ENERGY AND ENVIRONMENT CABINET

Department for Environmental Protection

Division of Waste Management

(Amendment)

401 KAR 45:100. Landfarming and composting of special waste.

RELATES TO: KRS 224.1 [~~224.01~~], 224.10, 224.40, 224.50, 7 U.S.C. 136 et seq.

STATUTORY AUTHORITY: KRS 224.10-100, 224.40-100, 224.40-305, 224.50-760, 7 U.S.C. 136 et seq.

NECESSITY, FUNCTION, AND CONFORMITY: KRS Chapter 224 requires the cabinet to adopt administrative regulations for the management, processing, and disposal of special wastes. KRS 224.40-305 requires persons who establish, construct, operate, maintain or permit the use of a waste site or facility to obtain a permit. [~~This chapter establishes the permitting standards for special waste sites or facilities, and the standards applicable to all special waste sites or facilities.~~] This administrative regulation sets forth requirements for special waste landfarming sites or facilities and special waste composting sites or facilities but does not include landfarming of biosolids.

Section 1. Applicability. (1) The requirements in this administrative regulation apply to any person disposing of or treating special waste by:

(a) Composting; or

(b) Landfarming of special wastes that are not biosolids. [~~landfarming or composting~~].

(2) Landfarming of biosolids shall be regulated in accordance with 401 KAR 45:105

Section 2. Classifications of Special Waste Landfarming and Composting Sites or Facilities. A special waste landfarming or composting site or facility is classified as a Type A or Type B facility after the cabinet reviews the application filed pursuant 401 KAR 45:030 Section 8(1)(b). [~~Notice of Intent filed pursuant to Section 3 of this administrative regulation~~]. The classification is based on the type and quantity of sludge or other special waste to be accepted at the landfarm or composting site or facility. The following classifications are established:

(1) A Type A landfarm or composting facility is a site or facility that accepts Type A [~~wastewater treatment~~] sludge or other special waste. Type A [~~wastewater treatment~~] sludge is sludge with the following parameters:

Cadmium	Greater than 10 mg/kg;
Copper	Greater than 450 mg/kg;
Lead	Greater than 250 mg/kg;
Nickel	Greater than 50 mg/kg;
Zinc	Greater than 900 mg/kg.

(2) A Type B landfarm or composting facility is a site or facility that accepts Type B [~~wastewater treatment~~] sludge or other special waste. Type B [~~wastewater~~] sludge is sludge with the following parameters:

Cadmium	Less than or equal to 10 mg/kg;
Copper	Less than or equal to 450 mg/kg;
Lead	Less than or equal to 250 mg/kg;
Nickel	Less than or equal to 50 mg/kg;

Zinc	Less than or equal to 900 mg/kg.

The maximum amount of [~~wastewater treatment~~] sludge that may be processed by a Type B landfarm or composting site or facility is 250,000 gallons or 250 tons (dewatered) per calendar year. If the owner or operator is processing Type B sludge and exceeds this volume limitation, then the site or facility shall be classified as a Type A landfarm or composting facility. [~~Unless otherwise required by the cabinet, an applicant for a Type B landfarming or composting permit shall be exempt from the requirements of publishing a public notice, the posting of financial assurance, the monitoring of groundwater, and postclosure care.~~]

(3) One (1) time only disposal. An applicant for one (1) time only disposal of special waste by landfarming or composting methods shall submit an application for a Type B landfarming or composting facility [~~unless otherwise directed by the cabinet~~].

(4) An application to landfarm biosolids shall meet the requirements of 401 KAR 45:105. [~~Other special waste. An application to landfarm or compost special waste other than municipal wastewater treatment sludge shall be classified using the parameters set forth in subsections (1) and (2) of this section and additional parameters based upon the source, chemical and physical characteristics of the waste, the volume of waste, and the waste potential for adverse impact on human health or the environment. After review of the notice of intent filed pursuant to Section 3 of this administrative regulation, the cabinet shall classify the site or facility as either a Type A or Type B landfarming or composting facility. The applicant shall comply with all requirements in this chapter for the designated type of landfarming or composting facility.~~]

(5) A facility composting a Type A [~~wastewater~~] sludge may, at the discretion of the cabinet, be classified as a Type B facility depending upon the volume of special waste received, methods of composting and siting considerations.

(6) A special waste landfarm or composting site or facilities classification under this section shall be reevaluated based upon the annual analyses submitted under Section 6(19) or 9(5) of this administrative regulation. The cabinet may reassign a landfarming or composting site or facility classification based on this submittal and require the owner or operator of the landfarm or composting site or facility to modify the permit accordingly.

(7) (a) Classification under this section shall be based on the average concentration of [~~these~~] metals, listed in subsection (1) and (2) of this section, in a minimum of two (2) consecutive samples taken no closer than thirty (30) days apart. Metal concentration values shall be determined on a dry weight basis. Analysis shall be accomplished by determining the [~~heavy~~] metal concentration of the undried sample (wet weight) and converting to dry weight using percent solids. The following formula shall be used: mg/L or mg/kg (wet weight) divided by (percent solids/100) = mg/kg dry weight.

