745-40-09 of the Administrative Code.

(b) The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the class B pathogen reduction requirements in rule 3745-40-04 of the Administrative Code and the vector attraction reduction requirement in [insert

one of the vector attraction reduction options in rule 3745-40-04 of the Administrative Code, Option VAR-1 to Option VAR-8 if one of those requirements is met] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(c) A narrative description, in the form of a standard operating procedure, of how the pathogen reduction alternative being utilized meets the applicable requirements of the pathogen reduction alternative, in accordance with paragraphs (B)(1) to (B)(7) of rule 3745-40-04 of the Administrative Code and, if applicable, a narrative description, in the form of a standard operating procedure, of how the vector attraction reduction alternative being utilized meets the applicable requirements of the vector attraction reduction alternative, in accordance with paragraphs (C)(1) to (C)(8) of rule 3745-40-04 of the Administrative Code. The standard operating procedure shall include all of the following at a minimum, when applicable:

(i) Sample collection or monitoring locations.

(ii) The frequency at which sample collection or monitoring is to occur.

(iii) Sample collection or monitoring procedures.

(iv) Sample storage and preservation procedures.

(v) Sample or monitoring analysis procedures, including any calculations required for sample or monitoring analysis.

(d) An example of the notice and necessary information that is provided to the beneficial user, land owner, and farm operator.

(e) A copy of the application for an authorization for a beneficial use site and the Ohio environmental protection agency beneficial use site authorization letter for each beneficial use site that is utilized for beneficial use.

(f) A copy of the information required to be maintained in accordance with paragraph (C)(6) of this rule.

(6) The beneficial user of class B biosolids subject to cumulative pollutant loading rates. The person who beneficially uses class B biosolids subject to cumulative pollutant loading rates shall develop the following information, shall retain the following information indefinitely, and shall make all of the following information available to the director or an authorized representative upon request:

(a) The location, by either street address or latitude and longitude, of each beneficial use

site on which class B are beneficially used.

(b) The number of acres of each beneficial use site where the class B biosolids are beneficially used.

(c) The date the class B biosolids were beneficially used at the beneficial use site.

(d) The cumulative amount, in pounds per acre, of each metal listed in table D-2 of rule 3745-40-04 of the Administrative Code that is beneficially used at each beneficial use site.

(e) The amount of class B biosolids, measured in dry tons, that are beneficially used at each beneficial use site.

(f) The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the requirement to obtain information in paragraph (D)(5) of rule 3745-40-04 of the Administrative Code was prepared for each beneficial use site on which bulk biosolids was applied under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(g) A description of how the requirements to obtain information in paragraph (D)(5) of rule 3745-40-04 of the Administrative Code are met.

(h) A copy of the notification given to Ohio environmental protection agency in accordance with paragraph (D)(6) of rule 3745-40-04 of the Administrative Code.

(i) The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the storage requirements of rule 3745-40-07 of the Administrative Code, the beneficial use requirements of rule 3745-40-08 of the Administrative Code, and the vector attraction reduction requirement in [insert either vector attraction reduction option VAR-9 or VAR-10 from paragraph (C) of rule 3745-40-04 of the Administrative Code, if applicable] in rule 3745-40-04 of the Administrative Code, was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(j) Records showing that the class B biosolids were not stored for more than ninety days at the beneficial use site, in accordance with table F-1 of rule 3745-40-07 of the Administrative Code.

(k) If applicable, a tile drainage operating procedure developed in accordance with

paragraph (D)(4) of rule 3745-40-08 of the Administrative Code and a drag line and mobile storage tank standard operating procedure developed in accordance with paragraph (E)(10) of rule 3745-40-08 of the Administrative Code.

(l) Records showing that the beneficial use requirements in rule 3745-40-08 of the Administrative Code have been met at each beneficial use site including, but not limited to all of the following:

(i) The soil pH for each beneficial use site.

(ii) The soil phosphorous levels for each beneficial use site.

(iii) The agronomic rate calculations for each beneficial use site.

