WEST VIRGINIA
SECRETARY OF STATE
KEN HECHLER
ADMINISTRATIVE LAW DIVISION

Form #1

FILED
Mar 22 4 19 PM '95
OFFICE OF THE SECRETARY OF STATE

NOTICE OF PUBLIC HEARING ON A PROPOSED RULE

AGENCY: DIVISION OF ENVIRONMENTAL PROTECTION Water Resources andSolid Waste Management TITLE NUMBER: 47

RULE TYPE: Legislative ; CITE AUTHORITY WV Code 22-1-3, 22-1-3a, 22-1A, and 22-15-20(b)

AMENDMENT TO AN EXISTING RULE: YES x NO___

IF YES, SERIES NUMBER OF RULE BEING AMENDED: 38D

TITLE OF RULE BEING AMENDED: Sewage Sludge Management Rule.

IF NO, SERIES NUMBER OF NEW RULE BEING PROPOSED: N/A

TITLE OF RULE BEING PROPOSED: N/A

DATE OF PUBLIC HEARING: April 14, 1995 TIME: 9:00 a.m.

LOCATION OF PUBLIC HEARING: Division of Environmental Protection
Training Center
10 McJunkin Road
Nitro, WV 25143

COMMENTS LIMITED TO: ORAL___, WRITTEN___, BOTH x

COMMENTS MAY ALSO BE MAILED TO THE FOLLOWING ADDRESS: Div. of Environ. Prot.
Off. of Water Res. &
Solid Waste Management
10 McJunkin Road
Nitro, WV 25143
Attn: Roger T. Hall

The Department requests that persons wishing to make comments at the hearing make an effort to submit written comments in order to facilitate the review of these comments.

The issues to be heard shall be limited to the proposed rule.

ATTACH A **BRIEF** SUMMARY OF YOUR PROPOSAL

Roger T. Hall
Authorized Signature

14.60

WEST VIRGINIA
SECRETARY OF STATE
KEN HECHLER
ADMINISTRATIVE LAW DIVISION

Form #2

FILED
MAR 22 4 19 PM '95
OFFICE OF WEST VIRGINIA SECRETARY OF STATE

NOTICE OF A COMMENT PERIOD ON A PROPOSED RULE

AGENCY: DIVISION OF ENVIRONMENTAL PROTECTION Water Resources & Solid Waste Management TITLE NUMBER: 47

RULE TYPE: Legislative ; CITE AUTHORITY WV Code 22-1-3, 22-1-2a, 22-1A and 22-15-20(b)

AMENDMENT TO AN EXISTING RULE: YES X NO

IF YES, SERIES NUMBER OF RULE BEING AMENDED: 38D

TITLE OF RULE BEING AMENDED: Sewage Sludge Management Rule

IF NO, SERIES NUMBER OF NEW RULE BEING PROPOSED: N/A

TITLE OF RULE BEING PROPOSED: N/A

IN ADDITION TO ~~XXXXXXX~~ A PUBLIC HEARING, A COMMENT PERIOD HAS BEEN ESTABLISHED DURING WHICH ANY INTERESTED PERSON MAY SEND COMMENTS CONCERNING THESE PROPOSED RULES. THIS COMMENT PERIOD WILL END ON April 24, 1995 AT 4:30 p.m.

ONLY WRITTEN COMMENTS WILL BE ACCEPTED AND ARE TO BE MAILED TO THE FOLLOWING ADDRESS.

Division of Environmental Protection
Office of Water Resources & Solid Waste Management
10 McJunkin Road
Nitro, WV 25143
Attn: Roger T. Hall

THE ISSUES TO BE HEARD SHALL BE LIMITED TO THIS PROPOSED RULE.

Roger T. Hall
Authorized Signature Roger T. Hall

ATTACH A **BRIEF** SUMMARY OF YOUR PROPOSAL

LEGISLATIVE RULE
47 CSR-38D

RULEMAKING FINDINGS REQUIRED OF THE DIVISION OF ENVIRONMENTAL PROTECTION

1. INCORPORATION BY REFERENCE - FEDERAL REGULATION

Subsection 3.1 of the existing rule and the emergency rule incorporates federal regulations 40 CFR 503, excluding sections 503.10(b)(1) and 503.20 through 503.29 inclusive. These federal regulations give general guidance to states which have been delegated authority under the Federal Clean Water Act.

2. STATEMENT OF STRINGENCY - FEDERAL COUNTERPART REGULATION

In addition to the federal counterpart regulations, described in Item No. 1 above, this emergency rule incorporates by reference 40 CFR 503.13(a)(2) and 503.13(b)(2) [attached]. Although the emergency rules does not incorporate the federal counterpart regulation verbatim, it does capture the essence of the federal regulation including the values in the referenced tables. Therefore, the emergency rule is no more stringent nor less stringent than the federal counterpart regulation as it relates to Table 3.

3. AFFECT ON PRIVATE PROPERTY RIGHTS

The emergency rule has no affect on the rights of private property owners, except to authorize the use of sewage sludge on land for soil enrichment purposes.

GASTON CAPERTON
GOVERNOR

BUREAU OF ENVIRONMENT
10 McJUNKIN ROAD
NITRO, WV 25143-2506

DAVID C. CALLAGHAN
COMMISSIONER

March 20, 1995

The Honorable Ken Hechler
Secretary of State
Building 1, Suite 157K
Charleston, West Virginia 25305

ATTN: Judy Cooper

RE: Legislative Rule 47CSR 38D
Sewage Sludge Management Rules

Dear Mr. Secretary:

This is to advise you that I am giving approval for the filing of the above-captioned legislative rule as a modification to a proposed rule with your Office and Legislative Rule-Making.

Your cooperation in this regard is very much appreciated. If you have any questions or require additional information, please feel free to contact Roger T. Hall at 759-0515.

Sincerely yours,

David C. Callaghan
Commissioner

DCC:RTH:jrb

Attachment

LEGISLATIVE RULE

DIVISION OF ENVIRONMENTAL PROTECTION
WATER RESOURCES AND SOLID WASTE MANAGEMENT

SEWAGE SLUDGE MANAGEMENT RULE
47 CSR 38D

SUMMARY

The rule amends existing 47 CSR 38D by making the definition of "Solid Waste" consistent with the definition in West Virginia Code 22-15. The existing rule is further amended by deleting Table 3 (Maximum Allowable Soil Concentrations) and any references to Table 3. The subject table sets standards which are more restrictive than natural concentrations in native soils, which in effect precludes the land application of sewage sludge for Publicly Owned Treatment Works (Sewage Treatment Plants). The standards were set without the benefit of adequate technical and scientific foundation, and were not intended by the Code and the existing rule to prohibit land application practices.

A number of "clean up" amendments are also made by the rule.

LEGISLATIVE RULE

47 CSR 38D

DIVISION OF ENVIRONMENTAL PROTECTION

WATER RESOURCES AND SOLID WASTE MANAGEMENT

STATEMENT OF CIRCUMSTANCES REQUIRING THE RULE AMENDMENT

Pursuant to West Virginia Code 22-15-20 (b), the Division of Environmental Protection promulgated an emergency rule which governed the land application of sewage sludge. Legislative rule 47 CSR 38D was subsequently filed on May 13, 1994 and became effective on June 1, 1994. Both rules contained maximum allowable soil concentration standards for various metals (arsenic, lead, zinc, etc.). These standards are contained in Table 3 of the existing rule.

Because of the emergency nature of the rule, as declared by the Legislature, there was virtually no time to develop a sound technical and scientific foundation for establishing the soil concentration standards. During the ensuing period of time since promulgating the rule, it has been determined through scientific sampling and analysis that many native soils throughout the state exhibit naturally-occurring levels of metals which exceed the standards established in Table 3.

The results of these determinations are that lands containing these naturally-occurring metals preclude the land application of sewage sludge. This poses a serious health and economic problem for Publicly Owned Treatment Works (POTW's) which are primarily municipal sewage treatment plants. These facilities are forced to either store the sewage sludge on site or dispose of it in permitted landfills. The stored sludge must be composted and carefully monitored by the POTW and poses an ever-present potential for health risks. This is an expansive process for which POTW"s are not well trained or prepared to implement. Landfilling is even more expensive because of the mandatory tipping fees. This additional cost will eventually be passed on to the public in the form of higher sewage and water bills.

In view of the inappropriateness of the soil concentration standards and the health and monetary considerations, the Division of Environmental Protection must amend Table 3 to reflect soil concentration levels which are based on sound technical and scientific data. Collection and analysis of such data will require several months. In the interim, the division is compelled to lift the requirements of Table 3 to avert any economic and health risk to the public.

APPENDIX B

FISCAL NOTE FOR PROPOSED RULES

Rule Title: Sewage Sludge Management Rule

Type of Rule: x **Legislative** ____ **Interpretive** ____ **Procedural**

Agency Division of Environmental Protection

Address 10 McJunkin Road

Nitro, West Virginia 25143

1. Effect of Proposed Rule

	ANNUAL		FISCAL YEAR		
	INCREASE	DECREASE	CURRENT	NEXT	THEREAFTER
ESTIMATED TOTAL COST	$ -0-	$ -0-	$ -0-	$ -0-	$ -0-
PERSONAL SERVICES	-0-	-0-	-0-	-0-	-0-
CURRENT EXPENSE	-0-	-0-	-0-	-0-	-0-
REPAIRS & ALTERNATIONS	-0-	-0-	-0-	-0-	-0-
EQUIPMENT	-0-	-0-	-0-	-0-	-0-
OTHER	-0-	-0-	-0-	-0-	-0-

2. Explanation of above estimates:

The proposed rule will not result in any increase or decrease in cost or revenue to the state.

3. Objectives of these rules:

The proposed rule will in effect amend existing 47CSR38D by making the definition of "Solid Waste" identical to the definition which appears at WV Code 22-15-2(27) and deletes Table 3 (Maximum Allowable Soil Concentrations) and any reference to Table 3 from the existing rule.

Rule Title: Sewage Sludge Management Rule

4. Explanation of Overall Economic Impact of Proposed Rule.

A. Economic Impact on State Government.

None

B. Economic Impact on Political Subdivisions; Specific Industries; Specific groups of Citizens.

The proposed rule will remove an unachievable restriction on the land application of sewage sludge for Publicly Owned Treatment Works (Sewage Treatment Plants); thereby saving these facilities substantial costs of storage or landfilling which would eventually be passed on to the public.

C. Economic Impact on Citizens/Public at Large.

The proposed rule will reduce the cost of sewage sludge disposal to Publicly Owned Treatment Works (Sewage Treatment Plants) which would ultimately be passed on to the public.

Date: March 20, 1995

Signature of Agency Head or Authorized Reprensentative

Roger T. Hall

Roger T. Hall

TITLE 47
LEGISLATIVE RULES
DIVISION OF ENVIRONMENTAL PROTECTION
WATER RESOURCES AND SOLID WASTE MANAGEMENT

SERIES 38D
SEWAGE SLUDGE MANAGEMENT RULE

§47-38D-1. GENERAL.

1.1. Scope and Purpose. -- This legislative rule establishes requirements for the permitting siting, bonding, installation, establishment, construction, modification, and operation of any facility that generates, processes, recycles and/or disposes of sewage sludge by whatever means, including, but not limited to, land application, composting, incineration, mixed waste composting, or any other method of handling sewage sludge within the state. This rule applies to any person who owns or operates a sewage sludge facility or who is responsible for the processing or disposal of sewage sludge.

1.2. Authority. -- W. Va. Code ~~§20-5F-2b(b)~~ §22-1-3, §22-1-3a, 22-1A, and §22-15-20(b)

1.3. Filing Date. ~~--May 13, 1994~~.

1.4. Effective Date. -- ~~June 1, 1994.~~

1.5. Incorporation by Reference. -- Whenever federal or state statutes or regulations are incorporated into this rule by reference, the reference is to the statute or regulation in effect on the effective date of this rule.

§47-38D-2. DEFINITIONS.

The following definitions shall apply to this rule unless otherwise specified herein:

2.1. "Agronomic rate" means the whole sewage sludge application rate, by dry weight, designed: (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop or vegetation on the land; and (2) To minimize the amount of nitrogen in sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

2.2. "Applicant" means the person applying for a commercial solid waste facility permit or similar renewal permit and any person related to such person by virtue of common ownership, common management or family relationships as the Director of the Division may specify, including the following: spouses, parents, children and siblings.

2.3. "Approved solid waste facility" means a solid waste facility or practice which has a valid permit under W. Va. Code ~~§20-5F~~ §22-15.

2.4. "Backhauling" means the practice of using the same container to transport solid waste and to transport any substance or material used as food by humans, animals raised for human consumption or reusable item which may be refilled with any substance or material used as food by humans.