(b) A single metal parameter shall be sufficient to require a sludge to be classified as Type A.

Section 3. Application Procedure for a Special Waste Landfarming or Composting Permit.

(1) Notice of intent to apply. An applicant for a special waste landfarming or composting permit shall submit a notice of intent to apply as required under Section 8(1)(b) or (c) of 401 KAR 45:030. Upon review of the notice of intent to apply, the cabinet shall notify the applicant of the special waste classification determination and designate the landfarming or composting facility as either a Type A or Type B facility. An applicant may be exempt from submitting a notice of intent prior to submitting the permit application required in subsection (2) of this section if the applicant is classifying itself as a Type A facility. However, the applicant is required to submit a notice of intent form with the permit application specified in subsection (2) of this section.

(2) (a) Contents of landfarming or composting permit application. Upon determination of a special waste classification, A person shall submit the designated permit application for a special waste landfarming or a composting facility as specified in Section 8(1)(b) or (c) of 401 KAR 45:030 to the cabinet.

(b) A landfarming application may include parcels of land that are not located contiguously.

(3) (a) An applicant for a landfarming or composting facility permit shall comply with applicable requirements [~~for a formal permit as specified~~] in 401 KAR 45:030 when applying for a formal permit.

(b) An applicant for a Type A landfarming or composting facility shall also comply with the:

1. Public notice requirement in 401 KAR 45:050;[~~, the~~]

2. Financial assurance requirements of 401 KAR 45:080; [~~, the~~]

3. Surface and groundwater requirements of 401 KAR 45:160;[~~,~~] and [~~the~~]

4. Postclosure requirements of Section 4 of this administrative regulation.

(4) (a) A groundwater monitoring plan pursuant to 401 KAR 45:160 shall be required for Type A facilities.

(b) Upon examination by the cabinet of the facility specific geologic setting [~~geological aspects~~] and any variance requests [~~other relevant factors~~] in the permit application [~~by the cabinet~~], the cabinet may require the applicant for a Type B facility [~~may be required~~] to prepare a groundwater monitoring plan to include location and specifications of wells, monitoring parameters and monitoring schedules in accordance with 401 KAR 45:160. [~~This plan shall be required for Type A landfarms or composting facilities.~~]

(5) [~~The cabinet shall not allow landfarming or composting practices that may present a threat to human health or the environment.~~] The cabinet shall base a decision to approve or deny a permit [~~as to the land~~] application for a special waste landfarming or composting facility based on the suitability of the facility, the [~~a particular~~] special waste's [~~waste upon the~~] ability [~~of the waste~~] to biodegrade in the environment, the potential for the special waste to be managed in a manner consistent with 401 KAR 30:031, the likelihood that special waste constituents will contaminate surface water or groundwater, the potential for nuisances from odors or unsightly conditions, and the potential for the special waste to harm human health or the environment.

Section 4. Closure and Postclosure of Landfarming and Composting Facilities.

(1) An owner or operator permanently ceasing to accept special waste at a Type A or Type B special waste landfarming or composting site or facility shall submit to the cabinet a closure report that includes:

(a) The results of final soil samples taken in accordance with the construction/operation permit within eighteen (18) months following the last application of special waste;

(b) 1. Landfarming sites or facilities shall submit a historical summary of all landfarming, by subplot, showing:

a. The allowable and actual rates of special waste application;[~~,~~]

b. Heavy metals and nitrogen; and[~~,~~]

c. Incorporating the annual landfarming review required by [~~as set forth in~~] Section 6(19) of this administrative regulation; or

2. Composting sites or facilities shall prepare a historical summary of composting activities at the site incorporating the annual composting review report required [~~as set forth in~~] in Section 9(5) of this administrative regulation.

(c) A certification from the owner or operator that the site or facility is closed and is in compliance with 401 KAR 30:031; and

[~~(d) Any additional information required by the cabinet in the original landfarming or composting permit.~~]

(2) The cabinet shall review the closure report and determine whether any additional monitoring or information shall be required to assure compliance of the site or facility with 401 KAR 30:031. If the site is not in conformance with 401 KAR 30:031 or the requirements of this chapter, the cabinet may take appropriate enforcement actions for violations of this chapter or KRS Chapter 224.

(3) (a) A two (2) year postclosure monitoring maintenance period commencing on the first day after the facility permanently ceases accepting special waste is required for all Type A landfarming and composting facilities and for any other landfarming or composting facility required to conduct groundwater or surface water monitoring pursuant to [~~under~~] 401 KAR 45:160.

(b) During the postclosure monitoring and maintenance period, the owner or operator shall conduct groundwater and surface monitoring as required by:

1. 401 KAR 45:160;[,]

2. The facility's approved groundwater and surface water monitoring plans;[,] and

3. The terms of the facility's special waste permit.

(4) (a) At the conclusion of the two (2) year postclosure monitoring and maintenance period, the owner or operator shall submit a certification that postclosure is complete and that the site or facility is in compliance with 401 KAR 30:031 and the terms of this chapter.

(b) The cabinet shall review the postclosure certification and if no additional monitoring or information is required and the site or facility is not subject to any enforcement actions for

violations of this chapter or KRS Chapter 224, then the cabinet shall accept the owner's or operator's certification of postclosure.

