

**Working Toward a Sustainable
Tomorrow:
Understanding and Expanding
Compost Infrastructure**

Meeting Notes

September 28–29, 2009

Submitted to:

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Region 4

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Introduction

On September 28th and 29th, 2009, the U.S. Composting Council (USCC) hosted the Working Toward a Sustainable Tomorrow: Understanding and Expanding Compost Infrastructure meeting at the Hilton Atlanta Airport Hotel in Atlanta, GA. (The agenda is included in Attachment A.) The meeting was hosted in partnership with the Environmental Protection Agency (EPA), EPA Region 4, BioCycle, the Georgia Department of Natural Resources' Environmental Protection Division, and the Florida Department of Environmental Protection. The purpose of the meeting was to provide attendees from the composting industry and other participants with resources and information on expanding compost infrastructure. (A list of attendees can be found in Attachment B.)

Welcome

Wayne King, Sr., USCC, stated that the seminar was designed to answer the following questions regarding composting:

- What lessons have we learned and what is yet to be taught?
- What does it take to make composting operations viable and successful?
- What must be done to make composting and compost a permanent part of a municipality's infrastructure?
- Where do we go from here?

Mr. King introduced Jon Johnston, Branch Chief of the RCRA Programs & Materials Management Branch, who has been with the agency for 32 years. Mr. Johnston said that it is essential to steer EPA back to materials management, find a way to start exploring valuable materials that are not being used, and facilitate dialogue between recycling organizations and State and local governments. The time is now for everyone to share ideas, perspectives, and information and participate in discussions. A small idea can become a big action, Mr. Johnson said.

Keynote Address: The State of Organics Recycling in America

Jean Schwab, manager of EPA's GreenScapes program, presented an overview of composting in the United States.

From 1995 to 2007, food waste generated doubled, but the percentage of food waste recycled only slightly increased. Comparatively, yard waste generated increased slightly, but the percentage recycled increased from 22.9% to 64.1%. That increase reflected stronger focus on yard waste, because organic waste was recognized to have more value outside landfills than inside them because of the demand for materials such as compost.

Ms. Schwab then listed the following actions that EPA took to promote change:

- Conducted the Organic Materials Management Strategies study
- Created the GreenScapes program

- Funded USCC to develop compost standards (Seal of Testing Assurance Program)
- Funded USCC to develop Department of Transportation (DOT) compost standards to promote compost use on roadsides
- Developed national best management practices (BMP) on compost use for erosion control
- Revised the Comprehensive Procedure Guidelines to include all composts and fertilizers made from recycled organic materials for Federal use
- Conducted workshops with industry and EPA regions
- Developed tools, research, and outreach materials on the beneficial uses of compost

Ms. Schwab discussed GreenScapes, which was created by EPA to educate and promote reducing organic waste generation at the source. Through GreenScapes, facilities reuse organic waste onsite and offsite, recycle organic waste, and rebuy recycled organic material content products such as mulch and compost. She also provided examples (accompanied by images) of how compost can be used to improve the environment and how customers can save money through increased soil quality.

Ms. Schwab acknowledged that there are significant obstacles to the continued growth of composting. There are too few local composters, and generators and end users find it difficult to find composters and compost that is ready to use. Food waste is difficult to manage. There is a widespread misperception that if something is labeled biodegradable, it is better for the environment. (Biodegradable items can take a long time to degrade, and can end up in landfills if the materials are not composted; compostable materials are best, Ms. Schwab explained.) Also, the lack of easy-to-use grades of compost and quality standards for compost and composters to ensure a quality product complicates production, marketing, and purchasing of compost.

Ms. Schwab explained that, fortunately, there are ways to overcome the obstacles. To address the lack of available local composters, the compost and recycling industry can work at the State and local levels where composting is desired; encourage others to view it as product production rather than waste management or disposal; make information available online (findacomposter.com, USCC); and increase emphasis on waste reduction. To correct the misconception of the term biodegradable, an effort can be put forth to better educate consumers. To rectify the problem of no easy-to-use grades and quality standards for compost, the composting industry and regulators should establish performance criteria. It is also important to convey that compost has worth—rather than giving it away, charge for it so consumers will view it as valuable.

Ms. Schwab suggested that the main groups who must work together to for successful composting are generators; haulers; processors; marketers; buyers and end users; local, State, and Federal Government; and nongovernmental organizations such as industry associations, environmental groups, schools, and universities. She urged the groups to start cooperating right away to stimulate national change in composting.