2.5. "Bulking Agent" means materials such as yard waste, wood chips, leaves and other living or dead plant tissues approved by the Chief as suitable to promote the passage of air through a static pile or windrow.

2.6. "Chief" means the Chief of the Office of Waste Management of the Division.

2.7. "Commercial recycler" means any person, corporation or business entity whose operation involves the mechanical separation of materials for the purpose of reselling or recycling at least seventy percent (70%) by weight of the materials coming into the commercial recycling facility.

2.8. "Commercial solid waste facility" means any solid waste facility which accepts solid waste generated by sources other than the owner or operator of the facility and shall not include an approved solid waste facility owned and operated by a person for the sole purpose of disposing of solid wastes created by that person or such person and other persons on a cost-sharing or nonprofit basis and shall not include land upon which reused or recycled materials are legitimately applied for structural fill, road base, mine reclamation and similar applications.

2.9. "Composting" means the aerobic, thermophilic decomposition of natural constituents of solid waste to produce a stable, humus-like material.

2.10. "Composting facility" means any solid waste facility processing solid waste by composting, including sludge composting, organic waste or yard waste composting, but does not include a facility for composting solid waste that is located at the site where the waste was generated.

2.11. "Curing area" means an area where organic material that has undergone the rapid initial stage of decomposition is further stabilized into a humus-like material.

2.12. "Director" means the Director of the Division.

2.13. "Distributor" is a person who prepares the product for distribution and marketing and is responsible for distributing and marketing the product.

2.14. "Division" means the Division of Environmental Protection.

2.15. "Domestic septage" means either liquid or solid material (septage) removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

2.16. "Energy recovery incinerator" means any solid waste facility at which solid waste is incinerated with the intention of using the resulting energy for the generation of steam, electricity or any other use not specified herein.

2.17. " Importer" means any person receiving sewage sludge from any source whatsoever for the purpose of processing .

2.18. "Incineration technologies" means any technology that uses controlled flame combustion to thermally break down solid waste, including refuse-derived fuel, to an ash residue that contains little or no combustible materials, regardless of whether the purpose is

processing, disposal, electric or steam generation or any other method by which solid waste is incinerated.

2.19. "Incinerator" means an enclosed device using controlled flame combustion to thermally break down solid waste, including refuse-derived fuel, to an ash residue that contains little or no combustible materials.

2.20. "Landfill" means any solid waste facility for the disposal of solid waste on land. Such facility is situated, for purposes of W. Va. Code ~~§20-5F~~ §22-15, in the county where the majority of the spatial area of such facility is located.

2.21. "Materials recovery facility" means any solid waste facility at which source-separated materials or materials recovered through a mixed waste processing facility are manually or mechanically shredded or separated for purposes of reuse and recycling, but does not include a composting facility.

2.22. "Mixed solid waste" means solid waste from which materials sought to be reused or recycled have not been source-separated from general solid waste.

2.23. "Mixed waste processing facility" means any solid waste facility at which materials are recovered from mixed solid waste through manual or mechanical means for purposes of reuse, recycling or composting.

2.24. "Municipal solid waste incineration" means the burning of any solid waste collected by any municipal or residential solid waste disposal company.

2.25. "Open dump" means any solid waste disposal which does not have a permit under W. Va. Code ~~§20-5F~~ §22-15, or is in violation of state law, or where solid waste is disposed in a manner that does not protect the environment.

2.26. "Person" or "persons" mean any industrial user, public or private corporation, institution, association, firm or company organized or existing under the laws of this or any other state or country; state of West Virginia; governmental agency, including federal facilities; political subdivision; county commission; municipal corporation; industry; sanitary district; public service district; drainage district; soil conservation district; watershed improvement district; partnership trust; estate; person or individual; group of persons or individuals acting individually or as a group; or any legal entity whatever.

2.27. "Producer" means any person producing sewage sludge at a publicly owned treatment works (POTW).

2.28. "Publicly owned treatment works" or "POTW" means any device or system used in the conveyance and/or treatment (including recycling and reclamation) of municipal sewage or industrial waste of a liquid nature which is owned by a state or municipality as defined by section 502 (4) of the Clean Water Act, any other treatment works treating domestic sewage (TWTDS), or wastewater treatment device or system, regardless of ownership (including federal facilities) used in the storage, treatment, recycling and reclamation of municipal or domestic sewage.

2.29. "Recycling facility" means any solid waste facility for the purpose of recycling at which neither land disposal nor biological, chemical or thermal transformation of solid waste occurs: Provided, That mixed waste recovery facilities, sludge processing facilities and composting facilities are not considered recycling facilities nor considered to be reusing or recycling solid waste within the meaning of W. Va. Code ~~§§20-9 and 11~~ §§22C-4 and 20-11.

2.30. "Representative sample" means a sample collected from a population or whole that exhibits the average or typical properties of the larger population or whole.

2.31. "Sewage sludge" means solid, semi-solid or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage, scum or solids removed in primary, secondary or advanced wastewater treatment processes and a material derived from sewage sludge. "Sewage sludge" does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator."

2.32. "Sewage sludge processing facility" is a solid waste facility that processes sewage sludge for land application, incineration or disposal at an approved landfill. Such processes include, but are not limited to, composting, lime stabilization, thermophilic digestion and anaerobic digestion.

2.33. "Sludge" means any solid, semisolid, residue or precipitate, separated from or created by a municipal, commercial or industrial waste treatment plant, water supply treatment plant or air pollution control facility or any other such waste having similar origin.

2.34. "Solid waste" means any garbage, paper, litter, refuse, cans, bottles, waste processed for the express purpose of incineration; sludge from a waste treatment plant, water supply treatment plant or air pollution control facility; and other discarded materials, including offensive or unsightly matter, solid, liquid, semisolid or contained liquid or gaseous material resulting from industrial, commercial, mining or community activities but does not include solid or dissolved material in sewage or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources and have permits under W. Va. Code ~~§20-5A~~ §22-11, or source, special nuclear or by-product material as defined by the Atomic Energy Act of 1949, as amended, including any nuclear or by-product material considered by federal standards to be below regulatory concern, or a hazardous waste either identified or listed under W. Va. Code ~~§20-5E~~ §22-18, or refuse, slurry, overburden or other wastes or material resulting from coal-fired electric power or steam generation, the exploration, development, production, storage and recovery of coal, oil, and gas and other mineral resources placed or disposed of at a facility which is regulated under W. Va. Code §§22-2, §22-3, §22-4, §22-6, §22-7, §22-8, §22-9, §22-10, §22A, §22C-2, §22C-7, §22C-8, and §22C-9 ~~22A, or 22B,~~ so long as such placement or disposal is in conformance with a permit issued pursuant to such provisions of this code. ~~chapters~~.

2.35 "Solid waste disposal" means the practice of disposing of solid waste including placing, depositing, dumping or throwing or causing to be placed, deposited, dumped or thrown any solid waste.

2.36. "Solid waste disposal shed" means the geographical area which the solid waste management board designates and files in the state register pursuant to W. Va. Code ~~§16-26-8~~ §22C-3-9.

2.37. "Solid waste facility" means any system, facility, land contiguous land, improvements on the land, structures or other appurtenances or methods used for processing, recycling or disposing of solid waste, including landfills, transfer stations, materials recovery facilities, mixed waste processing facilities, sewage sludge processing facilities, composting facilities and other such facilities not herein specified but not including land upon which sewage sludge is applied in accordance with W. Va. Code ~~§20-5F-2b~~ §22-15-20. Such facility shall be deemed to be situated, for purposes of this rule, in the county where the majority of the spatial area of such facility is located: Provided, That a salvage yard licensed and regulated pursuant to the terms of W. Va. Code §17-23, is not a solid waste facility.

2.38. "Source separated materials" means materials separated from general solid waste at the point of origin for the purpose of reuse and recycling but does not mean sewage sludge.

2.39. "Source separated organic waste" means readily degradable organic material such as food waste, yard waste and wood waste, except pressure-treated wood waste, which is collected separately from the mixed solid waste stream. It does not include sewage sludge or domestic septage.

2.40. "Stabilization" means the decomposition .of organic material to the point where it neither reheats when wetted nor gives off offensive odors and does not include pathogens, toxins or vectors in excess of Federal regulations 40 CFR 503.

§47-38D-3. STANDARDS FOR USE, DISPOSAL AND PROCESSING OF SEWAGE SLUDGE.

3.1. Incorporation of Federal Regulations. -- Federal regulations 40 CFR 503, excluding sections 503.10(b)(1) and 503.20 through 503.29 inclusive, in effect on the effective date this rule, are hereby fully incorporated and implemented as a part of these sewage sludge management regulations promulgated under the authority of W. Va. Code ~~§20-5F-2b~~ §22-15-20. Provided, That in instances where similar provisions exist, the more stringent requirements (state or federal) shall apply.

3.2. Sewage Sludge Land Application Siting Restrictions and Location Standards

3.2.1 Sludge will not be applied to land that meets any of the following conditions:

3.2.1.a. Land that is frozen, snow-covered, or known to be flooded on a regular basis unless the applicant can demonstrate to the Director that the land application will not cause runoff into streams or wetlands.

3.2.1.b. Land within 50 feet of surface water to include streams, springs, ponds, wetlands, or other collection points for surface water.

3.2.1.c. Land within 200 feet of drinking water supply wells or other personal water supply.

3.2.1.d. Land within 200 feet of an occupied dwelling.

3.2.1.e. Land within 50 feet of a federal or state highway.

3.2.1.f. Land within 100 feet of an adjacent property owner's property line.

3.2.1.g. Land from which drainage leads into a sinkhole.

3.2.1.h. Land that has been tested and determined to have a pH of less than 6.2, unless the pH is adjusted to 6.2 or greater.

3.2.1.i. Land that has a slope greater than 15%.

3.2.1.j. Land that has a seasonal high groundwater table less than 2 feet from the surface.

3.2.1.k. Land that has less than 6 inches of soil over bedrock or an impervious pan.

3.2.1.l. Land containing soil with surface permeability of less than 0.6 inches/hour or greater than 6 inches/hour.

3.2.2. No person or entity shall be allowed to apply sewage sludge to land in a manner that will result in exceeding the maximum soil concentration for arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc. ~~as listed in Table 3 of this rule and the soil testing requirements of this rule.~~

3.2.2.a. The director shall assign an individual and lifetime loading rate for each land application site by considering background soil concentrations, ~~and~~ maximum allowable pollutant concentrations as per Table 1 ~~and per Table 3~~ of this rule, and cumulative loading rates as per Federal Regulations 40 CFR Part 503, Sections 503.13.a2i and 503.13.b2 except as provided for in 3.2.2.b.

3.2.2.b. If circumstances at sewage sludge processing facilities result in short term excursions of Table 1 criteria, the Director may develop temporary loading rates, for a period not to exceed six months, based on the provisional limitations of Table 2 of this rule.

3.2.3. No land, except a solid waste facility, shall be allowed to accept or store so much sewage sludge as to exceed the agronomic rate or a rate of fifteen dry ton per acre per year, whichever is less: Provided, That up to twenty-five dry tons per acre per year may be applied in the reclamation of surface mine land.

3.2.4. No person shall be allowed to store sewage sludge at a land application site for a period longer than one week; except, storage shall be allowed for no longer than three months where provisions, approved by the Chief of the Office of Water Resources of the Division, have been made to prevent leachate runoff into surface or groundwater. Septage storage shall only be allowed in-tank and for no more than three days, or as otherwise authorized by the Chief of the Office of Water Resources of the Division.

3.2.5. No person shall be allowed to land apply sludge except during the hours of daylight.

3.3. Sewage Sludge Processing Facility Operational and Design Requirements.

3.3.1. Sewage sludge processing facilities must adhere to the following requirements:

3.3.1.a. Areas used for processing, curing and storage of raw materials, intermediate and final products, loading and unloading areas, impoundments, pipelines, ditches, pumps and drums, sumps and tanks, must be designed, constructed and operated to prevent release of contaminants to the groundwater and surface water. Storage of finished products from the facility shall be limited to one year.

3.3.1.b. The facility must be designed and operated to control vectors and odors.

3.3.1.c. The facility must not be operated or constructed within the one hundred year flood plain unless provisions have been made to prevent the encroachment of flood waters upon the facility.

3.3.1.d. All land areas within the boundaries of a sewage sludge processing facility upon which sewage sludge, intermediate or final products come in direct contact with the land surface must be protected in accordance with the Groundwater Protection Act, W. Va. Code ~~§20-5M~~ §22-12 and the rules promulgated thereunder.

3.4. Leachate Management Requirements.

3.4.1. Any liquid which comes in contact with sewage sludge at a sewage sludge processing facility must be handled as leachate and is subject to the requirements of W. Va. Code ~~§§20-5A and 5M~~ §§22-11 and 12, and the rules promulgated thereunder.