(5) Upon acceptance of certification of postclosure, the cabinet shall release the financial assurance bond.

(6) The two (2) year postclosure monitoring and maintenance period may be extended if groundwater contamination as specified in Section 5 of 401 KAR 45:160 is documented and the owner or operator is required to submit a groundwater assessment plan.

(7) Any necessary environmental remediation steps or corrective action for groundwater contamination required under 401 KAR 45:160 shall be performed before the special waste landfarm or composting site or facility postclosure is certified as complete and financial assurance is released.

Section 5. Siting Requirements for Landfarming. Special waste landfarming sites or facilities shall comply with the following siting requirements:

(1) Special waste shall not be applied in the 100-year floodplain unless the special waste is injected or incorporated;

(2) Land application units shall have a minimum of four (4) feet of soil between the soil surface and both the seasonal high water table and bedrock;

(3) Special waste shall not be applied on soils with a permeability rate greater than six (6) inches per hour or less than two-tenths (0.2) inches per hour; and

(4) Land application units shall not be located on land with a slope greater than fifteen (15) percent.

(5) All landfarming facilities shall comply with 401 KAR 30:031 and shall maintain the following buffer zones:

Required Buffer Zones Minimum Distance in Feet [~~Feed~~] From the Boundary of the Application Zone		
Structure or Object	Subsurface Injection or Incorporation	Surface Application
Residences & occupied Buildings	200	300
Water Well	200	300
Surface Water Body	200	300
Karst Feature	200	300
Perennial Stream	200	300
Intermittent Stream	30	50
Ephemeral Stream	30	50
Property Line	30	50
Public Road	30	50

Section 6. Operating Requirements for Special Waste Landfarming Facilities. Special waste landfarming sites or facilities shall comply with the following:

(1) Prior to applying sludges to the land, all sludges shall be processed to significantly reduce pathogens as specified in Section 11 of this administrative regulation.

(2) An operator certified in accordance with 401 KAR 45:090 shall be available at the landfarming site during special waste application. All sludge applications shall be accomplished under the direction of a certified landfarming operator.

(3) When surface application is used in conjunction with soil incorporation methods, incorporation shall occur within forty-eight (48) hours of sludge application.

(4) Surface application without incorporation into the soil shall not be used on land without established vegetative cover or crop residue of at least seventy-five (75) percent.

(5) No hazardous wastes or mixtures of hazardous and solid waste shall be disposed at, discharged to, or placed in a landfarming site.

(6) No toxic wastes or mixtures of toxic and nontoxic wastes regulated under 7 USC 136 et seq. (the Toxic Substances Control Act) shall be disposed at, discharged to, or placed in a landfarming site.

(7) The following agricultural use restrictions shall apply:

(a) Land spreading shall not occur on land where leafy vegetables or root crops for human consumption will be harvested within twelve (12) months;

(b) Land spreading shall not occur on land where crops for direct human consumption will be harvested within two (2) months;

(c) Dairy grazing shall be prohibited for six (6) months after land spreading. Other livestock grazing shall be prohibited for three (3) months;

(d) The [~~If the~~] annual application rate of cadmium shall meet the requirements in 401 KAR 30:031 Section 6 [~~exceeds 0.44 pound per acre, food chain crops shall not be utilized in the cropping season following land application~~]; and

(e) Special waste shall not be land spread where tobacco is to be harvested within five (5) years of special waste application, if the annual application rate of cadmium from the sludge exceeds 0.44 pound per acre at any time during the life of the site.

(8) The general public shall be restricted from the application zone for a period of twelve (12) months after each application, unless the special waste has undergone a process to further reduce pathogens in accordance with Section 12 of this administrative regulation.

(9) Special waste shall not be land spread on frozen, snow-covered, ice-covered, or water-saturated soil, or during any precipitation event.

(10) No special waste shall be applied in excess of schedules and rates of special waste application established in subsection (23) of this section and Section 7 of this administrative regulation. [~~approved by the cabinet~~].

(11) No raw or unstabilized special waste shall be landfarmed. The permittee shall maintain compliance with the ambient air quality standard for odor, as set forth in 401 KAR 53:010.

(12) The amount of any single surface application shall not be greater than an average one-half (1/2) inch in thickness.

(13) High pressure spray irrigation of sludge which produces aerosols shall be prohibited.

(14) Subplots shall be staked or otherwise clearly marked in the field.

(15) The owner or operator shall have a sign located at the entrance to the landfarming facility. The sign shall indicate the source and type of special waste and the type of operation, the name of operator, the permit number, the contact person and the emergency telephone number.

(16) Surface water or special waste ponding within the application zone shall be prohibited.

(17) Surface run-off and run-on shall be controlled to minimize the possibility of applied special waste contaminating nearby surface water or adjacent land areas.

(18) Records of all landfarming activities shall be maintained throughout the operation of the site on the form entitled Annual Landfarming Review, DEP 7048 [~~forms provided by the cabinet throughout the operation of the site~~]. The records shall at a minimum contain the schedules and rates of special waste application and all laboratory analyses. Records shall be made available to the cabinet upon request.