Ms. Schwab provided the following Web sites for more information:

- www.epa.gov/organicmaterials
- www.epa.gov/compost
- www.epa.gov/foodscraps
- www.epa.gov/greenscapes

Ms. Schwab can be contacted by e-mail at schwab.jean@epa.gov or by phone at (703) 308-8669.

Compost Infrastructure: A View From 30,000 Feet

Nora Goldstein is the editor of *BioCycle* magazine, which focuses on natural resource management. *BioCycle* celebrated 50 years of publication in 2009. Ms. Goldstein spoke on the outlook of compost infrastructure in the United States.

At this point, the view is very clear about what needs to be done, a bit obstructed on how it will be accomplished, and pretty hopeful about what is on the horizon for compost infrastructure. According to World Economic Forum/Deloitte Report, “Scarcity of natural resources will leave the consumer industry exposed to higher and more volatile pricing in little more than a decade,” she noted. The traditional linear supply model that companies follow (build, buy, bury) must be replaced with a model that enables resources to go full circle.

Ms. Goldstein noted that political will is one an important area that is lacking. The people’s will must be changed, since they elect representatives who have the ability to change laws. She pointed out that while we have the technology, knowledge, and proof that we need to make progress in composting, we have yet to put it to use.

Ms. Goldstein can be reached by e-mail at noragold@jgpress.com.

Composting: The Art of Successfully Managing Your Operations and Marketing

Craig Coker, of Coker Composting and Consulting, gave a PowerPoint presentation on how to manage and market a composting business. He noted that to be successful, it is important to master two different businesses: waste management and product marketing and sales.

When dealing with waste management, a composter must be responsible, reliable, and reputable in their dealings with customers. Mr. Coker pointed out that if a client has a bad experience, it is unlikely that the client will give composting a second chance. The composting company must be accessible at all hours, and must ensure that waste is always collected on time (as the odor can be unpleasant). The company must also be professional: develop a feedstock acceptance protocol, use well-prepared contracts, create incentives for good employee performance, and have employees wear uniforms.

A composting facility needs adequate space for composting, handling, storing, and dealing with access and activities. Land area requirements, road and utility access, surrounding land uses, the geography of the land (slope, soil, water/wetlands), elevation, air drainage, wind direction, zoning, and local and State regulations must also be taken into account.

Mr. Coker suggested that facilities incorporate a buffer zone to cut down on the impact of water, noise, odor, and sights of composting. Existing elements such as hills, fields, woods, railroads, and prevailing winds can be incorporated into the buffer zone. A visual barrier can reduce complaints from surrounding neighbors.

Water is a serious issue and must be managed properly at compost sites. Composters should work to ensure good drainage and prevent “dirty” runoff water from leaking into streams or other surface areas. Runoff water can be captured, treated, stored, and reused, and “clean” runoff water should be diverted from material storage and activity areas.

Facilities must also be cautious about fires. The temperature of the compost must be closely monitored, especially if it exceeds 170 degrees, and pile height should be limited to less than 18 feet. A burning pile of compost must be broken down and spread out before dousing, and fire departments must be trained ahead of time to handle this type of fire this.

Mr. Coker explained that marketing is important for a composting company. It is important to identify and characterize markets, evaluate composting operations and compost quality, select distribution and marketing options, and then develop and implement a marketing plan. There are three main markets for compost: (1) traditional markets, which include homeowners/gardeners, landscapers, and nursery production; (2) emerging markets, which include erosion and sediment control, bioengineering (structural soils, living walls, etc.), wetlands creation, and environmental restoration; and (3) reemerging markets, such as agriculture in certain areas.

Mr. Coker stated that on the distribution side, options include wholesale to large-quantity users; direct to municipal agencies; retail/contractor discount to professional end users; and retail to residents. Different ways to market products include merchandise giveaways with a recognizable logo and advertising through different avenues.

Mr. Coker emphasized that it is important to educate purchasers on the benefits of compost use. Compost use:

- helps reduce soil compaction,
- helps increase water retention,
- helps hold nutrients,
- helps reduce chemicals needed,
- reduces erosion,
- increases infiltration,
- reduces some plant diseases,
- increases porosity.

Sales staff must also be educated about composting and compost use. To be effective, they should be well aware of the composting process; compost application and benefits; product quality issues; Government regulation; health, safety, and environmental concerns; competition; prior research; the green industry; user needs; and basic sales and marketing techniques.