3.5. Storm Water Requirements.

3.5.1. Storm water drainage must be directed around and away from the operating area. All storm water must be collected and discharged in compliance with State Water Quality Standards and the permit issued by the Office of Water Resources of the Division.

3.6. Landfill Disposal of Sewage Sludge. -- Sewage sludge disposed at a landfill shall contain at least twenty percent (20%) solids by weight. This requirement may be met by adding or blending sand, sawdust, lime, or soil. Alternative sludge disposal methods can be utilized upon obtaining prior written approval from the Chief.

3.6.1. Sewage sludge may not represent more than twenty-five percent (25%) by weight of the total weight of waste disposed of at the landfill on any working day.

§47-38D-4. PERMITS REQUIRED.

4.1. Applicability.

4.1.1. No person may construct or operate a sewage sludge processing facility (including mixed waste composting facilities which utilize sewage sludge) or a commercial solid waste facility which processes or handles sewage sludge or materials derived from sewage sludge without first obtaining a solid waste facility permit; Provided, That land upon which sewage sludge is applied is not a solid waste facility.

4.1.2. On and after the effective date of this rule, all permitted facilities shall submit an application to modify such permit.

4.1.3. No person may land apply sewage sludge without first obtaining a land application permit; provided, That land application permit requirements may be incorporated into a modification of a facility's WV/NPDES permit required under W. Va. Code ~~§20-5A~~ §22-11.

4.1.4. For those publicly owned treatment works (POTW's) which produce sewage sludge and are regulated by the Division pursuant to an WV/NPDES permit required under W. Va. Code ~~§20-5A~~ §22-11 a sewage sludge processing facility modification will be obtained by the applicant as a part of the existing WV/NPDES permit and shall include a sewage sludge management plan approved by the Chief of the Office of Water Resources of the Division.

4.1.5. Facilities which are surface disposal sites as defined in 40 CFR 503, Subpart C, are hereby defined as "landfills" and must meet all requirements of 47 CSR 38 applicable to landfills.

4.1.6. Permits issued under paragraph 4.1.1 of this rule, shall be subject to the provisions of 47 CSR 38, section 3 (excluding the provisions for Liner Requirements) and the closure requirements of 47 CSR 38, section 6.

4.1.7. Permits issued under paragraph 4.1.4. of this rule, shall be subject to the permit issuance procedures, procedures for permit modifications, suspension and revocation, procedures for transfer of permits, and the procedures for permit appeals of ~~46 CSR 2~~ 47 CSR 10 and are not subject to the procedures outlined in 4.1.5, 4.1.6. and 4.1.8 of this rule.

4.1.8. Permits issued under paragraph 4.1.5, of this rule, shall be subject to the procedures of 47 CSR 38 section 3 and the closure requirements of 47 CSR 38 section 6.

4.1.9 Permits issued under paragraph 4.1.3 of this rule except for land application modifications made in WV/NPDES permits under paragraph 4.1.4 of this rule shall be subject to the permit issuance procedures (subsections 3.17 through 3.29 inclusive) of 47 CSR 38 and are not subject to the procedures outlined in paragraphs 4.1.5, 4.1.6 and 4.1.8 of this rule.

4.2. General, Processing Facility, and Land Application Permit Requirements -- Persons required to obtain a permit pursuant to this rule must provide the following information, in the form and manner prescribed by the Chief of the Office of Waste Management or the Office of Water Resources of the Division as appropriate. The form may require information in addition to that required by this subsection.

4.2.1. Permit Application General Requirements -- All applicants must provide the following information:

4.2.1.a. The name, address, and location of the facility;

4.2.1.b. A description of the activities conducted or to be conducted by the applicant;

4.2.1.c. The operator's and owner's name, address, telephone number, ownership status, and status as a federal, state, private, public or other entity;

4.2.1.d. Other environmental permits issued by any local,state or federal agency;

4.2.1.e. A description of the specific source(s) of sewage sludge;

4.2.1.f. The amount of sewage sludge actually generated or imported;

4.2.1.g. The content of heavy metals, pathogens, toxins or vectors and moisture (percent solids) present in the sewage sludge;

4.2.1.h. Each location that the sewage sludge is stored, land applied or otherwise disposed of; the amount so stored, land applied or otherwise disposed of; and the capacity of that location to accept sewage sludge;

4.2.1.i. Information relative to the quality of the sewage sludge(s) or product(s) derived from sewage sludge as required by 40 CFR 503, and

4.2.1.j. A detailed design and a description of the method to collect and control leachate and surface water runoff, including the method for treatment and disposal of leachate generated.

4.2.2. Sewage Sludge Processing Facility Permit Requirements.--All applicants for permits for sewage sludge processing facilities, except facilities located at the site where sewage sludge is generated, must submit the following additional information:

4.2.2.a. An engineering report to construct must contain, at a minimum, the following:

4.2.2.a.A. A regional map, or maps, (of appropriate scale) that delineate the entire service area of the proposed facility (both existing and proposed); existing and proposed collection, processing, and disposal operations; the location of the closest population centers; and the transportation systems including highways, airports, railways and waterways;

4.2.2.a.B. A vicinity map (minimum scale of 1"=2000') that delineates the area within one mile of the facility boundaries, zoning and land use, residences, surface waters, access roads, bridges, railroads, airports, historic sites, and other existing and proposed man-made or natural features relating to the project;

4.2.2.a.C. A site plan (minimum scale of 1"=200' with five foot contour intervals) that delineates property boundaries, the location of existing and proposed soil boring, monitoring wells, buildings and appurtenances, fences, gates, roads, parking areas, drainage, culverts, storage facilities or areas, loading areas; existing and proposed elevation contours and direction of prevailing winds; and the location of residences, potable wells, surface water bodies, and drainage swales located within the site and in the site plan area; and

4.2.2.a.D. A map indicating wetlands and flood plains within 1,000 feet of the site, if any.

4.2.2.b. A description of the operation of the facility, detailed engineering plans and specifications for the entire facility, must be submitted by the applicant including at a minimum:

4.2.2.b.A. A schedule of operation, including the days and hours that the facility will be open, preparations before opening, and procedures followed after closing for the day;

4.2.2.b.B. Anticipated daily traffic flow to and from the facility, including the number of trips by private or public collection vehicles, and the quantity of material contained in each vehicle;

4.2.2.b.C. The procedure for unloading trucks (including frequency, rate, and method);

4.2.2.b.D. Special precautions or procedures for operation during wind, heavy rain, snow, and freezing conditions;

4.2.2.b.E. A description of the ultimate use for the finished compost or other product, method for removal from the site, and a plan for use or disposal of those finished products that cannot be used in the expected manner due to poor quality or change in market conditions;

4.2.2.b.F. A (description) copy of the label or other information source, by the distributor, that outlines the type of waste the compost product was derived from, a list of any restrictions on use, and recommended safe uses and application rates;

4.2.2.b.G. Identification of the personnel required to operate and maintain the facility and their job descriptions/responsibilities;

4.2.2.b.H. A detailed description of the source, and anticipated quality, and quantity of any bulking agent to be used in the process; and

4.2.2.b.I. A detailed description of the quantity, quality and specific source of the sewage sludge received or anticipated to be received.

4.2.2.c. The permit application must contain an operating engineering report which must include, at a minimum, the following:

4.2.2.c.A. Detailed engineering plans and specifications for the entire sewage sludge processing facility, including manufacturer's performance data for the selected equipment;

4.2.2.c.B. Contingency plans detailing corrective (or remedial) action to be taken in the event of equipment breakdown; air pollution (odors); unacceptable waste delivered to the facility; groundwater contamination; spills; and undesirable conditions such as fires, dust, noise, vectors, lack of a market for the compost product and unusual traffic conditions; and

4.2.2.c.C. An Operation and Maintenance manual.--The manual must contain general design information, detailed operational information and instructions. In addition, the manual must list the specific procedures used or to be used in monitoring, sampling and analyzing sewage sludge and the finished product, and record keeping requirements.

4.2.2.d. A description of the design of the facility, including:

4.2.2.d.A. The type, size, and associated detention times of equipment used in the handling, processing, and storage of sewage sludge;

4.2.2.d.B. The method of measuring, shredding, mixing, and proportioning input materials;

4.2.2.d.C. A description and sizing of the storage facilities for amendment, bulking agent, and finished product;

4.2.2.d.D. The separation, processing, storage, and ultimate disposal of materials that cannot be composted, if applicable;

4.2.2.d.E. The location of all temperature and any other type of monitoring points, and the frequency of monitoring;

4.2.2.d.F. A process flow diagram of the entire process, including all major equipment and flow streams. The flow streams must indicate the quantity of material on a wet weight, dry weight, and volumetric basis;

4.2.2.d.G. The aeration capacity of the system;

4.2.2.d.H. The method of supplying and regulating airflow;

4.2.2.d.I. The expected mass balance through the composting system;

4.2.2.d.J. A description of how the (temperature) monitoring equipment will ensure that facility qualifies as a process to further reduce pathogens, toxins, heavy metals and/or vectors; and

4.2.2.d.K. If applicable, a description of the air emission collection and control technologies.

4.2.3. Land Application Permit Requirement.--Persons performing land application of sewage sludge or materials derived from sewage sludge must submit the following information to the Chief of the Office of Water Resources of the Division in addition to that required under section 4.2.1. of this rule

4.2.3.a. Soil analysis for all land application sites including but not limited to pH, potassium, phosphorus, nitrogen, all metals listed in Table 1 of this rule and any additional chemical analysis required by the Director;

4.2.3.b. Information relative to the nitrogen content of the sludge(s) or product(s) derived from sewage sludge to be land applied;

4.2.3.c. A soils map with application sites clearly defined;

4.2.3.d. An agreement between the preparer of sewage sludge(s) or material(s) derived from sewage sludge, the applier, and the owner of the land application site indicating each party's concurrence with the application, and certifying that each will comply with applicable requirements of 40 CFR 503 and this rule;

4.2.3.e. A description of existing and future uses of the land application site;

4.2.3.f. Information relative to past application(s) of sewage sludge or material(s) derived from sewage sludge as necessary to comply with 40 CFR 503.12 and this rule;

4.2.3.g. Information relative to past fertilizer applications to the site;

4.2.3.h. In addition to the chemical analyses required in paragraph 4.2.1 of this rule, any additional chemical analyses of sewage sludge(s) or material(s) derived from sewage sludge, requested by the Chief of the Office of Water Resources of the Division, including, but not limited to sodium, chloride, fluoride, calcium and sulfates;

4.2.3.i. A description of the methods to be used for land application;

4.2.3.j. A description of the methods for transportation of sludge to the site;

4.2.3.k. For sewage sludge or material derived from sewage sludge, which has been imported, a copy of the POTW's NPDES permit;

4.2.3.l. For sewage sludge or material derived from sewage sludge, which has been imported, information relative to the significant industrial users of the POTW from which the sludge or material originated;

4.2.3.m. For sewage sludge or material derived from sewage sludge, which has been imported, a description of the methods by which pathogen control and vector attraction reduction are being achieved; and

4.2.3.n. A description of the methods to be utilized to adjust and maintain the soil to a minimum pH of 6.2 for at least 5 years from the date of application.

§47-38D-5. GENERAL, PROCESSING FACILITY, AND LAND APPLICATION PERMIT REQUIREMENTS.