(iv) If a multi-year phosphate agronomic rate is utilized, the period of time for which the rate was calculated

(v) Forecast or actual precipitation data in accordance with paragraphs (B)(4) and (B)(5) of rule 3745-40-08 of the Administrative Code.

(vi) If applicable, the monitoring records for all beneficial use sites with subsurface tile drainage in accordance with paragraph (D)(4) of rule 3745-40-08 of the Administrative Code.

(vii) The sign placement records for all authorized beneficial use sites in accordance with paragraph (D) of rule 3745-40-11 of the Administrative Code.

(m) A description of how the agronomic rate is met at each beneficial use site including, but not limited to, all of the following:

(i) Nutrient concentrations of the biosolids.

(ii) Soil phosphorus test results.

(iii) Soil types.

(iv) Crop types.

(v) Expected crop yield.

(vi) Crop nitrogen requirements.

(vii) All sources of nitrogen and phosphate such as commercial fertilizer or manure in addition to biosolids.

(viii) Phosphorus index calculations, if applicable.

(ix) How beneficial use application equipment is calibrated.

[Comment: An agronomic rate calculation worksheet with instructions is available

at: http://epa.ohio.gov/dsw/sludge/biosolid.aspx#137944357-compliance-tools. The instructions include available references to determine soil types, crop yields, and phosphorus index guidance.]

(n) If applicable, a narrative description of how the vector attraction reduction requirements in either paragraph (C)(9) or (C)(10) of rule 3745-40-04 of the Administrative Code are met at each site. At a minimum, this description shall include both of the following:

(i) If VAR-9 is being performed in accordance with paragraph (C)(9) of rule 3745-40-04 of the Administrative Code, a description of both of the following:

*(a)* The equipment utilized to inject the biosolids.

*(b)* How the beneficial user ensures that there is not a significant amount of the biosolids present on the surface of the authorized beneficial use site.

(ii) If VAR-10 is being performed in accordance with paragraph (C)(10) of rule 3745-40-04 of the Administrative Code, a description of all of the following:

*(a)* The date and time the sewage sludge was delivered to the authorized beneficial use site.

*(b)* The date and time class B biosolids were incorporated into the soil of the authorized beneficial use site.

*(c)* The equipment utilized to incorporate the biosolids.

*(d)* How the beneficial user ensures that the biosolids are mixed with soil to a minimum depth of four inches or greater on the authorized beneficial use site.

(o) A copy of the information provided to the beneficial use site operator in accordance with paragraph (B) of rule 3745-40-05 of the Administrative Code.

(7) The beneficial user of class B or bulk exceptional quality biosolids. The beneficial user of class B or bulk exceptional quality biosolids shall develop and maintain all of the following information at the beneficial use site during the period class B or bulk exceptional quality biosolids are beneficially used:

(a) The name of the permittee who generates the class B or bulk exceptional quality biosolids being beneficially used at the beneficial use site.

(b) A site map of the beneficial use site that, at a minimum, depicts the area where beneficial use is to occur.

(c) The agronomic rate of class B or bulk exceptional quality biosolids calculated for the beneficial use site.

(d) The applicable isolation distances for the beneficial use of class B or bulk exceptional quality biosolids that shall be satisfied at the beneficial use site.

(D) Annual reporting requirements. A permittee shall submit an annual sewage sludge or biosolids report to the director or an authorized representative. The annual sewage sludge or biosolids report shall include, but not be limited to, both of the following:

(1) The information requested in the Ohio environmental protection agency annual sewage sludge report, including copies of all certification statements required in paragraph (C) of rule 3745-40-09 of the Administrative Code.

[Comment: The Ohio environmental protection agency annual sewage sludge report shall be submitted through the Ohio EPA ebusiness center, division of surface water NPDES permit applications service.]

(2) Any records, as required in accordance with rules 3745-40-04 and 3745-40-08 of the Administrative Code including, but not limited to, all of the following:

(a) Pathogen reduction alternative records.

(b) Vector attraction reduction alternative records.

(c) Metals, nutrients, foreign/inert method sampling results.

(d) Cumulative pollutant loading rate records, if applicable.

(e) Agronomic rate calculations.