Mr. Coker also said when hiring a broker, there are negotiation issues to bear in mind, such as the amount of material to be marketed, the length and type of contract, delivery schedule, reimbursable costs, storage locations and costs, bonding/guarantee requirements, and educational/promotion responsibilities. It is important to use a formal contract agreement.

In closing, Mr. Coker stressed that for a composting business to be profitable, owners and operators must ensure that waste managed correctly and efficiently; guarantee consistency, volume, and value in the products they offer; and take control of their market.

Mr. Coker can be contacted by e-mail at cscoker@verizon.net or by phone at (540) 890-1086.

Building Soil: Market Opportunities for Compost in Storm Water Management, Water Conservation, and Erosion Control

David McDonald, Resource Conservation Planner at Seattle Public Utilities, began his presentation with a quote from Margaret Mead: “Never doubt that a small group of committed individuals can change the world. Indeed, it is the only thing that ever has.”

Mr. McDonald cited storm water and erosion control as drivers for change. Large cities are already required to comply with Phase 1 of the Clean Water Act. Smaller cities will be required to comply in Phase 2. For erosion control, EPA’s National Pollutant Discharge Elimination System menu of BMP now includes compost blankets, berms, and socks. Also, builders are required to have erosion control training.

Water conservation is also a driver for change, Mr. McDonald stated. Peak summer water demand is landscape irrigation, and compost soil amendment and mulching can cut summer irrigation needs by up to 50%.

Climate change is another driver. Because of global warming, there is less snowpack and more variable rainfall in the Pacific Northwest and annual rainfall is likely to change in most regions of the U.S. and the world. A warmer atmosphere has higher energy, which creates the potential for more frequent, intense storms. Floods or droughts are likely as well, as the Southeast U.S. has just seen. Fortunately, compost can help “climate-proof” our landscapes, he said, by improving infiltration and water-holding capacities (thus mitigating both floods and droughts) and improving rooting depth and plant health to adapt to new stresses.

As an example, Mr. McDonald said that salmon decline in the Pacific Northwest region brought the attention of the public and businesses to the issues of stormwater management, energy (dams) and water conservation. He encouraged the audience to consider using whatever environmental issues are of concern in their own areas to get the public's attention and promote change. He also encouraged attendees to make contact with stormwater regulators and water utilities to build awareness of the unique values of compost.

Mr. McDonald listed the benefits of healthy soil. Soil organisms:

- support healthy plant growth and fertilize and protect plants from disease,
- create soil structure and resist compaction,
- provide storm water infiltration,
- prevent erosion,
- reduce summer water needs,
- filter out pollutants,
- reduce need for landscape chemicals.

He emphasized that compost specifications vary by intended end use (stormwater, landscape, water conservation, horticulture, erosion control, agriculture, etc.) but whatever the end use, quality matters:

- particle size
- C:N ratio
- pH
- maturity/stability
- contaminants
- weed seeds
- nutrients
- biodiversity (mycorrhizae, etc.)
- plant growth tests
-

To market compost successfully, compost producers need to fit the product to the intended use: physically, chemically, and horticulturally.

As an example, Bioretention Soil Mixes – for Low Impact Development (LID) stormwater swales and “rain gardens” need specification like the following:

- 30-40% compost; $\frac{3}{4}$ - $\frac{1}{2}$ inch screen, few particles smaller than $\frac{1}{4}$ inch
 - stable, mature, dependable quality (STA) compost that fits the plants to be grown

- low contaminants – especially a concern with biosolids compost; need low metals, low soluble phosphorus, low soluble endocrine disruptors, yard/food waste compost needs low pesticides, low plastic contaminants
- 60-70% coarse sand
 - few fines (less than 5% by dry weight passing the #200 sieve)
- Dependable infiltration & detention volume (pore space)
- Dependable plant growth
 - fit compost nutrient profile to plant needs

As another example, selling compost as landscape Soil Amendment (for stormwater, water conservation, plant growth benefits) needs these specs:

- Maturity – dependable enhanced plant growth (meets USCC STA standards)
- Nutrient levels:
 - low soluble nutrients for water quality, but
 - turf needs N (with adequate P)
 - trees and shrubs need C (stable N,P,K)
 - balanced pH, high CEC

For use as mulch, composter producers can sell “overs” or minimally composted wood chips as high quality mulch, but need to differentiate and explain their mulch products:

- Uniform color
- Disease control
- High C, low N for weed control
- Chunky 1-inch minus screened, few fines

Yet another example, selling compost for Erosion Control requires these specs:

- Larger particle size (1” screen)
 - longer chunks tie it together, resist erosion
 - higher initial porosity
 - resists compaction and crusting
- Range of intermediate particle sizes, but few fines
- Low P (for water quality)
- Low metals
- Delivery:
 - blower trucks
 - readily available
 - builders can’t wait!