5.1. Permit General Requirements.-- All permits issued pursuant to this rule shall contain the following:

5.1.1. Any requirement of 40 CFR 503, including but not limited to:

5.1.1.a. Limitations on the concentrations of pollutants (heavy metals), toxins, vectors and pathogens in the sewage sludge or sewage sludge products;

5.1.1.b. Requirements relative to monitoring sewage sludge and sewage sludge product quality and reporting the results of those analyses for pH, percent solids, organic nitrogen, potassium, phosphorus, calcium, magnesium, total nitrogen, ammonia nitrogen, pathogen test results, vector attraction verification; and all heavy metals listed in Table 1 of this rule except that the frequency of monitoring shall be as described in Appendix A of this rule ;

5.1.1.c. Requirements relative to reporting and certification;

5.1.1.d. Requirement to pay fees as identified in section 6 of this rule;

5.1.1.e. Requirements for the proper collection, control and disposal of leachate and stormwater runoff for the protection of ground and surface waters;

5.1.1.f. Requirements to retain records for the facility for a minimum of five years;

5.1.1.g. Requirements to monitor and report monthly to the Division the quantity of sewage sludge produced or imported and the specific source of the sewage sludge produced or imported;

5.1.1.h. Requirements not to exceed a commercial solid waste facility's tonnage limits, where applicable;

5.1.1.i. Requirements to provide copies of monthly reports to the county or regional solid waste authority in which the facility or land application site(s) is located;

5.1.1.j. Any other requirements, including additional monitoring, determined to be necessary by the Director to insure compliance with state and federal regulations;

5.2. Processing Facility Permit Requirements.-- In addition to the requirements of subsection 5.1. of this rule, any solid waste facility permit issued to a sewage sludge processing facility, pursuant to the sewage sludge regulations, must contain the following:

5.2.1. Operational requirements relative to pathogen control in accordance with 40 CFR 503.32 and its Appendix B;

5.2.2. Operational requirements relative to vector attraction reduction in accordance with 40 CFR 503.33;

5.2.3. Requirements to routinely monitor and report information relative to the quality of raw materials used in the sewage sludge processing facility including but not limited to: sewage sludge, bulking agents, and kiln dust; except that the frequency of monitoring shall be as described in Appendix A of this rule;

5.2.4. Limitations for the pollutant concentrations of the end product of the sewage sludge processing facility;

5.2.5. Labeling requirements as per 40 CFR 503.14.e., if applicable;

5.2.6. Requirements for the implementation of practices to prevent the contamination of ground and surface waters, including liners if necessary; and

5.2.7. For commercial sewage sludge processing facilities, requirements for reporting in accordance with subsection 4.12 of the Solid Waste Management Regulations (47 CSR.38);

5.3. Land Application Permit Requirements.-- In addition to the requirements of subsection 5.1 of this rule, any land application permit issued pursuant to the sewage sludge regulations shall contain the following:

5.3.1. Requirements delineating the sites for which land application is approved:

5.3.2. Limitations on the maximum amount of sewage sludge allowed to be land applied;

5.3.3. Requirements implementing the siting restrictions and location standards of subsection 3.2 of this rule;

5.3.4. Requirements limiting the types of crops that may be grown on land used for application of sewage sludge and the time between application of sewage sludge and the harvesting of crops, in accordance with 40 CFR 503.32(b);

5.3.5. Restrictions on animal grazing and public access, in accordance with 40 CFR 503.32(b); ~~and~~

5.3.6. Applicable vector attraction reduction requirements of 40 CFR 503.33; and

5.3.7. Applicable pathogen reduction requirements of 40 CFR 503.32 and its Appendex B.

§47-38D-6. FEE AND BONDING REQUIREMENTS

6.1. Applicability.-- Any producer or importer of sewage sludge for land application shall be subject to non-refundable fees, as described herein, which shall be used to cover the costs of the sewage sludge management program. The fees established herein in paragraphs 6.4.1 and 6.4.2 of this rule shall be assessed on forms prescribed by the Chief of the Office of Water Resources of the Division and shall be paid to said chief quarterly.

6.2. Water Quality Management Fund.-- Fees collected for land application shall be deposited in the special revenue fund designated the "Water Quality Management Fund" established under the provisions of W.Va. Code ~~§ 20-5A-6a~~ §22-11-10 except as otherwise specified herein.

6.3. Bonding.-- The Director may require a surety bond, deposit or similar instrument in an amount sufficient to cover the cost of future environmental remediation from producers and importers of sewage.

6.4. Fee Assessments.

6.4.1. Producers and importers of sewage sludge or material derived from sewage sludge for land application shall be assessed a sewage sludge management program fee calculated as $5.00 per actual ton of sludge times the proportion of solids in the sludge for sludge with maximum metals concentrations not exceeding those listed in Table 1 of this rule.

6.4.2. All sewage sludge placed in, or upon, or used by a solid waste facility or processed or handled, pursuant to a permit issued by the Division, shall be subject to the same tipping and other fees as levied on the disposal of solid waste under W. Va. code ~~§ 20~~ §22; Provided, That no such fees, excepting assessment fees required by this section, shall be levied upon the application of sewage sludge to land outside a solid waste facility in accordance with the statute and this rule.

6.4.3. Fees generated pursuant to paragraph 6.4.1 shall be reviewed periodically by the Director and shall be adjusted as necessary to assure that total collections shall not exceed $200,000 per year.

APPENDIX A

FREQUENCY OF MONITORING

AMOUNT OF SEWAGE SLUDGE RECEIVED (actual dry tons per 365 day period)	FREQUENCY OF MONITORING
Greater than zero but less than 290	once every 6 months
Equal to or greater than 290 but less than 1,500	once per quarter (4 times per year)
Equal to or greater than 1,500 but less 15,000	once per month (12 times per year)
Equal to or greater than 15,000	once per week

TABLE 1

MAXIMUM CONCENTRATION OF METALS IN SEWAGE SLUDGE FOR LAND APPLICATION

Metal	Concentration (mg/kg)
Arsenic	41
Cadmium	10
Chromium	1000
Copper	1000
Lead	250
Mercury	10
Molybdenum	18
Nickel	200
Selenium	36
Zinc	2500

TABLE 2

PROVISIONAL MAXIMUM CONCENTRATION OF METALS IN SEWAGE SLUDGE FOR PRODUCERS NOT MEETING TABLE 1 CRITERIA

Metal	Concentration (mg/kg)
Arsenic	75
Cadmium	85
Chromium	3000
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500

~~TABLE 3~~

~~MAXIMUM ALLOWABLE SOIL CONCENTRATIONS~~

~~Metal~~	~~Concentration (mg/kg)~~
~~Arsenic~~	~~5.7~~
~~Cadmium~~	~~1.4~~
~~Chromium~~	~~140.0~~
~~Copper~~	~~140.0~~
~~Lead~~	~~35.0~~
~~Mercury~~	~~2.0~~
~~Molybdenum~~	~~2.5~~
~~Nickel~~	~~28.0~~
~~Selenium~~	~~5.0~~
~~Zinc~~	~~350.0~~

§503.1 Purpose and applicability.

(a) Purpose.

(1) This part establishes standards, which consist of general requirements, pollutant limits, management practices, and operational standards, for the final use or disposal of sewage sludge generated during the treatment of domestic sewage in a treatment works. Standards are included in this part for sewage sludge applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator. Also included in this part are pathogen and alternative vector attraction reduction requirements for sewage sludge applied to the land or placed on a surface disposal site.

(2) In addition, the standards in this part include the frequency of monitoring and recordkeeping requirements when sewage sludge is applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator. Also included in this part are reporting requirements for Class I sludge management facilities, publicly owned treatment works (POTWs) with a design flow rate equal to or greater than one million gallons per day, and POTWs that serve 10,000 people or more.

(b) Applicability.

(1) This part applies to any person who prepares sewage sludge, applies sewage sludge to the land, or fires sewage sludge in a sewage sludge incinerator and to the owner/operator of a surface disposal site.

(2) This part applies to sewage sludge applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator.

(3) This part applies to the exit gas from a sewage sludge incinerator stack.

(4) This part applies to land where sewage sludge is applied, to a surface disposal site, and to a sewage sludge incinerator.

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§503.2 Compliance period.

(a) Compliance with the standards in this part shall be achieved as expeditiously as practicable, but in no case later than February 19, 1994. When compliance with the standards requires construction of new pollution control facilities, compliance with the standards shall be achieved as expeditiously as practicable, but in no case later than February 19, 1995.

(b) The requirements for frequency of monitoring, recordkeeping, and reporting in this part for total hydrocarbons in the exit gas from a sewage sludge incinerator are effective February 19, 1994 or, if compliance with the operational standard for total hydrocarbons in this part requires the construction of new pollution control facilities, February 19, 1995.

(c) All other requirements for frequency of monitoring, recordkeeping, and reporting in this part are effective on July 20, 1993.

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§503.3 Permits and direct enforceability.

(a) Permits. The requirements in this part may be implemented through a permit:

(1) Issued to a "treatment works treating domestic sewage", as defined in 40 CFR 122.2, in accordance with 40 CFR parts 122 and 124 by EPA or by a State that has a State sludge management program approved by EPA in accordance with 40 CFR part 123 or 40 CFR part 501 or

(2) Issued under subtitle C of the Solid Waste Disposal Act; part C of the Safe Drinking Water Act; the Marine Protection, Research, and Sanctuaries Act of 1972; or the Clean Air Act. "Treatment works treating domestic sewage" shall submit a permit application in accordance with either 40 CFR 122.21 or an approved State program.

(b) Direct enforceability. No person shall use or dispose of sewage sludge through any practice for which requirements are established in this part except in accordance with such requirements.

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§503.4 Relationship to other regulations.

Disposal of sewage sludge in a municipal solid waste landfill unit, as defined in 40 CFR 258.2, that complies with the requirements in 40 CFR part 258 constitutes compliance with section 405(d) of the CWA. Any person who prepares sewage sludge that is disposed in a municipal solid waste landfill unit shall ensure that the sewage sludge meets the requirements in 40 CFR part 258 concerning the quality of materials disposed in a municipal solid waste landfill unit.

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§503.5 Additional or more stringent requirements.

(a) On a case-by-case basis, the permitting authority may impose requirements for the use or disposal of sewage sludge in

addition to or more stringent than the requirements in this part when necessary to protect public health and the environment from any adverse effect of a pollutant in the sewage sludge.

(b) Nothing in this part precludes a State or political subdivision thereof or interstate agency from imposing requirements for the use or disposal of sewage sludge more stringent than the requirements in this part or from imposing additional requirements for the use or disposal of sewage sludge.

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§503.6 Exclusions.

(a) Treatment processes. This part does not establish requirements for processes used to treat domestic sewage or for processes used to treat sewage sludge prior to final use or disposal, except as provided in §503.32 and §503.33.

(b) Selection of a use or disposal practice. This part does not require the selection of a sewage sludge use or disposal practice. The determination of the manner in which sewage sludge is used or disposed is a local determination.

(c) Co-firing of sewage sludge. This part does not establish requirements for sewage sludge co-fired in an incinerator with other wastes or for the incinerator in which sewage sludge and other wastes are co-fired. Other wastes do not include auxiliary fuel, as defined in 40 CFR 503.41(b), fired in a sewage sludge incinerator.

(d) Sludge generated at an industrial facility. This part does not establish requirements for the use or disposal of sludge generated at an industrial facility during the treatment of industrial wastewater, including sewage sludge generated during the treatment of industrial wastewater combined with domestic sewage.

(e) Hazardous sewage sludge. This part does not establish requirements for the use or disposal of sewage sludge determined to be hazardous in accordance with 40 CFR part 261.

(f) Sewage sludge with high PCB concentration. This part does not establish requirements for the use or disposal of sewage sludge with a concentration of polychlorinated biphenyls (PCBs) equal to or greater than 50 milligrams per kilogram of total solids (dry weight basis).

(g) Incinerator ash. This part does not establish requirements for the use or disposal of ash generated during the firing of sewage sludge in a sewage sludge incinerator.

(h) Grit and screenings. This part does not establish

requirements for the use or disposal of grit (e.g., sand, gravel, cinders, or other materials with a high specific gravity) or screenings (e.g., relatively large materials such as rags) generated during preliminary treatment of domestic sewage in a treatment works.

(i) Drinking water treatment sludge. This part does not establish requirements for the use or disposal of sludge generated during the treatment of either surface water or ground water used for drinking water.

(j) Commercial and industrial septage. This part does not establish requirements for the use or disposal of commercial septage, industrial septage, a mixture of domestic septage and commercial septage, or a mixture of domestic septage and industrial septage.

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§503.7 Requirement for a person who prepares sewage sludge.

Any person who prepares sewage sludge shall ensure that the applicable requirements in this part are met when the sewage sludge is applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator.

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§503.8 Sampling and analysis

(a) Sampling. Representative samples of sewage sludge that is applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator shall be collected and analyzed.

(b) Methods. The materials listed below are incorporated by reference in this part. These incorporations by reference were approved by the Director of the Federal Register in accordance with 5 USC 552(a) and 1 CFR part 51. The materials are incorporated as they exist on the date of approval, and notice of any change in these materials will be published in the Federal Register. They are available for inspection at the Office of the Federal Register, 7th Floor, suite 700, 800 North Capitol Street, NW., Washington, DC, and at the Office of Water Docket, room L-102, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC. Copies may be obtained from the standard producer or publisher listed in the regulation. Methods in the materials listed below shall be used to analyze samples of sewage sludge.

(1) Enteric viruses. ASTM Designation: D 4994-89, "Standard Practice for Recovery of Viruses From Wastewater Sludges", 1992 Annual Book of ASTM Standards: Section 11--Water and Environmental Technology, ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

(2) Fecal coliform. Part 9221 E. or Part 9222 D., "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.

(3) Helminth ova. Yanko, W.A., "Occurrence of Pathogens in Distribution and Marketing Municipal Sludges", EPA 600/1-87-014, 1987. National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB 88-154273/AS).