(f) If a multi-year phosphate agronomic rate is utilized, the period of time for which the rate was calculated.

(g) Summary of complaints.

(h) Standard operating procedures for all of the following:

(i) Pathogen reduction alternative sampling.

(ii) Vector attraction reduction alternative sampling.

(iii) Beneficial use at beneficial use sites with tile drainage.

(iv) Use of drag hose application systems at beneficial use sites.

(v) Use of mobile storage tanks at beneficial use sites.

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| Effective: | 12/1/2018 |
| Five Year Review (FYR) Dates: | 6/14/2018 and 12/01/2023 |
| | |
| Promulgated Under: | 119.03 |
| Statutory Authority: | 6111.042, 6111.03 |
| Rule Amplifies: | 6111.042, 6111.03 |
| Prior Effective Dates: | 4/8/02, 10/1/07, 7/1/11 |

**3745-40-10 Facility storage requirements.**

(A) Facility storage requirements. Except as provided in paragraph (B) of this rule, facility storage of sewage sludge or biosolids shall meet all of the following requirements:

(1) Be provided by the permittee in a manner that is protective of human health and the environment, and that does not impact waters of the state or create nuisance odors.

(2) Unless demonstrated to the director that engineered or contracted alternatives to facility storage of sewage sludge or biosolids are in place in accordance with paragraph (B) of this rule, consist of one hundred twenty days of biosolids storage for the design capacity of the treatment works. The one hundred twenty days of facility storage should be over and above the treatment capacity of the sewage sludge or biosolids treatment train. Units provided for storage should be dedicated for storage and not sewage sludge or biosolids treatment.

(3) Be approved by a permit to install that shall be obtained from the director in accordance with Chapter 3745-42 of the Administrative Code prior to the construction of any facility storage.

(B) The director or an authorized representative may approve alternatives to the facility storage of sewage sludge or biosolids through any of the following:

(1) An effective contract with a landfill showing that the landfill will accept up to the design volume of the treatment works sewage sludge during the effective dates of the treatment works' NPDES permit.

(2) An effective contract with another permitted facility showing that the permitted facility will accept up to the design volume of the treatment works sewage sludge during the effective time of the treatment works' NPDES permit.

(3) Ownership or leasing of, or effective contract with, an Ohio environmental protection agency permitted regional storage facility showing that the regional storage facility will accept up to the design volume of the treatment works' sewage sludge or biosolids during the effective time of the treatment works' NPDES permit.

(4) Ownership or leasing of, or effective contract with, a sewage sludge or biosolids incinerator that will accept up to the design volume of the treatment works sewage sludge during the effective time of the treatment works' NPDES permit.

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| Replaces: | 3745-40-10 |
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| Prior Effective Dates: | 4/8/02, 10/17/03, 10/1/07, 7/1/11 |

**3745-40-11 Signage requirements for beneficial use sites receiving class B biosolids.**

[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) Unless deemed otherwise by the director, any authorized beneficial use site, where class B biosolids are beneficially used, shall have signs that adhere, at a minimum, to the following requirements:

(1) Are erected at least one week prior to the delivery of biosolids to the site.

(2) Face each road frontage, within twenty-five feet of the road.

(3) Within twenty-five feet of any entrance or exit on a public road where the site is accessed for beneficial use. The sign shall face the public road.

(4) In other locations to protect public health or the environment as determined by the director or the director's authorized representative.

(5) Include text that is in black capital letters on a white background, where the letters are at least one inch in height.

(6) Read: "NOTICE: OHIO EPA AUTHORIZED CLASS B BIOSOLIDS BENEFICIAL USE SITE. TRESPASSING IS PROHIBITED."

(7) Include the name of the permittee and the permittee's telephone number.

(8) Are unobstructed from view.

(B) In addition to the requirements of paragraphs (A)(1) to (A)(8) of this rule, for any high potential public exposure site receiving class B biosolids, the permittee shall have signage in place for a minimum of one year after the termination of beneficial use activity at the site.