Compost soil can be used for erosion control, water quality and flood control, water conservation, and long-term landscape success, and there are soil mixes for those different purposes. Mr. McDonald listed the following Web sites as sources of information:

- www.soilsforsalmon.com
- www.buildingsoil.com

Mr. McDonald answered the following questions from the audience.

Q. Is anyone testing biosolids going into compounds for endocrine disruptors from pharmaceuticals?

A. This is an emerging issue, but there is good news: Composting process breaks down most of these compounds.

Q. When developing your manual, did you have good representation from architects, engineers, and stakeholders?

A. Our initial stakeholder group included builders and developers, and landscape professionals, regulators and engineers, but not architects initially. Stormwater regulators and policy makers became convinced that soil protection and restoration was an essential part of solving our stormwater and water quality problems in the Northwest, and so the technical team and stakeholders developed a practical, cost-effective soil BMP.

Q. What kind of soil were you working with?

A. Our Washington soils include both glacial and volcanic origin types, so we have the full range of rocky, sandy, silt, clay and glacially-compacted “till” soils that can be like concrete. Soil restoration with compost works well in every type of soil it’s been tried on, in the U.S. and around the world which is why we have so much interest from China and every region of the U.S. and Canada now.

Q. How much compost do you end up with a couple of years down the road – what are the levels of organic matter?

A. When we start out with a certain level (in our BMP 5% organic matter (OM) for turf soil, 10% OM for planting beds) that’s not what we’ll end up with in the long term. About half the organic is burnt up by soil organisms, providing both food and homes for them as they rebuild the soil ecology. Long term, organic levels are maintained by the dense vegetation (turn or trees) that this rich soil supports, as long as the grass clippings or leaves are returned to the soil as mulch. So our turf areas may stabilize after a couple of years as 3-4% OM and planting beds at 4-6% OM. But in the process you’ve rebuilt soil structure, porosity, and biology, so you get a permanent benefit in terms of infiltration, bio-filtration of pollutants, moisture-holding capacity, cation exchange capacity, nutrient cycling, and plant health.

Mr. McDonald can be reached by e-mail at david.mcdonald@seattle.gov.

Certification of Compost Operations and Operators

Frank Franciosi, of Novozymes North America, Inc., spoke on education, training, and State affiliation provided by USCC. The USCC Professional Composter Training Course (PCTC) follows a 5-day, 40-hour model which will be followed by shorter courses on specific or advanced topics. Following are members of the Professional Certification Committee:

- Cochair: Frank Franciosi, Novozymes
- Cochair: Craig Coker, Coker Composting and Consulting
- Cary Oshins, USCC staff
- Ginny Black, Minnesota Office of Environmental Assistance
- Jeff Gage, Compost Design Services
- Monica Ozores-Hampton, University of Florida
- Jeff Ziegenbein, Inland Empire Regional Composting Authority
- Wayne Thompson, Texas Cooperative Extension
- Ken Powell, Kansas Department of Health and Environment
- Carrie Gregory, Pierce County Recycling and Composting

The PCTC will feature lectures by experts in the field with hands-on experience. The core course will be supplemented by advanced topics at the annual conference. The following topics will be covered:

- Composting fundamentals
- Systems method and equipment
- Feed stocks and recipes
- Site selection and design
- Water management
- Odor management
- Compost quality
- Compost markets and uses
- Marketing
- Facility management

Mr. Franciosi explained that the goal is to have a certified professional composter at each facility. Doing so will prove beneficial, as it will improve product quality, improve facility success, reduce environmental impact, reduce complaints, and increase the acceptance of composting as a resource management strategy for processing organic residuals.

Mr. Franciosi discussed details partnership with USCC, including the State affiliate and chapter system and the benefits of partnership.

Mr. Franciosi answered the following questions from the audience.