(4) Inorganic pollutants. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, Second Edition (1982) with Updates I (April 1984) and II (April 1985) and Third Edition (November 1986) with Revision I (December 1987). Second Edition and Updates I and II are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB-87-120-291). Third Edition and Revision I are available from Superintendent of Documents, Government Printing Office, 941 North Capitol Street, NE., Washington, DC 20002 (Document Number 955-001-00000-1).

(5) Salmonella sp. bacteria. Part 9260 D., "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005; 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, Virginia 22314.

(6) Specific oxygen uptake rate. Part 2710 B., "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.

(7) Total, fixed, and volatile solids. Part 2540 G., "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.

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§503.9 General definitions

(a) Apply sewage sludge or sewage sludge applied to the land means land application of sewage sludge.

(b) Base flood is a flood that has a one percent chance of occurring in any given year (i.e., a flood with a magnitude equalled once in 100 years).

(c) Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 CFR 501.2, required to have an approved pretreatment program under 40 CFR 403.8(a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 CFR 403.10(e)) and any treatment works treating domestic sewage, as defined in 40 CFR 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

(d) Cover crop is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

(e) CWA means the Clean Water Act (formerly referred to as either the Federal Water Pollution Act or the Federal Water Pollution Control Act Amendments of 1972), Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483, Public Law 97-117, and Public Law 100-4.

(f) Domestic septage is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

(g) Domestic sewage is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

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

(i) EPA means the United States Environmental Protection Agency.

(j) Feed crops are crops produced primarily for consumption by animals.

(k) Fiber crops are crops such as flax and cotton.

(l) Food crops are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

(m) Ground water is water below the land surface in the saturated zone.

(n) Industrial wastewater is wastewater generated in a commercial or industrial process.

(o) Municipality means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201(e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use, or disposal of sewage sludge.

(p) Permitting authority is either EPA or a State with an EPA-approved sludge management program.

(q) Person is an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

(r) Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

(s) Place sewage sludge or sewage sludge placed means disposal of sewage sludge on a surface disposal site.

(t) Pollutant is 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 EPA, 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.

(u) Pollutant limit is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of a pollutant that can be applied to a unit area of land (e.g., kilograms per hectare); or the volume of a material that can be applied to a unit area of land (e.g., gallons per acre).

(v) Runoff is rainwater, leachate, or other liquid that drains

overland on any part of a land surface and runs off of the land surface.

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

(x) State is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian Tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

(y) Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

(z) Treat or treatment of sewage sludge is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

(aa) Treatment works is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

(bb) Wetlands m

eans those areas that are inundated or saturated by surface water or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

>

Subpart B--Land Application

>

503.10 Applicability.

(a) This subpart applies to any person who prepares sewage sludge that is applied to the land, to any person who applies

sewage sludge to the land, to sewage sludge applied to the land, and to the land on which sewage sludge is applied.

(b)(1) Bulk sewage sludge. The general requirements in 503.12 and the management practices in 503.14 do not apply when bulk sewage sludge is applied to the land if the bulk sewage sludge meets the pollutant concentrations in 503.13(b)(3), the Class A pathogen requirements in 503.32(a), and one of the vector attraction reduction requirements in 503.33 (b)(1) through (b)(8).

(2) The Regional Administrator of EPA or, in the case of a State with an approved sludge management program, the State Director, may apply any or all of the general requirements in 503.12 and the management practices in 503.14 to the bulk sewage sludge in 503.10(b)(1) on a case-by-case basis after determining that the general requirements or management practices are needed to protect public health and the environment from any reasonably anticipated adverse effect that may occur from any pollutant in the bulk sewage sludge.

(c)(1) The general requirements in 503.12 and the management practices in 503.14 do not apply when a bulk material derived from sewage sludge is applied to the land if the derived bulk material meets the pollutant concentrations in 503.13(b)(3), the Class A pathogen requirements in 503.32(a), and one of the vector attraction reduction requirements in 503.33 (b)(1) through (b)(8).

(2) The Regional Administrator of EPA or, in the case of a State with an approved sludge management program, the State Director, may apply any or all of the general requirements in §503.12 and the management practices in §503.14 to the bulk sewage sludge in §503.10(b)(1) on a case-by-case basis after determining that the general requirements or management practices are needed to protect public health and the environment from any reasonably anticipated adverse effect that may occur from any pollutant in the bulk sewage sludge.

(c)(1) The general requirements in §503.12 and the management practices in §503.14 do not apply when a bulk material derived from sewage sludge is applied to the land if the derived bulk material meets the pollutant concentrations in §503.13(b)(3), the Class A pathogen requirements in §503.32(a), and one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8).

(2) The Regional Administrator of EPA or, in the case of a State with an approved sludge management program, the State Director, may apply any or all of the general requirements in §503.12 or the management practices in §503.14 to the bulk material in §503.10(c)(1) on a case-by-case basis after determining that the general requirements or management practices are needed to protect public health and the environment from any reasonably anticipated adverse effect that may occur from any pollutant in the bulk sewage sludge.

(d) The requirements in this subpart do not apply when a bulk material derived from sewage sludge is applied to the land if the sewage sludge from which the bulk material is derived meets the pollutant concentrations in §503.13(b)(3), the Class A pathogen requirements in §503.32(a), and one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8).

(e) Sewage sludge sold or given away in a bag or other container for application to the land. The general requirements in §503.12 and the management practices in §503.14 do not apply when sewage sludge is sold or given away in a bag or other container for application to the land if the sewage sludge sold or given away in a bag or other container for application to the land meets the pollutant concentrations in §503.13(b)(3), the Class A pathogen requirements in § 503.32(a), and one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8).

(f) The general requirements in §503.12 and the management practices in §503.14 do not apply when a material derived from sewage sludge is sold or given away in a bag or other container for application to the land if the derived material meets the pollutant concentrations in §503.13(b)(3), the Class A pathogen requirements in §503.32(a), and one of the vector attraction

reduction requirements in §503.33 (b)(1) through (b)(8).

(g) The requirements in this subpart do not apply when a material derived from sewage sludge is sold or given away in a bag or other container for application to the land if the sewage sludge from which the material is derived meets the pollutant concentrations in §503.13(b)(3), the Class A pathogen requirements in §503.32(a), and one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8).

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§503.11 Special definitions

(a) Agricultural land is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

(b) Agronomic rate is the whole sludge application rate (dry weight basis) designed:

(1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and

(2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

(c) Annual pollutant loading rate is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

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

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

(f) Cumulative pollutant loading rate is the maximum amount of an inorganic pollutant that can be applied to an area of land.

(g) Forest is a tract of land thick with trees and underbrush.

(h) Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

(i) Monthly average is the arithmetic mean of all measurements

taken during the month.

(j) Other container is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

(k) Pasture is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

(l) Public contact site is 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.

(m) Range land is open land with indigenous vegetation.

(n) Reclamation site is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

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§503.12 General requirements.

(a) No person shall apply sewage sludge to the land except in accordance with the requirements in this subpart.

(b) No person shall apply bulk sewage sludge subject to the cumulative pollutant loading rates in §503.13(b)(2) to agricultural land, forest, a public contact site, or a reclamation site if any of the cumulative pollutant loading rates in §503.13(b)(2) has been reached.

(c) No person shall apply domestic septage to agricultural land, forest, or a reclamation site during a 365 day period if the annual application rate in §503.13(c) has been reached during that period.

(d) The person who prepares bulk sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site shall provide the person who applies the bulk sewage sludge written notification of the concentration of total nitrogen (as N on a dry weight basis) in the bulk sewage sludge.

(e)(1) The person who applies sewage sludge to the land shall obtain information needed to comply with the requirements in this subpart.

(2)(i) Before bulk sewage sludge subject to the cumulative pollutant loading rates in §503.13(b)(2) is applied to the land, the person who proposes to apply the bulk sewage sludge shall contact the permitting authority for the State in which the bulk

sewage sludge will be applied to determine whether bulk sewage sludge subject to the cumulative pollutant loading rates in §503.13(b)(2) has been applied to the site since July 20, 1993.

(ii) If bulk sewage sludge subject to the cumulative pollutant loading rates in §503.13(b)(2) has not been applied to the site since July 20, 1993, the cumulative amount for each pollutant listed in Table 2 of §503.13 may be applied to the site in accordance with §503.13(a)(2)(i).

(iii) If bulk sewage sludge subject to the cumulative pollutant loading rates in §503.13(b)(2) has been applied to the site since July 20, 1993, and the cumulative amount of each pollutant applied to the site in the bulk sewage sludge since that date is known, the cumulative amount of each pollutant applied to the site shall be used to determine the additional amount of each pollutant that can be applied to the site in accordance with §503.13(a)(2)(i).

(iv) If bulk sewage sludge subject to the cumulative pollutant loading rates in §503.13(b)(2) has been applied to the site since July 20, 1993, and the cumulative amount of each pollutant applied to the site in the bulk sewage sludge since that date is not known, an additional amount of each pollutant shall not be applied to the site in accordance with §503.13(a)(2)(i).

(f) When a person who prepares bulk sewage sludge provides the bulk sewage sludge to a person who applies the bulk sewage sludge to the land, the person who prepares the bulk sewage sludge shall provide the person who applies the sewage sludge notice and necessary information to comply with the requirements in this subpart.

(g) When a person who prepares sewage sludge provides the sewage sludge to another person who prepares the sewage sludge, the person who provides the sewage sludge shall provide the person who receives the sewage sludge notice and necessary information to comply with the requirements in this subpart.

(h) The person who applies bulk sewage sludge to the land shall provide the owner or lease holder of the land on which the bulk sewage sludge is applied notice and necessary information to comply with the requirements in this subpart.

(i) Any person who prepares bulk sewage sludge that is applied to land in a State other than the State in which the bulk sewage sludge is prepared shall provide written notice, prior to the initial application of bulk sewage sludge to the land application site by the applier, to the permitting authority for the State in which the bulk sewage sludge is proposed to be applied. The notice shall include:

(1) The location, by either street address or latitude and longitude, of each land application site.

(2) The approximate time period bulk sewage sludge will be applied to the site.

(3) The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if appropriate) for the person who prepares the bulk sewage sludge.

(4) The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if appropriate) for the person who will apply the bulk sewage sludge.

(j) Any person who applies bulk sewage sludge subject to the cumulative pollutant loading rates in §503.13(b)(2) to the land shall provide written notice, prior to the initial application of bulk sewage sludge to a land application site by the applier, to the permitting authority for the State in which the bulk sewage sludge will be applied and the permitting authority shall retain and provide access to the notice. The notice shall include:

(1) The location, by either street address or latitude and longitude, of the land application site.

(2) The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if appropriate) of the person who will apply the bulk sewage sludge.

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§503.13 Pollutant limits.

(a) Sewage sludge.

(1) Bulk sewage sludge or sewage sludge sold or given away in a bag or other container shall not be applied to the land if the concentration of any pollutant in the sewage sludge exceeds the ceiling concentration for the pollutant in Table 1 of §503.13.

(2) If bulk sewage sludge is applied to agricultural land, forest, a public contact site, or a reclamation site, either:

(i) The cumulative loading rate for each pollutant shall not exceed the cumulative pollutant loading rate for the pollutant in Table 2 of §503.13; or

(ii) The concentration of each pollutant in the sewage sludge shall not exceed the concentration for the pollutant in Table 3 of §503.13.

(3) If bulk sewage sludge is applied to a lawn or a home garden, the concentration of each pollutant in the sewage sludge shall not exceed the concentration for the pollutant in Table 3 of §503.13.

(4) If sewage sludge is sold or given away in a bag or other container for application to the land, either:

(i) The concentration of each pollutant in the sewage sludge shall not exceed the concentration for the pollutant in Table 3 of §503.13; or

(ii) The product of the concentration of each pollutant in the sewage sludge and the annual whole sludge application rate for the sewage sludge shall not cause the annual pollutant loading rate for the pollutant in Table 4 of §503.13 to be exceeded. The procedure used to determine the annual whole sludge application rate is presented in appendix A of this part.

(b) Pollutant concentrations and loading rates--sewage sludge.

(1) Ceiling concentrations.

Table 1 of § 503.13.--Ceiling Concentrations

Pollutant	Ceiling concentration (milligrams per kilogram) ↑1
Arsenic	
Cadmium	
Chromium	

Copper	43
Lead	8
Mercury	
Molybdenum	
Nickel	4
Selenium	1
Zinc	75

<FN1> Dry weight basis.

(2) Cumulative pollutant loading rates.

Table 2 of § 503.13.--Cumulative Pollutant Loading Rates

Pollutant	Cumulative pollutant loading rate (kilograms per hectare)
Arsenic	
Cadmium	
Chromium	30
Copper	15
Lead	3
Mercury	
Nickel	4
Selenium	1
Zinc	28

[§503.13(b)(2) Table 2 amended at 59 FR 9098, Feb. 25, 1994]

(3) Pollutant concentrations.