(19) Each landfarming owner or operator shall submit an annual report of landfarming activities to the cabinet by March 15th for the landfarming activities conducted the previous calendar year [~~sixty (60) days prior to the anniversary date of the permit issuance~~]. The report shall be submitted on form DEP 7048 entitled "Annual Landfarming Review" [~~(November 2016)~~]. ~~The requirements contained in the annual landfarming review are incorporated in this administrative regulation by reference. The review may be obtained from the Division of Waste Management, 300 Sower Boulevard, Frankfort, Kentucky 40601, (502) 564-6716, between the hours of 8 a.m. to 4:30 p.m., Eastern Time, Monday through Friday, or from the Web site at eec.ky.gov/environmental-protection/waste.~~]

(20) Operational monitoring shall be performed on the following schedule:

(a) Soil shall be sampled annually in accordance with the soil monitoring plan in the approved permit application; and

(b) Special waste from [~~municipal wastewater treatment,~~] municipal water treatment facilities shall be sampled in accordance with the following table, or more frequently if required by the cabinet. Other special waste shall be sampled in accordance with a schedule approved by the cabinet. Special waste shall be analyzed for solids content, pH, ammonium nitrogen (NH4-N), nitrate nitrogen (NO3-N), total Kjeldahl nitrogen, total phosphorus, total potassium, PCBs, chromium, copper, zinc, nickel, lead, and cadmium. Laboratory analysis results shall be reported in milligrams per kilogram wet and dry weight.

Required Sampling Schedule	
Design Treatment Capacity(gallons per day)	Samples Per Year
Less than 1,000,000	2
1,000,001 - 10,000,000	4

More than 10,000,000	12

(21) Soil pH shall be maintained at six and five-tenths (6.5) or greater during crop production, hay production, or grazing.

(22) Special waste containing concentrations of PCBs greater than one (1) milligram per kilogram shall not be landfarmed.

(23) The maximum amount of metals from special waste that may be applied during the life of the site shall be based upon the cation exchange capacity (CEC) of the soil and shall be as follows:

Maximum Amount of Metals Cation Exchange Capacity (meq/100g)			
Parameter	0-5	5-15	15+
Lead	500 lbs/ac.	1000 lbs/ac.	2000 lbs/ac.
Cadmium	4.46 lbs/ac.	8.92 lbs/ac.	17.84 lbs/ac.
Copper	125 lbs/ac.	250 lbs/ac.	500 lbs/ac.
Nickel	50 lbs/ac.	100 lbs/ac.	200 lbs/ac.
Zinc	250 lbs/ac.	500 lbs/ac.	1000 lbs/ac.

The following equation shall be used to determine the maximum number of tons of <u>special</u> waste per acre that may be land spread without exceeding the above limitations:

$$\text{Tons waste / acre} = \frac{\text{(lbs per acre for each parameter Table 4)}}{\text{(dry mg / kg of metal in waste sample) x 0.002}}$$

(24) The amount of nitrogen land spread shall not exceed the nitrogen utilization rate of the vegetative cover in the application zone.

(25)<u>(a)</u> If the laboratory analyses and calculations to determine quantities of metals applied to the soil discloses that the cumulative concentration of a contaminant is above the maximum

level permitted under subsection (23) of this section, a written notice shall be given to the cabinet within ten (10) days of receipt of the monitoring results. The owner or operator shall cease further landfarming and submit to the cabinet within forty-five (45) days a report describing proposed corrective actions to be taken by the owner or operator.

(b) A notice shall be recorded on the property deed within forty-five (45) days of receipt of the monitoring results stating that the property has received special waste at concentrations exceeding permitted levels, and that food chain crops shall not be grown due to possible health hazards.

(26) In addition to the operating requirements in this section, the owner or operator who is landfarming Type A sludge shall sample surface water quarterly.

(a) Parameters to be monitored shall include:

1. pH;[,]

2. Ammonium nitrogen (NH4-N);[,]

3. Fecal coliform bacteria;[,]

4. Chromium;[,]

5. Biological oxygen demand;[,]

6. Total organic carbon;[,] and

7. Total dissolved solids.

(b) A minimum of one (1) upgradient and one (1) downgradient sampling point shall be required.

(27) Owners and operators of Type A landfarming or composting facilities and all Type B facilities that have documented contamination [~~other designated facilities~~] shall conduct groundwater monitoring in accordance with 401 KAR 45:160.

(28) If [~~heavy~~] metal applications exceed the amounts listed in subsection (23) of this section, the owner or operator shall immediately commence closure of the facility and [~~immediately~~] submit a closure report within 45 days containing the information required by Section 4(1) of this administrative regulation. The report shall also include a copy of the notice in the deed advising all future landowners in perpetuity that [~~heavy~~] metal concentrations exceed those allowed by this administrative regulation.

(29) Landfarming sites and facilities shall comply with all requirements set forth in 401 KAR 45:140.

Section 7. Application Rates for Landfarming Sites or Facilities.

(1) The annual application rate shall be the lesser of the two application rates [~~as~~] determined for cadmium and for nitrogen utilization.