Q. What states currently require certified operators?

A. Kentucky, New Jersey, New Hampshire, and Virginia.

Q. What is the cost of the training?

A. In California (our first course), it was \$595 for USCC members, but it will vary depending on where it is being held. We are considering doing one in New York.

Q. Will cost be involved with chapter affiliation?

A. You have to join as a state chapter for the \$250 membership fee. The USCC will rebate back to the state chapter 10% of the annual dues from membership based in that state.

Q. Can chapter be subset of an existing 501(c)3?

A. Yes.

Compost Infrastructure Challenges and Opportunities in EPA Region 4

Mary Beth Van Pelt, of EPA Region 4, read to the participants letters from representatives who could not be at the conference. (A letter from Bob Bickner in Kentucky is located in Attachment C.) Following is a letter from Brian Rosa in North Carolina:

Friends,

I would like to thank all those who have put this workshop together, especially EPA Region 4 and the USCC. I'm sorry that I cannot attend, but a family illness is taking president over my attendance. I would like to take this opportunity to encourage the USCC and all of those in attendance to work towards a more sustainable future by focusing on food waste diversion as a way to reduce Global Warming. As we are all aware of Global Warming, I'm not sure we are all aware that it (Global Warming) is the single most important issue facing humanity!

I would ask that we as a group and as individuals consider that fact in all our decisions on the future of the compost industry. We have to be more aggressive forcing the issue of carbon and methane reduction! Food waste is the number contributor to methane production in landfills! Methane being over 70 times more potent than CO₂ in a 20-year period and 23 times more potent in a 100-year period. We have to get food waste out of the landfills and have to be done as soon as possible. According to the IPCC (Intergovernmental Panel on Climate Change) "Rajendra K. Pachauri's assertion: We have a window of seven years to stabilize CO₂ at today's levels if we are to limit our global mean temperature increase to around 2.4 degrees Celsius"

I would like to see a strongly worded letter submitted to all branches of the government mandating that the government make any and all carbon reduction actions based on the facts stated in the IPCC's recommendations. Including federal support to increase composting and methane digestion of food waste and all organics currently landfilled.

I know that there so many obstacles but we must persevere! One of those issues we are facing in North Carolina is water quality permitting. HB1100 has given us an

opportunity to try to address that, but at a snail's pace and at this rate, will not be a benefit to the situation at hand! The water quality permitting folks are only looking at a small fraction of the whole. They are not taking into consideration of the benefits of what composting provides, only the mandate to reduce water pollution. How to convince WQ folks that we are working towards the same goal and in order to get there we have to look at the whole process and consider the benefits that surely outweigh the impact on the environment!

Time is of the essence! It is critical that we as an industry and as citizens of this planet to make every minute count! I encourage you all to learn more about global warming issues, consider those issues when making any and all decisions in your business and daily life. We can make a difference and we must!!

Brian Rosa,

Organic Recycling Specialist

NC Department of Environment and Natural Resources/Division of Pollution Prevention and Environmental Assistance (DPPEA)

After reading the letters, Ms. Van Pelt asked for a synopsis of steps composters must take to open a business in respective States.

Scott Mouw, of the North Carolina DPPEA, stated that his department is very focused on trying to get composting going in their state. The effort includes providing sourcing material and making sure people are aware of available resources. He stated that their biggest question is what it means to have a wastewater permit if you are a composter. The ongoing issue is to determine when a composter needs a stormwater permit and when they need a wastewater permit, or both. This process could take up to a year and a half.

Woody Barnes, of the South Carolina Department of Health and Environmental Control, said that when it comes to yard waste, debris and compost regulation is very limited. Their biggest issue is composting food waste, and nothing is spelled out yet. Zoning and facility issues must be addressed, and it has not yet been determined who will make those decisions.

Stephanie Busch, of the Georgia Department of Natural Resources, responded to the question posed from EPA about what happens if EPD receives a call from someone wanting to start a compost operation in Georgia and they already have approval from local government zoning board. Under the current rule, EPD would talk to the caller about the operation (e.g., type of feedstock and the generator source) so as to determine the type of permit the company would need. Depending upon the nature of the call and in what phase of planning their business, EPD may direct composters to the University of Georgia for technical assistance and training, refer them to the Georgia Recycling Coalition for networking and markets, or work another agency to find someone to assist with business planning. Georgia is revising its compost rule as part of a facilitated stakeholder process funded by a Resource Conservation Challenge grant.