Table 3 of § 503.13.--Pollutant Concentrations

Pollutant	Monthly average concentrations (milligrams per kilogram)↑1
Arsenic	
Cadmium	
Chromium	12
Copper	15
Lead	3
Mercury	
Nickel	4
Selenium	

Zinc.....	28

<FN1> Dry weight basis.

[§503.13(b)(3) Table 3 amended at 59 FR 9098, Feb. 25, 1994]

(4) Annual pollutant loading rates.

Table 4 of § 503.13.--Annual Pollutant Loading Rates

Pollutant	Annual pollutant loading rate (kilograms per hectare per 365 da period)
Arsenic	2
Cadmium	1
Chromium	1
Copper	
Lead	
Mercury	0.
Nickel	
Selenium	5
Zinc	1

[§503.13(b)(4) Table 4 amended at 59 FR 9098, Feb. 25, 1994]

(c) Domestic septage.

The annual application rate for domestic septage applied to agricultural land, forest, or a reclamation site shall not exceed the annual application rate calculated using equation (1).

$$AAR = \frac{N}{0.0026} \qquad \text{Eq. (1)}$$

Where:

AAR=Annual application rate in gallons per acre per 365 day period.

N=Amount of nitrogen in pounds per acre per 365 day period needed by the crop or vegetation grown on the land.

>

§503.14 Management practices.

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

(b) Bulk sewage sludge shall not be applied to agricultural land, forest, a public contact site, or a reclamation site that is flooded, frozen, or snow-covered so that the bulk sewage sludge enters a wetland or other waters of the United States, as defined in 40 CFR 122.2, except as provided in a permit issued pursuant to section 402 or 404 of the CWA.

(c) Bulk sewage sludge shall not be applied to agricultural land, forest, or a reclamation site that is 10 meters or less from waters of the United States, as defined in 40 CFR 122.2, unless otherwise specified by the permitting authority.

(d) Bulk sewage sludge shall be applied to agricultural land, forest, a public contact site, or a reclamation site at a whole sludge application rate that is equal to or less than the agronomic rate for the bulk sewage sludge, unless, in the case of a reclamation site, otherwise specified by the permitting authority.

(e) Either a label shall be affixed to the bag or other container in which sewage sludge that is sold or given away for application to the land, or an information sheet shall be provided to the person who receives sewage sludge sold or given away in an other container for application to the land. The label or information sheet shall contain the following information:

(1) The name and address of the person who prepared the sewage sludge that is sold or given away in a bag or other container for application to the land.

(2) A statement that application of the sewage sludge to the land is prohibited except in accordance with the instructions on the label or information sheet.

(3) The annual whole sludge application rate for the sewage sludge that does not cause any of the annual pollutant loading rates in Table 4 of §503.13 to be exceeded.

>

§503.15 Operational standards-- pathogens and vector attraction reduction.

(a) Pathogens--sewage sludge.

(1) The Class A pathogen requirements in §503.32(a) or the

Class B pathogen requirements and site restrictions in §503.32(b) shall be met when bulk sewage sludge is applied to agricultural land, forest, a public contact site, or a reclamation site.

(2) The Class A pathogen requirements in §503.32(a) shall be met when bulk sewage sludge is applied to a lawn or a home garden.

(3) The Class A pathogen requirements in §503.32(a) shall be met when sewage sludge is sold or given away in a bag or other container for application to the land.

(b) Pathogens--domestic septage.

The requirements in either §503.32 (c)(1) or (c)(2) shall be met when domestic septage is applied to agricultural land, forest, or a reclamation site.

(c) Vector attraction reduction--sewage sludge.

(1) One of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(10) shall be met when bulk sewage sludge is applied to agricultural land, forest, a public contact site, or a reclamation site.

(2) One of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8) shall be met when bulk sewage sludge is applied to a lawn or a home garden.

(3) One of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8) shall be met when sewage sludge is sold or given away in a bag or other container for application to the land.

(d) Vector attraction reduction--domestic septage. The vector attraction reduction requirements in §503.33(b)(9), (b)(10), or (b)(12) shall be met when domestic septage is applied to agricultural land, forest, or a reclamation site.

>

§503.16 Frequency of monitoring.

(a) Sewage sludge.

(1) The frequency of monitoring for the pollutants listed in Table 1, Table 2, Table 3 and Table 4 of §503.13; the pathogen density requirements in §503.32(a) and in §503.32(b)(2) through (b)(4); and the vector attraction reduction requirements §503.33 (b)(1) through §503.33(b)(8) shall be the frequency in Table 1 of §503.16.

Table 1 of § 503.16.--Frequency of Monitoring--Land Application

Amount of sewage sludge ↑1 (metric tons per 365 day period)	Frequency
Greater than zero but less than 290	Once per yea
Equal to or greater than 290 but less than 1,500	Once per quarter (four times p year
Equal to or greater than 1,500 but less than 15,000	Once per 60 days (six times p year
Equal to or greater than 15,000	Once per month (12 times per year

<FN1>Either the amount of bulk sewage sludge applied to the land or the amount of sewage sludge received by a person who prepares sewage sludge that is sold or given away in a bag or other container for application to the land (dry weight basis).

(2) After the sewage sludge has been monitored for two years at the frequency in Table 1 of §503.16, the permitting authority may reduce the frequency of monitoring for pollutant concentrations and for the pathogen density requirements in §503.32 (a)(5)(ii) and (a)(5)(iii), but in no case shall the frequency of monitoring be less than once per year when sewage sludge is applied to the land.

(b) Domestic septage. If either the pathogen requirements in §503.32(c)(2) or the vector attraction reduction requirements in §503.33(b)(12) are met when domestic septage is applied to agricultural land, forest, or a reclamation site, each container of domestic septage applied to the land shall be monitored for compliance with those requirements.

(Approved by the Office of Management and Budget under control number 2040-0157)

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§503.17 Recordkeeping.

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(a) Sewage sludge.

(1) The person who prepares the sewage sludge in §503.10(b)(1) or (e) shall develop the following information and shall retain the information for five years:

(i) The concentration of each pollutant listed in Table 3 of §503.13 in the sewage sludge.

(ii) The following certification statement:

> "I certify, under penalty of law, that the Class A pathogen requirements in §503.32(a) and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in §503.33(b)(1) through §503.33(b)(8)] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements and vector attraction reduction requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(iii) A description of how the Class A pathogen requirements in §503.32(a) are met.

(iv) A description of how one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8) is met.

(2) The person who derives the material in §503.10 (c)(1) or (f) shall develop the following information and shall retain the information for five years:

(i) The concentration of each pollutant listed in Table 3 of §503.13 in the material.

(ii) The following certification statement:

> "I certify, under penalty of law, that the Class A pathogen requirements in §503.32(a) and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8)] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements and the vector attraction reduction requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(iii) A description of how the Class A pathogen requirements in §503.32(a) are met.

(iv) A description of how one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8) is met.

(3) If the pollutant concentrations in §503.13(b)(3), the Class A pathogen requirements in §503.32(a), and the vector

attraction reduction requirements in either §503.33 (b)(9) or (b)(10) are met when bulk sewage sludge is applied to agricultural land, forest, a public contact site, or a reclamation site:

(i) The person who prepares the bulk sewage sludge shall develop the following information and shall retain the information for five years.

(A) The concentration of each pollutant listed in Table 3 of §503.13 in the bulk sewage sludge.

(B) The following certification statement:

> "I certify, under penalty of law, that the pathogen requirements in §503.32(a) have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(C) A description of how the pathogen requirements in §503.32(a) are met.

(ii) The person who applies the bulk sewage sludge shall develop the following information and shall retain the information for five years.

(A) The following certification statement:

> "I certify, under penalty of law, that the management practices in §503.14 and the vector attraction reduction requirement in [insert either §503.33 (b)(9) or (b)(10)] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices and vector attraction reduction requirements have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."

(B) A description of how the management practices in §503.14 are met for each site on which bulk sewage sludge is applied.

(C) A description of how the vector attraction reduction requirements in either §503.33(b)(9) or (b)(10) are met for each site on which bulk sewage sludge is applied.

(4) If the pollutant concentrations in §503.13(b)(3) and the Class B pathogen requirements in §503.32(b) are met when bulk sewage sludge is applied to agricultural land, forest, a public contact site, or a reclamation site:

(i) The person who prepares the bulk sewage sludge shall develop the following information and shall retain the information for five years:

(A) The concentration of each pollutant listed in Table 3 of §503.13 in the bulk sewage sludge.

(B) The following certification statement:

> "I certify under, penalty of law, that the Class B pathogen requirements in §503.32(b) and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8) if one of those requirements is met] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements [and vector attraction reduction requirements if applicable] have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(C) A description of how the Class B pathogen requirements in §503.32(b) are met.

(D) When one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8) is met, a description of how the vector attraction reduction requirement is met.

(ii) The person who applies the bulk sewage sludge shall develop the following information and shall retain the information for five years.

(A) The following certification statement:

> "I certify, under penalty of law, that the management practices in §503.14, the site restrictions in §503.32(b)(5), and the vector attraction reduction requirements in [insert either §503.33 (b)(9) or (b)(10), if one of those requirements is met] have been met for each site on which bulk sewage sludge is applied. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices and site restrictions [and the vector attraction reduction

requirements if applicable] have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(B) A description of how the management practices in §503.14 are met for each site on which bulk sewage sludge is applied.

(C) A description of how the site restrictions in §503.32(b)(5) are met for each site on which bulk sewage sludge is applied.

(D) When the vector attraction reduction requirement in either §503.33 (b)(9) or (b)(10) is met, a description of how the vector attraction reduction requirement is met.

(5) If the requirements in §503.13(a)(2)(i) are met when bulk sewage sludge is applied to agricultural land, forest, a public contact site, or a reclamation site:

(i) The person who prepares the bulk sewage sludge shall develop the following information and shall retain the information for five years.

(A) The concentration of each pollutant listed in Table 1 of §503.13 in the bulk sewage sludge.

(B) The following certification statement:

"I certify, under penalty of law, that the pathogen requirements in [insert either §503.32(a) or §503.32(b)] and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8) if one of those requirements is met] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements [and vector attraction reduction requirements] have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(C) A description of how the pathogen requirements in either §503.32 (a) or (b) are met.

(D) When one of the vector attraction requirements in §503.33 (b)(1) through (b)(8) is met, a description of how the vector attraction requirement is met.

(ii) The person who applies the bulk sewage sludge shall develop the following information, retain the information in §503.17 (a)(5)(ii)(A) through (a)(5)(ii)(G) indefinitely, and

retain the information in §503.17 (a)(5)(ii)(H) through (a)(5)(ii)(M) for five years.

(A) The location, by either street address or latitude and longitude, of each site on which bulk sewage sludge is applied.

(B) The number of hectares in each site on which bulk sewage sludge is applied.

(C) The date and time bulk sewage sludge is applied to each site.

(D) The cumulative amount of each pollutant (i.e., kilograms) listed in Table 2 of §503.13 in the bulk sewage sludge applied to each site, including the amount in §503.12(e)(2)(iii).

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

(F) The following certification statement:

> "I certify, under penalty of law, that the requirements to obtain information in §503.12(e)(2) have been met for each site on which bulk sewage sludge is applied. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the requirements to obtain information have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."

(G) A description of how the requirements to obtain information in §503.12(e)(2) are met.

(H) The following certification statement:

> "I certify, under penalty of law, that the management practices in §503.14 have been met for each site on which bulk sewage sludge is applied. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."

(I) A description of how the management practices in §503.14 are met for each site on which bulk sewage sludge is applied.

(J) The following certification statement when the bulk sewage sludge meets the Class B pathogen requirements in

§503.32(b):

> "I certify, under penalty of law, that the site restrictions in §503.32(b)(5) have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the site restrictions have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."

(K) A description of how the site restrictions in §503.32(b)(5) are met for each site on which Class B bulk sewage sludge is applied.

(L) The following certification statement when the vector attraction reduction requirement in either §503.33 (b)(9) or (b)(10) is met:

> "I certify, under penalty of law, that the vector attraction reduction requirement in [insert either §503.33(b)(9) or §503.33(b)(10)] has been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the vector attraction reduction requirement has been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(M) If the vector attraction reduction requirements in either §503.33 (b)(9) or (b)(10) are met, a description of how the requirements are met.
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(6) If the requirements in §503.13(a)(4)(ii) are met when sewage sludge is sold or given away in a bag or other container for application to the land, the person who prepares the sewage sludge that is sold or given away in a bag or other container shall develop the following information and shall retain the information for five years:

(i) The annual whole sludge application rate for the sewage sludge that does not cause the annual pollutant loading rates in Table 4 of §503.13 to be exceeded.