(2) The applicant shall determine the percent of available organic nitrogen in the special waste using the following calculation: Percent available organic N = (percent total N) - (percent NH4-N) - (percent NO3-N).

(3) The applicant shall determine the amount of nitrogen that shall be available for plant uptake at the landfarming site using one (1) of the following calculations depending on the application method:

(a) Incorporation: Lbs available N/ton = (percent NH4-N x 20) + (percent NH3-N x 20) + (percent available organic N x 4).

(b) Surface application: Lbs available N/ton = (percent NH4-N x 10) + (percent NO3-N x 20) + (percent available organic N x 4).

$$\text{Tons/acre} = \frac{\text{Nitrogen utilization rate of the vegetative cover}}{\text{Lbs available organic N/ton}}$$

(4) The annual application rate of cadmium from special waste shall not exceed 0.44 pound per acre. The annual application rate shall be determined using the following calculation:

$$\text{Tons/acre} = \frac{\text{pounds of allowable cadmium per acre}}{(\text{mg per kg of cadmium in sample}) \times 0.002}$$

Section 8. Sludge Giveaway Program. A municipal water [~~or wastewater treatment~~] sludge generator may give away sludge equal to or less than the metal concentration limitation specified in Section 2(2) of this administrative regulation to persons for subsequent use as a soil conditioner. This program shall be operated under a registered permit-by-rule in accordance with this administrative regulation and 401 KAR 45:070. The maximum amount of sludge that may be distributed annually to any person is limited to 2000 pounds (dry weight).

(1) During operation of the giveaway program the generator shall:

(a) Maintain a list of names and addresses of all persons receiving the sludge;

(b) Submit annually to the cabinet the sludge analysis performed in accordance with the schedule contained in Section 6(20) of this administrative regulation, and a copy of the distribution log;

(c) Provide to persons receiving <u>special</u> waste, copies of the sludge analyses and a brochure, approved by the cabinet, explaining the proper procedures to be utilized in the landfarming of sludge; and

(d) Use a process to significantly reduce pathogens in accordance with Section 11 of this administrative regulation.

(2) Unless the sludge has undergone a process to further reduce pathogens in accordance with Section 12 of this administrative regulation, it shall not be used in a manner likely to allow direct human contact for a period of twelve (12) months from the date of application.

(3) The sludge generator shall maintain another approved means of sludge disposal.

Section 9. Operating Requirements for Composting Facilities. Composting facilities shall comply with the following:

(1) Within one (1) month of receiving any materials that do not meet standards for land application established in the permit or by this administrative regulation, the owner or operator shall dispose of the material in a facility permitted to accept the waste or special waste [~~waste management facility any materials that do not meet standards for distribution within one (1) month of such a determination~~];

(2) After the compost has completed the curing process, at least seventy-five (75) percent of the compost shall be distributed within one (1) year;

(3) Use one (1) or more processes to further reduce pathogens in accordance with Section 12 of this administrative regulation;

(4) Process and store compost on an impermeable pad, or provide information on soils at the facility and a groundwater quality assurance plan;

(5) Each composting owner or operator shall submit an annual report for the previous calendar year's activities to the cabinet by March 1st of each year [~~sixty (60) days prior to the anniversary date of the permit issuance~~]. The report shall be submitted on form DEP 7048A entitled "Annual Composting Review" ~~(November 2016). The requirements contained in the annual composting review are incorporated in this administrative regulation by reference. The review may be obtained from the Division of Waste Management, 300 Sower Boulevard, Frankfort, Kentucky 40601 (502) 564-6716, between the hours of 8 a.m. to 4:30 p.m., Eastern Time, Monday through Friday, or from the Web site at eec.ky.gov/environmental protection/waste~~]; and

(6) Composting sites or facilities shall comply with all requirements set forth in 401 KAR 45:140.

Section 10. Usage of Composted and Treated Special Waste.

(1) Composted special waste and treated special waste that has undergone additional treatment to [~~a level of a process to~~] further reduce pathogens, as described in Section 12 of this administrative regulation, shall meet the following criteria in order to be distributed or marketed to the general public:

(a) The final product shall not exceed Type B metals concentration limits as specified in Section 2(1)(b) of this administrative regulation.

(b) A brochure shall accompany all compost or treated special waste sold or given away. The brochure shall be subject to cabinet approval and shall contain, at a minimum, the following information:

1. The source or sources of the original material;

2. An [~~A recent~~] analysis of the parameters in paragraph (b) of Section 6(20) within six (6) months of the finished product; and

3. Suggested uses and application rates for the product; and

(c) The quantity distributed shall be limited to fifty (50) tons per person per year for composted special waste and fifteen (15) tons per person per year for treated special waste.

(2) A final product that exceeds metals concentration limits or exceeds the quantity limitation set forth in subsection (1) of this section shall be disposed or distributed in accordance with the facility's permit [~~or otherwise directed by the cabinet~~].

Section 11. Processes to Significantly Reduce Pathogens. Processes to significantly reduce pathogens shall include one (1) or more of the following:

(1) Aerobic digestion. The process shall be conducted by agitating sludge with air or oxygen to maintain aerobic conditions at residence times ranging from sixty (60) days at fifteen degrees Celsius (15° C) to forty (40) days at twenty degrees Celsius (20° C), with a volatile solids reduction of at least thirty-eight (38) percent.