Mark Williams, of the Mississippi Department of Environmental Quality, explained that composting activities are limited because of a rigorous permitting process for commercial composters. Testing and requirements may be onerous for facilities, and as a result, there are very few of them. The department is working with local governments, promoting education on composting, encouraging individual composting, and working on a rule change to attempt to develop or modify regulations.

Francine Joyal, of the Florida Department of Environmental Protection, noted that it can be difficult for composters to establish a business in Florida. Engineering costs associated with the application are high and there are many rules and regulations that a business has to abide by. Florida is currently going through a rule change that will create a registration program which will ease the permitting burden for food waste and animal by-product composting. The main sentiment is that the Florida Solid Waste Program is working with the regulated community in developing regulations to encourage recycling while also protecting the environment.

Jonathan Crosby, of the Alabama Department of Environmental Management, stated that the State has no permits requirements for composting. Currently, their main priorities are regular recycling and unauthorized landfills, though legislation to develop compost rigs was passed a year ago. The lack of funding is a big issue.

(A list of composting regulations for Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee is provided in Attachment C.)

Food Waste Diversion and Compost Manufacturing

Holly Elmore, of Green Foodservice Alliance (GFA), talked about composting food residuals and excess food from the foodservice industry, which is one of the biggest generators of organic matter going into landfills. The GFA, based out of Atlanta, works with foodservice operations of all types, including restaurants, hotels, convention centers, event venues, off-premise catering, universities, school systems, cafeterias, and health care organizations to create Zero Waste Zones. Atlanta Zero Waste Zones are prototypes and serve as templates for national expansion. Ms. Elmore said that Zero Waste Zones have a tremendous impact on the environment as the zones divert recoverable products from landfills and back into the production cycle. Zero Waste Zone success is dependent upon a strong infrastructure. There are approximately 250 food permitted composting facilities in the United States. Along with the EPA and USCC, the GFA is working to support efforts to create more in-regulation composting options.

Tim Lesko, cofounder and president of GreenCo, gave a PowerPoint presentation on his business, which deals in food waste diversion and manufacturing. GreenCo currently services the following industries: food processing, meat and seafood, fruit and vegetable, bakeries, supermarkets, food services, hospitals, restaurants, schools, universities, and colleges.

Through a series of photographs, Mr. Lesko showed steps that his business takes from collecting food residuals, to purging and retaining it in holding bays, to mixing it with

ground yard waste, to assembling the material into windrows, to selling the finished organic product to consumers.

Mr. Lesko answered the following questions from the audience.

Q. When you were planning your business, did you have contracts?

A. On the front end, we had several contracts in place for food residuals. On the back end, we did not.

Q. Do you deliver?

A. Yes, we are full service.

Q. What is your wholesale cost?

A. Around \$15 to \$52.

Q. Was ground water monitoring required?

A. No.

Q. Do you accept compostable products?

A. Yes—in fact, one of our biggest clients is Emory [University]. However, one of our biggest challenges is making sure that food residuals are what we will get from the client, with nothing else mixed in.

Composting in Georgia

Derrick Williams, of the Georgia Environmental Protection Division, gave a PowerPoint presentation about regulations and permitting in Georgia for composting facilities. (A list of composting regulations for Georgia is included in Attachment C.)

Mr. Williams explained that a facility must obtain a solid waste handling permit if it is composting solid waste such as garbage, food industry by-products, industrial or municipal sludge, or solid waste other than yard trimmings. To obtain a solid waste handling permit, the facility owner must complete an application and a request for site suitability and provide documentation of public hearings held by the host jurisdiction. The facility must undergo siting, in which zoning takes place that is consistent with the jurisdiction's solid waste management plan, topography, floodplains, wetlands, stream, and hydrogeologic and site assessments. Design standards must be met as well. The design must be prepared by a professional engineer, and the site design sheet and facility layout must show items such as property lines, existing geographical features, different work areas, and wastewater control processes. The operational plan must describe incoming waste, storage and containment, processing of waste, emergency procedures, and evidence of financial responsibility.

Mr. Williams went over the stakeholder process and creating a “straw man” (proposed rules). There are three tiered systems of solid waste composting permits in Georgia. Materials that are exempt include yard trimmings, onsite agricultural waste, and onsite household waste. There is also permit-by-rule (PBR) which applies to a facility processing no less than 75% (by weight) of solid waste generated there, and there is a full solid waste handling permit.

Mr. Williams then reviewed the five categories of feedstock and the design and operation criteria for the six classes of facilities. He suggested the following Web site for more information: www.gaepd.org.