(ii) The concentration of each pollutant listed in Table 4 of §503.13 in the sewage sludge.

(iii) The following certification statement:

"I certify, under penalty of law, that the management practice in §503.14(e), the Class A pathogen requirement in §503.32(a), and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8)] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practice, pathogen requirements, and vector attraction reduction requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

(iv) A description of how the Class A pathogen requirements in §503.32(a) are met.

(v) A description of how one of the vector attraction requirements in §503.33 (b)(1) through (b)(8) is met.

(b) Domestic septage. When domestic septage is applied to agricultural land, forest, or a reclamation site, the person who applies the domestic septage shall develop the following information and shall retain the information for five years:

(1) The location, by either street address or latitude and longitude, of each site on which domestic septage is applied.

(2) The number of acres in each site on which domestic septage is applied.

(3) The date and time domestic septage is applied to each site.

(4) The nitrogen requirement for the crop or vegetation grown on each site during a 365 day period.

(5) The rate, in gallons per acre per 365 day period, at which domestic septage is applied to each site.

(6) The following certification statement:

"I certify, under penalty of law, that the pathogen requirements in [insert either §503.32(c)(1) or §503.32(c)(2)] and the vector attraction reduction requirements in [insert §503.33(b)(9), §503.33(b)(10), or §503.33(b)(12)] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements and vector attraction reduction requirements have been met. I am aware

that there are significant penalties for false certification including the possibility of fine and imprisonment."

(7) A description of how the pathogen requirements in either §503.33 (c)(1) or (c)(2) are met.

(8) A description of how the vector attraction reduction requirements in §503.33 (b)(9), (b)(10), or (b)(12) are met.
(Approved by the Office of Management and Budget under control number 2040-0157)

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§503.18 Reporting.

(a) Class I sludge management facilities, POTWs (as defined in 40 CFR 501.2) with a design flow rate equal to or greater than one million gallons per day, and POTWs that serve 10,000 people or more shall submit the following information to the permitting authority:

(1) The information in § 503.17(a), except the information in §503.17 (a)(3)(ii), (a)(4)(ii) and in (a)(5)(ii), for the appropriate requirements on February 19 of each year.

(2) The information in §503.17 (a)(5)(ii)(A) through (a)(5)(ii)(G) on [insert the month and day from the date of publication of this rule] of each year when 90 percent or more of any of the cumulative pollutant loading rates in Table 2 of §503.13 is reached at a site.
(Approved by the Office of Management and Budget under control number 2040-0157)

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§503.30 Scope.

(a) This subpart contains the requirements for a sewage sludge to be classified either Class A or Class B with respect to pathogens.

(b) This subpart contains the site restrictions for land on which a Class B sewage sludge is applied.

(c) This subpart contains the pathogen requirements for domestic septage applied to agricultural land, forest, or a reclamation site.

(d) This subpart contains alternative vector attraction reduction requirements for sewage sludge that is applied to the land or placed on a surface disposal site.

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§503.31 Special definitions.

(a) Aerobic digestion is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

(b) Anaerobic digestion is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

(c) Density of microorganisms is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

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

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

(f) Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

(g) pH means the logarithm of the reciprocal of the hydrogen ion concentration.

(h) Specific oxygen uptake rate (SOUR) is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in the sewage sludge.

(i) Total solids are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

(j) Unstabilized solids are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

(k) Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitos, or other organisms capable of transporting infectious agents.

(l) Volatile solids is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

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§503.32 Pathogens.

(a) Sewage sludge--Class A.

(1) The requirement in §503.32(a)(2) and the requirements in either §503.32(a)(3), (a)(4), (a)(5), (a)(6), (a)(7), or (a)(8) shall be met for a sewage sludge to be classified Class A with respect to pathogens.

(2) The Class A pathogen requirements in §503.32 (a)(3) through (a)(8) shall be met either prior to meeting or at the same time the vector attraction reduction requirements in §503.33, except the vector attraction reduction requirements in §503.33 (b)(6) through (b)(8), are met.

(3) Class A--Alternative 1.

(i) Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge shall be less than three Most Probable Number per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10 (b), (c), (e), or (f).

(ii) The temperature of the sewage sludge that is used or disposed shall be maintained at a specific value for a period of time.

(A) When the percent solids of the sewage sludge is seven percent or higher, the temperature of the sewage sludge shall be 50 degrees Celsius or higher; the time period shall be 20 minutes

or longer; and the temperature and time period shall be determined using equation (2), except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.
To view Figure, TAB to this link, then press ENTER. There will be a pause while the figure-viewing software loads.

(B) When the percent solids of the sewage sludge is seven percent or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 50 degrees Celsius or higher; the time period shall be 15 seconds or longer; and the temperature and time period shall be determined using equation (2).

(C) When the percent solids of the sewage sludge is less than seven percent and the time period is at least 15 seconds, but less than 30 minutes, the temperature and time period shall be determined using equation (2).

(D) When the percent solids of the sewage sludge is less than seven percent; the temperature of the sewage sludge is 50 degrees Celsius or higher; and the time period is 30 minutes or longer, the temperature and time period shall be determined using equation (3).
To view Figure, TAB to this link, then press ENTER. There will be a pause while the figure-viewing software loads.

(4) Class A--Alternative 2.

(i) Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge shall be less than three Most Probable Number per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10 (b), (c), (e), or (f).

(ii)(A) The pH of the sewage sludge that is used or disposed shall be raised to above 12 and shall remain above 12 for 72 hours.

(B) The temperature of the sewage sludge shall be above 52 degrees Celsius for 12 hours or longer during the period that the pH of the sewage sludge is above 12.

(C) At the end of the 72 hour period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air

dried to achieve a percent solids in the sewage sludge greater than 50 percent.

(5) Class A--Alternative 3.

(i) Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in sewage sludge shall be less than three Most Probable Number per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10 (b), (c), (e), or (f).

(ii)(A) The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses.

(B) When the density of enteric viruses in the sewage sludge prior to pathogen treatment is less than one Plaque-forming Unit per four grams of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses until the next monitoring episode for the sewage sludge.

(C) When the density of enteric viruses in the sewage sludge prior to pathogen treatment is equal to or greater than one Plaque-forming Unit per four grams of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses when the density of enteric viruses in the sewage sludge after pathogen treatment is less than one Plaque-forming Unit per four grams of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the enteric virus density requirement are documented.

(D) After the enteric virus reduction in paragraph (a)(5)(ii)(C) of this section is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to enteric viruses when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented in paragraph (a)(5)(ii)(C) of this section.

(iii)(A) The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains viable helminth ova.

(B) When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is less than one per four grams of total solids (dry weight basis), the sewage sludge is

Class A with respect to viable helminth ova until the next monitoring episode for the sewage sludge.

(C) When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is equal to or greater than one per four grams of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova when the density of viable helminth ova in the sewage sludge after pathogen treatment is less than one per four grams of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the viable helminth ova density requirement are documented.

(D) After the viable helminth ova reduction in paragraph (a)(5)(iii)(C) of this section is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to viable helminth ova when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented in paragraph (a)(5)(iii)(C) of this section.

(6) Class A--Alternative 4.

(i) Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge shall be less than three Most Probable Number per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10 (b), (c), (e), or (f).

(ii) The density of enteric viruses in the sewage sludge shall be less than one Plaque-forming Unit per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10 (b), (c), (e), or (f), unless otherwise specified by the permitting authority.

(iii) The density of viable helminth ova in the sewage sludge shall be less than one per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10 (b), (c), (e), or

(f), unless otherwise specified by the permitting authority.

(7) Class A--Alternative 5.

(i) Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella, sp. bacteria in the sewage sludge shall be less than three Most Probable Number per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10(b), (c), (e), or (f).

(ii) Sewage sludge that is used or disposed shall be treated in one of the Processes to Further Reduce Pathogens described in appendix B of this part.

(8) Class A--Alternative 6.

(i) Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella, sp. bacteria in the sewage sludge shall be less than three Most Probable Number per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10(b), (c), (e), or (f).

(ii) Sewage sludge that is used or disposed shall be treated in a process that is equivalent to a Process to Further Reduce Pathogens, as determined by the permitting authority.

(b) Sewage sludge--Class B.

(1)(i) The requirements in either §503.32(b)(2), (b)(3), or (b)(4) shall be met for a sewage sludge to be classified Class B with respect to pathogens.

(ii) The site restrictions in §503.32(b)(5) shall be met when sewage sludge that meets the Class B pathogen requirements in §503.32(b)(2), (b)(3), or (b)(4) is applied to the land.

(2) Class B--Alternative 1.

(i) Seven samples of the sewage sludge shall be collected at the time the sewage sludge is used or disposed.

(ii) The geometric mean of the density of fecal coliform in

the samples collected in paragraph (b)(2)(i) of this section shall be less than either 2,000,000 Most Probable Number per gram of total solids (dry weight basis) or 2,000,000 Colony Forming Units per gram of total solids (dry weight basis).

(3) Class B--Alternative 2. Sewage sludge that is used or disposed shall be treated in one of the Processes to Significantly Reduce Pathogens described in appendix B of this part.

(4) Class B--Alternative 3. Sewage sludge that is used or disposed shall be treated in a process that is equivalent to a Process to Significantly Reduce Pathogens, as determined by the permitting authority.

(5) Site Restrictions.

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

(ii) Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of sewage sludge when the sewage sludge remains on the land surface for four months or longer prior to incorporation into the soil.

(iii) Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of sewage sludge when the sewage sludge remains on the land surface for less than four months prior to incorporation into the soil.

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

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

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

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

(viii) Public access to land with a low potential for public exposure shall be restricted for 30 days after application of sewage sludge.
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(c) Domestic septage.

(1) The site restrictions in §503.32(b)(5) shall be met when domestic septage is applied to agricultural land, forest, or a reclamation site; or

(2) The pH of domestic septage applied to agricultural land, forest, or a reclamation site shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 30 minutes and the site restrictions in §503.32 (b)(5)(i) through (b)(5)(iv) shall be met.

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§503.33 Vector attraction reduction.

(a)(1) One of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(10) shall be met when bulk sewage sludge is applied to agricultural land, forest, a public contact site, or a reclamation site.

(2) One of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8) shall be met when bulk sewage sludge is applied to a lawn or a home garden.

(3) One of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8) shall be met when sewage sludge is sold or given away in a bag or other container for application to the land.

(4) One of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(11) shall be met when sewage sludge (other than domestic septage) is placed on an active sewage sludge unit.

(5) One of the vector attraction reduction requirements in §503.33 (b)(9), (b)(10), or (b)(12) shall be met when domestic septage is applied to agricultural land, forest, or a reclamation site and one of the vector attraction reduction requirements in §503.33 (b)(9) through (b)(12) shall be met when domestic septage is placed on an active sewage sludge unit.

(b)(1) The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38 percent (see calculation procedures in "Environmental Regulations and Technology--Control of Pathogens and Vector Attraction in Sewage Sludge", EPA-625/R-92/013, 1992, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268).

(2) When the 38 percent volatile solids reduction requirement in §503.33(b)(1) cannot be met for an anaerobically digested

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

(3) When the 38 percent volatile solids reduction requirement in §503.33(b)(1) cannot be met for an aerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 degrees Celsius. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 15 percent, vector attraction reduction is achieved.

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

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

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

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

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

(9)(i) Sewage sludge shall be injected below the surface of the land.

(ii) No significant amount of the sewage sludge shall be present on the land surface within one hour after the sewage

sludge is injected.

(iii) When the sewage sludge that is injected below the surface of the land is Class A with respect to pathogens, the sewage sludge shall be injected below the land surface within eight hours after being discharged from the pathogen treatment process.

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

(ii) When sewage sludge that is incorporated into the soil is Class A with respect to pathogens, the sewage sludge shall be applied to or placed on the land within eight hours after being discharged from the pathogen treatment process.

(11) Sewage sludge placed on an active sewage sludge unit shall be covered with soil or other material at the end of each operating day.

(12) The pH of domestic septage shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for 30 minutes.

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Subpart E--Incineration

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§503.40 Applicability.

(a) This subpart applies to a person who fires sewage sludge in a sewage sludge incinerator, to a sewage sludge incinerator, and to sewage sludge fired in a sewage sludge incinerator.

(b) This subpart applies to the exit gas from a sewage sludge incinerator stack.

(c) The management practice in §503.45(a), the frequency of monitoring requirement for total hydrocarbon concentration in § 503.46(b) and the recordkeeping requirements for total hydrocarbon concentration in §503.47(c) and (n) do not apply if the following conditions are met:

(1) The exit gas from a sewage sludge incinerator stack is monitored continuously for carbon monoxide.