(2) Air drying. Liquid sludge shall be allowed to drain or dry on under-drained sand beds, or paved or unpaved basins. Sludge in paved or unpaved basins [~~in which the sludge~~] shall be at a depth of nine (9) inches. Air drying shall be conducted for a minimum of three (3) months, with two (2) months of temperatures which average on a daily basis above zero degrees Celsius (0° C).

(3) Anaerobic digestion. The process shall be conducted in the absence of air at residence times ranging from sixty (60) days at twenty degrees Celsius (20° C) to fifteen (15) days at thirty-five degrees Celsius (35° C) to fifty-five degrees Celsius (55° C), with a volatile solids reduction of at least thirty-eight (38) percent.

(4) Composting. When using the within-vessel, static aerated pile or windrow composting methods, the special waste shall be maintained at minimum operating conditions of forty degrees Celsius (40° C) for five (5) days. For four (4) hours during this period, the temperature shall exceed fifty-five degrees Celsius (55° C).

(5) Lime stabilization. Sufficient lime shall be added to produce a pH of twelve (12) for two (2) hours [~~of contact time~~].

[~~(6) Other methods. Other methods or operating conditions may be acceptable if pathogens and vector attraction of the waste (volatile solids) are reduced to an extent equivalent to the reduction achieved by any of the above methods.~~]

Section 12. Processes to Further Reduce Pathogens. Processes to further reduce pathogens shall include one (1) or more of the following:

(1)(a) Composting.

1. Using the within-vessel composting method, the special waste shall be maintained at operating conditions of fifty-five degrees Celsius (55° C) or greater for three (3) days.

2. Using the static aerated pile composting method, the special waste shall be maintained at operating conditions of fifty-five degrees Celsius (55° C) or greater for three (3) days.

3. Using the windrow composting method, the special waste shall:

a. Attain a temperature of fifty-five degrees Celsius (55° C) or greater for at least fifteen (15) days during the composting period; and [~~. Also,~~]

b. During the high temperature period, there shall be a minimum of five (5) turnings of the windrow.

(b) 1. Heat drying. Dewatered sludge cake shall be dried by contact with hot gases, and moisture content shall be reduced to ten (10) percent or lower.

2. Sludge particles shall reach temperatures in excess of eighty degrees Celsius (80° C), or the wet bulb temperature of the gas stream in contact with the sludge at the point when it leaves the dryer shall be in excess of eighty degrees Celsius (80° C).

(c) Heat treatment. Liquid sludge shall be heated to 180 degrees Celsius (180oC) for thirty (30) minutes.

(d) Thermophilic aerobic digestion. Liquid sludge shall be agitated with air or oxygen to maintain aerobic conditions at residence times of ten (10) days at fifty-five to sixty degrees Celsius (55° - 60° C), with a volatile solids reduction of at least thirty-eight (38) percent.

[~~(e) Other methods. Other methods or operating conditions may be acceptable if pathogens and vector attraction of the waste (volatile solids) are reduced to an extent equivalent to the reduction achieved by any of the methods in paragraphs (a) to (d) of this subsection.~~]

(2) Any of the processes described in paragraphs (a) to (d) of this subsection shall be added to the processes in Section 11. [~~, if added to the processes described in Section 11 of this administrative regulation, further reduce pathogens. Because~~] The processes listed in paragraphs (a) to (d) of this subsection, on their own, do not reduce the attraction of disease vectors but are meant to be added to the processes in Section 11. The following processes shall be an additional method of reducing pathogens: [~~, they are only add-on in nature:~~]

(a) Beta ray irradiation. Sludge shall be irradiated with beta rays from an accelerator at dosages of at least one (1.0) megarad at room temperature, approximately twenty degrees Celsius (20° C).

(b) Gamma ray irradiation. Sludge shall be irradiated with gamma rays from certain isotopes, such as Cobalt-60 and Cesium-137, at dosages of at least one (1.0) megarad at room temperature, approximately twenty degrees Celsius (20° C).

(c) Pasteurization. Sludge shall be maintained for at least thirty (30) minutes at a minimum temperature of seventy degrees Celsius (70° C).

[~~(d) Other methods. Other methods or operating conditions may be acceptable if pathogens are reduced to an extent equivalent to the reduction achieved by any of the methods described in paragraphs (a) to (c) of this subsection.~~]

Section 13. Incorporation by Reference.

(1) The following material is incorporated by reference:

(a) "Annual Landfarming Review", Form DEP 7048, (February 2023); and

(b) "Annual Composting Review", Forms DEP 7048A, (February 2023).

(2) This material may be inspected, copied, or obtained, subject to applicable copyright law, at the Division of Waste Management, 300 Sower Boulevard, 2nd Floor, Frankfort, Kentucky 40601, Monday through Friday, 8:00 a.m. to 4:30 p.m.

(3) This material may also be obtained on the division's Web site at eec.ky.gov/environmental-protection/waste.