Mr. Williams answered the following question from the audience.

Q. When are proposed rules going out for public comment?

A. We will be taking it to the DNR in December and there will be a public hearing in March.

Derrick Williams can be e-mailed at derrick_williams@dnr.state.ga.us.

Green Infrastructure: How to Institutionalize Organics Diversion and Compost Use Through Local/State and Government/Business Collaboration

Mr. McDonald explained the value of a “green” infrastructure (ecosystem services that we rely on to make our built environments usable, such as water supply, stormwater management, climate moderation, air quality, food production, etc.). Natural systems have lower energy demands, lower maintenance, higher resiliency, and are locally adaptable over time. Mr. McDonald reiterated (from his previous-day’s presentation) that an important drivers for compost use in coming years could be climate change. Over the next 20 to 50 years, climate changes will likely result in storm, flood and drought damage, increased energy costs, population shifts, and reduced agricultural productivity. Composting is the foundation of green infrastructure, which relies on healthy soil. Organics recycling can produce, restore and maintain healthy soil for trees, storm water management, water conservation, sustainable and livable landscapes, sustainable agriculture, climate mitigation and moderation, and energy conservation.

He gave a background summary of organics recycling in Seattle (and neighboring communities that have followed this lead):

- 1987: voters rejected incineration
- 1988: Backyard composting bins and education
- 1988: Curbside recycling; 60% Recycling Goal (2008 at 47%)
- 1989: Yard Waste curbside collection. 1998 food waste research & pilots begin
- 2005: Mayor’s Climate Protection Initiative, spread to most large U.S. cities (0.25 tons of GHG per ton of food waste)
- 2006: Recyclables banned from garbage
- 2007: Beyond 60% Recycling - 72% recycling by 2025 - Food waste emphasis: food recovery first!
- 2009: Food waste collection citywide - household & commercial curbside.

He talked about Washington's Soil Best Practices regulations (which require compost use to restore construction-disturbed soils) and the benefits of these practices for builders and developers:

- More marketable buildings
- Better erosion control
- Easier planting, healthier plants, fewer callbacks
- More attractive landscapes, that sell the next job
- Easier maintenance for customers (healthier plants, fewer weeds, less need for water, fertilizer, pesticides)
- Reduced stormwater runoff, with better water quality
- Regulatory compliance (current and upcoming regulations)

Mr. McDonald summarized the Washington Department of Ecology's "Post Construction Soil Quality & Depth" BMP in their Stormwater Manual, which is taking effect as local jurisdictions bring their codes up to compliance with that state manual (as they are required to do over the next few years by their NPDES permits):

- Retain native soil and vegetation wherever possible
- All areas cleared and graded require 8 inch amended soil depth:
 - Soil organic matter content 10% for landscape beds, 5% for turf areas, (S.O.M. by loss on combustion method)
 - 10% S.O.M. results from roughly 30-40% compost by volume added to low-organic subsoil.
 - 5% S.O.M. results from roughly 20% compost by volume in soil
 - May use native topsoil, incorporate organic amendments into existing soil, or bring in topsoil blend to meet spec
 - pH 6-8, or original pH
 - Subsoil scarified 4 inches below 8-inch topsoil layer
 - Protected from compaction after amendment
 - Mulched after planting, & maintained by leaving organic debris

In order to implement Washington state's soil BMP, a technical and stakeholder group developed the **Building Soil** guidelines manual (approved by the state regulators) which describes practical methods to achieve the soil standards, including:

- Complete a simple form, "Soil Management Plan", for each project site
- Four options for soil management in different areas of the site:
 - 1) Leave native soil & vegetation undisturbed, protect from compaction
 - 2) Amend existing soil in place (with compost or other organic)
 - 3) Stockpile site topsoils prior to grading for reapplication

4) Import topsoil meeting organic matter content standards

- Choose pre-approved or custom calculated amendment rates
- Simple field inspection and verification procedures
- Includes model specs written in CSI and APWA formats
- Available at: www.BuildingSoil.org

Mr. McDonald showed a number of successful soil restoration and erosion control projects using compost around the Pacific Northwest region, discussing the challenges of each site and the lessons learned. Many of these sites and lessons can be seen in slide-shows and links on the www.BuildingSoil.org or www.SoilsforSalmon.org websites.