(2) The monthly average concentration of carbon monoxide in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to seven percent oxygen, does not exceed 100 parts per million on a volumetric basis.

(3) The person who fires sewage sludge in a sewage sludge incinerator retains the following information for five years:

(i) The carbon monoxide concentrations in the exit gas; and

(ii) A calibration and maintenance log for the instrument used to measure the carbon monoxide concentration.

(4) Class I sludge management facilities, POTWs (as defined in 40 CFR 501.2) with a design flow rate equal to or greater than one million gallons per day, and POTWs that serve a population of 10,000 people or greater submit the monthly average carbon monoxide concentrations in the exit gas to the permitting authority on February 19 of each year.
[§503.40(c) added at 59 FR 9098, Feb. 25, 1994]

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§503.41 Special definitions.

(a) Air pollution control device is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

(b) Auxiliary fuel is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

(c) Control efficiency is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

(d) Dispersion factor is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

(e) Fluidized bed incinerator is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

(f) Hourly average is the arithmetic mean of all measurements, taken during an hour. At least two measurements must be taken during the hour.

(g) Incineration is the combustion of organic matter and

inorganic matter in sewage sludge by high temperatures in an enclosed device.

(h) Monthly average is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

(i) Risk specific concentration is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of the site where the sewage sludge incinerator is located.

(j) Sewage sludge feed rate is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

(k) Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

(l) Stack height is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR 51.100 (ii).

(m) Total hydrocarbons means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

(n) Wet electrostatic precipitator is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

(o) Wet scrubber is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

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§503.42 General requirements.

No person shall fire sewage sludge in a sewage sludge incinerator except in compliance with the requirements in this subpart.

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§503.43 Pollutant limits.

(a) Firing of sewage sludge in a sewage sludge incinerator shall not violate the requirements in the National Emission Standard for Beryllium in subpart C of 40 CFR part 61.

(b) Firing of sewage sludge in a sewage sludge incinerator shall not violate the requirements in the National Emission Standard for Mercury in subpart E of 40 CFR part 61.

(c) Pollutant limit--lead.

(1) The daily concentration of lead in sewage sludge fed to a sewage sludge incinerator shall not exceed the concentration calculated using Equation (4).
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(2)(i) When the sewage sludge stack height is 65 meters or less, the actual sewage sludge incinerator stack height shall be used in an air dispersion model specified by the permitting authority to determine the dispersion factor (DF) in equation (4).

(ii) When the sewage sludge incinerator stack height exceeds 65 meters, the creditable stack height shall be determined in accordance with 40 CFR 51.100(ii) and the creditable stack height shall be used in an air dispersion model specified by the permitting authority to determine the dispersion factor (DF) in equation (4).

(3) The control efficiency (CE) in equation (5) shall be determined from a performance test of the sewage sludge incinerator, as specified by the permitting authority.

(d) Pollutant limit--arsenic, cadmium, chromium, and nickel.

(1) The daily concentration for arsenic, cadmium, chromium, and nickel in sewage sludge fed to a sewage sludge incinerator each shall not exceed the concentration calculated using equation (5).
To view Figure, TAB to this link, then press ENTER. There will be a pause while the figure-viewing software loads.

(2) The risk specific concentrations for arsenic, cadmium, and nickel used in equation (6) shall be obtained from Table 1 of §503.43.

Table 1 of § 503.43.--Risk Specific Concentration Arsenic, Cadmium, and Nickel

Pollutant	Risk specific concentration (micrograms per cubic meter)
Arsenic	0.0
Cadmium	0.0
Nickel	2

(3) The risk specific concentration for chromium used in equation (5) shall be obtained from Table 2 of §503.43 or shall be calculated using equation (6), as specified by the permitting authority.

Table 2 of § 503.43.--Risk Specific Concentration--Chromium

Type of incinerator	Risk specific concentration (micrograms per cubic meter)
Fluidized bed with wet scrubber	0.
Fluidized bed with wet scrubber and wet electrostatic precipitator	0.
Other types with wet scrubber	0.0
Other types with wet scrubber and wet electrostatic precipitator	0.0

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(4)(i) When the sewage sludge incinerator stack height is equal to or less than 65 meters, the actual sewage sludge incinerator stack height shall be used in an air dispersion model, as specified by the permitting authority, to determine the dispersion factor (DF) in equation (5).

(ii) When the sewage sludge incinerator stack height is

greater than 65 meters, the creditable stack height shall be determined in accordance with 40 CFR 51.100(ii) and the creditable stack height shall be used in an air dispersion model, as specified by the permitting authority, to determine the dispersion factor (DF) in equation (5).

(5) The control efficiency (CE) in equation (5) shall be determined from a performance test of the sewage sludge incinerator, as specified by the permitting authority.

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§503.44 Operational standard--total hydrocarbons.

(a) The total hydrocarbons concentration in the exit gas from a sewage sludge incinerator shall be corrected for zero percent moisture by multiplying the measured total hydrocarbons concentration by the correction factor calculated using equation (7).
To view Figure, TAB to this link, then press ENTER. There will be a pause while the figure-viewing software loads.

(b) The total hydrocarbons concentration in the exit gas from a sewage sludge incinerator shall be corrected to seven percent oxygen by multiplying the measured total hydrocarbons concentration by the correction factor calculated using equation (8).
To view Figure, TAB to this link, then press ENTER. There will be a pause while the figure-viewing software loads.

(c) The monthly average concentration for total hydrocarbons in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture using the correction factor from equation (7) and to seven percent oxygen using the correction factor from equation (8), shall not exceed 100 parts per million on a volumetric basis when measured using the instrument required by §503.45(a).

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§503.45 Management practices.

(a)(1) An instrument that measures and records the total hydrocarbons concentration in the sewage sludge incinerator stack exit gas continuously shall be installed, calibrated, operated, and maintained for each sewage sludge incinerator, as specified by the permitting authority.

(2) The total hydrocarbons instrument shall employ a flame ionization detector; shall have a heated sampling line maintained at a temperature of 150 degrees Celsius or higher at all times; and shall be calibrated at least once every 24-hour operating

period using propane.

(b) An instrument that measures and records the oxygen concentration in the sewage sludge incinerator stack exit gas continuously shall be installed, calibrated, operated, and maintained for each sewage sludge incinerator, as specified by the permitting authority.

(c) An instrument that measures and records information used to determine the moisture content in the sewage sludge incinerator stack exit gas continuously shall be installed, calibrated, operated, and maintained for each sewage sludge incinerator, as specified by the permitting authority.

(d) An instrument that measures and records combustion temperatures continuously shall be installed, calibrated, operated, and maintained for each sewage sludge incinerator, as specified by the permitting authority.

(e) The maximum combustion temperature for a sewage sludge incinerator shall be specified by the permitting authority and shall be based on information obtained during the performance test of the sewage sludge incinerator to determine pollutant control efficiencies.

(f) The values for the operating parameters for the sewage sludge incinerator air pollution control device shall be specified by the permitting authority and shall be based on information obtained during the performance test of the sewage sludge incinerator to determine pollutant control efficiencies.

(g) Sewage sludge shall not be fired in a sewage sludge incinerator if it is likely to adversely affect a threatened or endangered species listed under section 4 of the Endangered Species Act or its designated critical habitat.

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§503.46 Frequency of monitoring.

(a) Sewage sludge.

(1) The frequency of monitoring for beryllium and mercury shall be specified by the permitting authority.

(2) The frequency of monitoring for arsenic, cadmium, chromium, lead, and nickel in sewage sludge fed to a sewage sludge incinerator shall be the frequency in Table 1 of §503.46.

Table 1 of § 503.46.--Frequency of Monitoring--Incineration

Amount of sewage sludge ↑1 (metric tons per 365 day period)	Frequency
Greater than zero but less than 290	Once per yea
Equal to or greater than 290 but less than 1,500	Once per quarter (fo times per year
Equal to or greater than 1,500 but less than 15,000	Once per 60 days (s times per year
Equal to or greater than 15,000	Once per month (12 tim per year

<FN1> Amount of sewage sludge fired in a sewage sludge incinerator (dry weight basis).

(3) After the sewage sludge has been monitored for two years at the frequency in Table 1 of §503.46, the permitting authority may reduce the frequency of monitoring for arsenic, cadmium, chromium, lead, and nickel, but in no case shall the frequency of monitoring be less than once per year when sewage sludge is fired in a sewage sludge incinerator.

(b) Total hydrocarbons, oxygen concentration, information to determine moisture content, and combustion temperatures.

The total hydrocarbons concentration and oxygen concentration in the exit gas from a sewage sludge incinerator stack, the information used to measure moisture content in the exit gas, and the combustion temperatures for the sewage sludge incinerator shall be monitored continuously.

(c) Air pollution control device operating parameters.

The frequency of monitoring for the sewage sludge incinerator air pollution control device operating parameters shall be specified by the permitting authority.
(Approved by the Office of Management and Budget under control number 2040-0157)

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§503.47 Recordkeeping.

(a) The person who fires sewage sludge in a sewage sludge incinerator shall develop the information in §503.47(b) through §503.47(n) and shall retain that information for five years.

(b) The concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the sewage sludge incinerator.

(c) The total hydrocarbons concentrations in the exit gas from the sewage sludge incinerator stack.

(d) Information that indicates the requirements in the National Emission Standard for beryllium in subpart C of 40 CFR part 61 are met.

(e) Information that indicates the requirements in the National Emission Standard for mercury in subpart E of 40 CFR part 61 are met.

(f) The combustion temperatures, including the maximum combustion temperature, for the sewage sludge incinerator.

(g) Values for the air pollution control device operating parameters.

(h) The oxygen concentration and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack.

(i) The sewage sludge feed rate.

(j) The stack height for the sewage sludge incinerator.

(k) The dispersion factor for the site where the sewage sludge incinerator is located.

(l) The control efficiency for lead, arsenic, cadmium, chromium, and nickel for each sewage sludge incinerator.

(m) The risk specific concentration for chromium calculated using equation (6), if applicable.

(n) A calibration and maintenance log for the instruments used to measure the total hydrocarbons concentration and oxygen concentration in the exit gas from the sewage sludge incinerator stack, the information needed to determine moisture content in the exit gas, and the combustion temperatures.
(Approved by the Office of Management and Budget under control number 2040-0157)

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§503.48 Reporting.

Class I sludge management facilities, POTWs (as defined in 40 CFR 501.2) with a design flow rate equal to or greater than one million gallons per day, and POTWs that serve a population of

10,000 people or greater shall submit the information in §503.47(b) through §503.47(h) to the permitting authority on February 19 of each year.
(Approved by the Office of Management and Budget under control number 2040-0157)

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Appendix A to Part 503--Procedure to Determine the Annual Whole Sludge Application Rate for a Sewage Sludge

Section 503.13(a)(4)(ii) requires that the product of the concentration for each pollutant listed in Table 4 of §503.13 in sewage sludge sold or given away in a bag or other container for application to the land and the annual whole sludge application rate (AWSAR) for the sewage sludge not cause the annual pollutant loading rate for the pollutant in Table 4 of §503.13 to be exceeded. This appendix contains the procedure used to determine the AWSAR for a sewage sludge that does not cause the annual pollutant loading rates in Table 4 of §503.13 to be exceeded.

The relationship between the annual pollutant loading rate (APLR) for a pollutant and the annual whole sludge application rate (AWSAR) for 1a sewage sludge is shown in equation (1).

APLR=CXAWSARX0.001 (1)

Where:

APLR=Annual pollutant loading rate in kilograms per hectare per 365 day period.

C=Pollutant concentration in milligrams, per kilogram of total solids (dry weight basis).

AWSAR=Annual whole sludge application rate in metric tons per hectare per 365 day period (dry weight basis).

0.001=A conversion factor.

To determine the AWSAR, equation (1) is rearranged into equation (2):
To view Figure, TAB to this link, then press ENTER. There will be a pause while the figure-viewing software loads.

The procedure used to determine the AWSAR for a sewage sludge is presented below.

Procedure:

1. Analyze a sample of the sewage sludge to determine the concentration for each of the pollutants listed in Table 4 of §503.13 in the sewage sludge.

2. Using the pollutant concentrations from Step 1 and the APLRs from Table 4 of §503.13, calculate an AWSAR for each pollutant using equation (2) above.

3. The AWSAR for the sewage sludge is the lowest AWSAR calculated in Step 2.

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Appendix B to Part 503--Pathogen Treatment Processes

A. Processes to Significantly Reduce Pathogens (PSRP)

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

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

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

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

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

B. Processes to Further Reduce Pathogens (PFRP)

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

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

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

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

4. Thermophilic aerobic digestion--Liquid sewage sludge is agitated with air or oxygen to maintain aerobic conditions and the mean cell residence time of the sewage sludge is 10 days at 55 to 60 degrees Celsius.

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

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

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