401 KAR 45:100 approved for filing.
Pages (1-22)

Rebecca Goodman, Secretary
Energy and Environment Cabinet

08/24/2023
Date

PUBLIC HEARING AND PUBLIC COMMENT PERIOD: A public hearing on this administrative regulation shall be held on November 21, 2023, at 5:30 p.m. (Eastern Time) in Training Room C of the Energy and Environment Cabinet at 300 Sower Blvd, Frankfort, Kentucky 40601. The public hearing can also be accessed at the following website address https://us02web.zoom.us/j/86146637051 or can be accessed toll free by telephone: 833-548-0282 using Meeting ID code: 861 4663 7051 and Passcode 139147. Please note that registration is required to participate in this hearing. You must either email your name and mailing address to Michael.Mullins@ky.gov or mail this information to Michael Mullins, Department for Environmental Protection, Office of the Commissioner, 300 Sower Boulevard, Frankfort, Kentucky 40601. Please put "Land Application of Biosolids" as the subject line, and state in the body of the message if you plan to speak during the hearing. Individuals interested in being heard at this hearing shall notify this agency in writing by five workdays prior to the hearing, of their intent to attend. If no notification of intent to attend the hearing is received by that date, the hearing may be canceled. This hearing is open to the public. Any person who wishes to be heard will be given an opportunity to comment on the proposed administrative regulation. A transcript of the public hearing will not be made unless a written request for a transcript is made. If you do not wish to be heard at the public hearing, you may submit written comments on the proposed administrative regulation. Written comments shall be accepted through November 30, 2023. Send written notification of intent to be heard at the public hearing or written comments on the proposed administrative regulation to the contact person.

CONTACT PERSON: Michael Mullins, Env Scientist Consultant II, 300 Sower Blvd, Frankfort, Kentucky 40601, phone: (502) 782-6720, fax: (502) 564-4245, email: michael.mullins@ky.gov.

REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

401 KAR 45:100
Contact Person: Michael Mullins
Phone: (502) 782-6720
Email: michael.mullins@ky.gov

(1) Provide a brief summary of:

(a) What this administrative regulation does: This administrative regulation establishes requirements for composting and land application of sludges.

(b) The necessity of this administrative regulation: This administrative regulation is necessary for the regulated community to know the requirements for the composting and land applying sludges.

(c) How this administrative regulation conforms to the content of the authorizing statutes: The authorizing statutes provides the department the authority to promulgate administrative regulations and administer special waste programs. Sludges from water and wastewater treatment plants as well as some other sludges are special wastes pursuant to KRS 224.50-760. This administrative regulation establishes requirements for composting and land applying those materials.

(d) How this administrative regulation currently assists or will assist in the effective administration of the statutes: This administrative regulation assists in the administration of the statutes by providing the regulated community on the proper composting and land application procedures and requirements.

(2) If this is an amendment to an existing administrative regulation, provide a brief summary of:

(a) How the amendment will change this existing administrative regulation: The amendment clarifies that the processes that are established in this administrative regulation do not apply to wastewater treatment plant sludges (biosolids). The amendments make other corrections to streamline the process and comply with the drafting requirements of KRS Chapter 13A.

(b) The necessity of the amendment to this administrative regulation: This amendment is necessary to correctly direct interested individuals to 401 KAR 45:105 where the information related to the management of biosolids is located.

(c) How the amendment conforms to the content of the authorizing statutes: The amendment conforms to the authorizing statutes by clarifying that information related to biosolids as required by KRS 224.50-765 is located in 401 KAR 45:105. The remaining changes streamline the current process for sludges that do not originate from wastewater treatment plants.

(d) How the amendment will assist in the effective administration of the statutes: This amendment clarifies that the processes for the regulation of biosolids is located in 401 KAR 45:105. The amendment also streamlines the current processes related to other sludges that may be composted or land applied.

(3) List the type and number of individuals, businesses, organizations, or state and local governments affected by this administrative regulation: The total universe of potential impacted entities is 399. 394 of those are wastewater treatment plants that either already have a permit (54) or could get a permit in the future (340). The remaining 5 are private entities (contractors) that already have permits.

(4) Provide an analysis of how the entities identified in question (3) will be impacted by either the implementation of this administrative regulation, if new, or by the change, if it is an amendment, including:

(a) List the actions that each of the regulated entities identified in question (3) will have to take to comply with this administrative regulation or amendment: The regulated entities will need to refer to 401 KAR 45:105 to find information managing biosolids.

(b) In complying with this administrative regulation or amendment, how much will it cost each of the entities identified in question (3): There will be no additional cost to the regulated entity to comply with this amendment. The same application fee will apply to the current process and the costs of complying with 401 KAR 45:105 will be either the same or less than the current process.

(c) As a result of compliance, what benefits will accrue to the entities identified in question (3): The entities will benefit by having all of the information related to biosolid management in the new administrative regulation (401 KAR 45:105).

(5) Provide an estimate of how much it will cost the administrative body to implement this administrative regulation:

(a) Initially: There will not be a cost to the agency to implement this amendment

(b) On a continuing basis: There will not be a cost to the agency to implement this amendment on a continuing basis

(6) What is the source of the funding to be used for the implementation and enforcement of this administrative regulation: The funding source for this program will be a mix of restricted funds from the fees charged for application review and general funds.