(C) In addition to the requirements of paragraphs (A)(1) to (A)(8) of this rule, for any low potential public exposure site receiving class B biosolids, the permittee shall have signage in place for a minimum of thirty days after the termination of beneficial use activity at the site.

(D) The beneficial user shall maintain records of the date when signs were posted and removed from any authorized beneficial use site in accordance with rule 3745-40-09 of the Administrative Code.

[Comment: For signs that will remain permanently posted on an authorized beneficial use site, the date of removal shall be the date that visual confirmation is made to verify that the sign is still posted for the time required by rule.]

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| Effective: | 12/1/2018 |
| Five Year Review (FYR) Dates: | 6/14/2018 and 12/01/2023 |
| Promulgated Under: | 119.03 |
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| Rule Amplifies: | 6111.03, 6111.042 |
| Prior Effective Dates: | 4/8/02, 10/17/03, 10/1/07, 7/1/11 |

**3745-40-12 Compliance and enforcement; and spill notification requirements.**

(A) In accordance with Chapter 3745-40 of the Administrative Code, the director may take any of the following actions:

(1) Pursue enforcement action against any person who is in non-compliance with this chapter.

(2) Deny any NPDES permit or biosolids management plan application not in compliance with this chapter and require the submittal of a new NPDES permit or biosolids management plan application, including all applicable fees to the Ohio environmental protection agency within thirty days.

(3) Specify in an NPDES permit or biosolids management plan, any terms and conditions, including schedules of compliance, necessary to achieve compliance with this chapter.

(4) Specify in NPDES permits or biosolids management plan, any terms and conditions that are more stringent than the requirements in this chapter when the director has determined that such are necessary to protect public health or the environment.

(5) Revoke any NPDES permit or biosolids management plan approved in accordance with this chapter.

(6) Require any person treating, storing, transferring or disposing of sewage sludge or biosolids that have resulted in a nuisance odor to take measures to eliminate the nuisance odor.

(7) Modify a site authorization to include additional requirements.

(8) Require any person who beneficially uses biosolids that have resulted in a nuisance odor to cease beneficial use.

(9) Modify any NPDES permit or biosolids management plan.

(10) Deny a beneficial use site authorization request.

(11) De-authorize any beneficial use site for repeated nuisance odors or violations of this chapter or to protect human health or safety or the environment.

(12) To ensure the protection of human health or the environment, require sampling and monitoring for additional pollutants beyond the requirements in this chapter.

(B) Discharge notification requirements. The permittee shall notify the Ohio environmental protection agency by calling 1-800-282-9378 as soon as possible, but no later than twenty-four hours following the first discovery by the permittee that sewage sludge or biosolids have entered waters of the state. Within fourteen days after the sewage sludge or

biosolids are discharged into waters of the state, the permittee shall submit a report to the director or an authorized representative that includes all of the following:

(1) The reason for the discharge.

(2) The location of the discharge to surface waters of the state.

(3) An estimate of the quantity and duration of the discharge to surface waters of the state.

(4) If applicable, records of the quantity and duration of any precipitation leading to the event.

(5) Measures taken to clean up and eliminate the discharge and prevent another occurrence of the discharge.

(C) Spill notification requirements. The permittee shall notify the appropriate Ohio environmental protection agency district office as soon as possible, but no later than twenty-four hours following the first discovery by the permittee that sewage sludge or biosolids have spilled. Within fourteen days after the sewage sludge or biosolids are spilled, the permittee shall submit a report to the director or an authorized representative that includes at least all of the following:

(1) The reason for the spill.

(2) The location of the spill.

(3) An estimate of the quantity and duration of the spill.

(4) If applicable, records of the quantity and duration of any precipitation leading to the event.

(5) Measures taken to clean up and eliminate the spill and prevent another occurrence of the spill.

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| Effective: | 12/1/2018 |
| Five Year Review (FYR) Dates: | 6/14/2018 and 12/01/2023 |
| Promulgated Under: | 119.03 |
| Statutory Authority: | 6111.042, 6111.03 |
| Rule Amplifies: | 6111.03, 6111.042 |
| Prior Effective Dates: | 4/8/02, 10/17/03, 10/1/07, 7/1/11 |