(7) Provide an assessment of whether an increase in fees or funding will be necessary to implement this administrative regulation, if new, or by the change if it is an amendment: There will not be a need to increase fees or funding associated with this amendment. The agency currently regulates wastewater treatment plant sludges and will simply use the current personnel and funding to implement the new process in 401 KAR 45:105.

(8) State whether or not this administrative regulation establishes any fees or directly or

indirectly increases any fees: There are no new fees associated with this administrative regulation or the amendment. The current fee that is charged for application review (401 KAR 45:250) will continue to be applied to biosolid applications under this new process.

(9) TIERING: Is tiering applied? (Explain why or why not) No. All entities that submit an application for a biosolids permit will be reviewed in accordance with the application information submitted and will not be treated differently.

FISCAL NOTE

401 KAR 45:100
Contact Person: Michael Mullins
Phone: (502) 782-6720
Email: michael.mullins@ky.gov

(1) What units, parts, or divisions of state or local government (including cities, counties, fire departments, or school districts) will be impacted by this administrative regulation? This administrative regulation will impact not only the Department for Environmental Protection's Division of Waste Management but also local governments that have wastewater treatment plants that generate sludge.

(2) Identify each state or federal statute or federal regulation that requires or authorizes the action taken by the administrative regulation. KRS 224.10-100, 224.40-100, 224.40-305, 224.50-760, 224.50-765.

(3) Estimate the effect of this administrative regulation on the expenditures and revenues of a state or local government agency (including cities, counties, fire departments, or school districts) for the first full year the administrative regulation is to be in effect.

(a) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for the first year? This administrative regulation will not generate any additional revenue. The current application fees (401 KAR 45:250) will continue after these amendments are effective.

(b) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for subsequent years? This administrative regulation will not generate any additional revenue. The current application fees will continue after these amendments are effective and will be applied to the biosolids application.

(c) How much will it cost to administer this program for the first year? There should not be an additional cost associated with implementation of these amendments. The Cabinet will use the same personnel and equipment to review permits under the current structure and the new biosolids permitting process.

(d) How much will it cost to administer this program for subsequent years? There should not be an additional cost associated with implementation of these amendments.

Note: If specific dollar estimates cannot be determined, provide a brief narrative to explain the fiscal impact of the administrative regulation.

Revenues (+/-): There are no anticipated increases in revenues related to these amendments.
Expenditures (+/-): There are no anticipated increases in expenditures related to these amendments.

Other Explanation: The new process related to the implementation of SB 213 from the 2023 Legislative Session changed the process but didn't change any of the fees associated with the management of biosolids.

(4) Estimate the effect of this administrative regulation on the expenditures and cost savings of regulated entities for the first full year the administrative regulation is to be in effect.

(a) How much cost savings will this administrative regulation generate for the regulated entities for the first year? The Cabinet does not anticipate there to be a significant cost savings to the regulated entity with the implementation of these amendments.

(b) How much cost savings will this administrative regulation generate for the regulated entities for subsequent years? The Cabinet does not anticipate there to be a significant cost savings to the regulated entity with the implementation of these amendments.

(c) How much will it cost the regulated entities for the first year? The addition of language clarifying that this permitting administrative regulation does not apply to the permitting of the land application of biosolids will not result in a cost increase for the regulated entity.

(d) How much will it cost the regulated entities for subsequent years? The addition of clarifying language stated in (c) will not result in a cost increase for the regulated entity.

Note: If specific dollar estimates cannot be determined, provide a brief narrative to explain the fiscal impact of the administrative regulation.

Cost Savings (+/-): There is not a predicted change in costs with this proposal.
Expenditures (+/-): There is not expected to be a change in expenditures with this proposal.
Other Explanation: The amendment to this administrative regulation is simply the insertion of language clarifying that this regulation does not apply to the land application of biosolids. Those processes are established in 401 KAR 45:105. Therefore, there is not an anticipated impact to costs or revenues with this amendment.

(5) Explain whether this administrative regulation will have a major economic impact, as defined below. "Major economic impact" means an overall negative or adverse economic impact from an administrative regulation of five hundred thousand dollars ($500,000) or more on state or local government or regulated entities, in aggregate, as determined by the promulgating administrative bodies. [KRS 13A.010(13)] This proposal will not have a major economic impact as defined KRS 13A.010(13).

SUMMARY OF MATERIAL INCORPORATED BY REFERENCE

I. The "Annual Landfarming Review", Form DEP 7048, February 2023. This form is used by permittees to track landfarming activities throughout the year. This form consists of 14 pages.

II The "Annual Composting Review", Form DEP 7048A, February 2023. This form is used by permittees to track landfarming activities throughout the year. This form consists of 4 pages.

SUMMARY OF CHANGES TO MATERIAL INCORPORATED BY REFERENCE

I. The content of this form has not changed. However, the format of the form was updated to allow for electronic submittal using the cabinet's electronic submittal portal.

II. The content of this form has not changed. However, the format of the form was updated to allow for electronic submittal using the cabinet's electronic submittal portal.