He then summarized the steps they took in building the Soils for Salmon soil quality movement in Washington, starting from 1999 through the present:

- Start one-on-one with policy makers, building industry leaders. Partner with professional organizations, “green” industry leaders, and regulators.
- Engage (fund) scientists in meaningful research
- Soils for Salmon technical “how to” seminars around the state: 22 events/1600 design & engineering professionals in first 3 years
- 2001-2003 soil quality starts to appear in state policy statements: priorities for watershed restoration, and stormwater management policy.
- Write soil BMPs for WA State Stormwater Manual, then local codes
- Local government and WsDOT projects lead: prove it works, is cost-effective
- Educate engineers, LA’s, landscapers, planners (thru professional organizations)
- Effective web-based resources – link them up to professional and agency sites
- NPDES regulators begin to push Low Impact Development (LID), including. soil
- Continue to reach builders through erosion control classes, demos, articles, mail, email, web, and one-to-one.

As an example of the last step, Mr. McDonald cited their successful erosion control trainings for builders over the last two years:

- “Certified Erosion and Sediment Control Lead” (CESCL) trained staff are required by the State on all construction sites over 1 acre in size
- CESCL training now includes the compost-based erosion control BMPs (compost blankets, berms, and socks), and the state soil amendment BMP
- 1200 builders trained in classes and field demonstrations in the last 18 months.

In closing Mr. McDonald said that our challenge is to build a widespread understanding, especially among regulators, that compost is not primarily a waste diversion strategy. Instead it is the foundation of critical, essential green infrastructure (and also a cost-effective diversion strategy).

So he said our discussion should not be “how can we manage all this organic waste”, but rather “how can we ever get enough compost to restore and maintain all our essential green infrastructure: stormwater, water supply, air, etc.?” When seen in this light it becomes self-evident that we can’t afford to burn or landfill most organics, because we need every bit to restore and build the soil that is the foundation of that essential green infrastructure.

In order to make that paradigm shift happen, Mr. McDonald said we have to build working relationships and partnerships with a much wider assortment of regulators, policy makers, users, and beneficiaries of soil and organics-based infrastructure. He suggested the following groups as good partners to start on collaboration:

- Organics recyclers: composters, wood processors, biosolids, agriculture, bio-energy, waste haulers, product marketers
- Scientists: land grant universities, regional, USDA/NRCS, climate etc. scientific opinion leaders
- Game changers: storm water and civil engineers, DOTs, water supply planners, energy planners, public health agencies, green building and climate change advocates, public-based environment, community, and regional quality/agriculture/food/green jobs economic development groups
- Doers: builders, developers, landscapers, LAs, erosion professionals
- Regulators: EPA, State, and local—storm water, water, energy, agriculture, public health, homeland security

Mr. McDonald challenged the audience to go out and make those connections in their own region, building on local issues of concern (water, flooding, or whatever’s important locally) to create awareness and change.

Here are resources on compost use in soil BMP, erosion, and LID specifications:

- Building Soil guidelines manual for implementing Washington’s Post-construction Soil Quality & Depth BMP (includes APWA & CSI specs) and resources for builders, including the EPA-approved compost erosion-based erosion control BMP specifications (blankets, berms, and socks) at www.BuildingSoil.org
- Similar information, plus the scientific background and more resources for designers, at www.SoilsforSalmon.org
- Low Impact Development Technical Manual, from the Puget Sound Partnership www.psp.wa.gov/stormwater
- Seattle’s “Natural Drainage Systems” specs www.seattle.gov/util/NaturalSystems
- National specs coming in ASLA/USGBC “Sustainable Sites” criteria, to be released Nov. 5, 2009, and to be incorporated into USGBC LEED green building standards in next few years, at www.SustainableSites.org

Mr. McDonald answered the following questions from the audience.

Q. Have you heard of a developer or builder getting carbon credits for compost use?

A. No, and I think it's unlikely to happen. However, they are getting LEED [Leadership in Energy and Environmental Design] credits for it.

Q. Have you gone back in years after and measured carbon levels (organic matter)?

A. Yes. You're going to stabilize at a lower organic matter than when soil is first amended. When you take degraded soil and amend it, you're building habitat and food sources to get the soil organisms going again. An amended soil will stabilize at an organic content (OM) around one half of the level at time of amendment, but with long-term function restored, and vigorous plant growth that can maintain that OM level.

Brainstorming Discussion

For the last session, Ms. Goldstein and Ms. Schwab led a brainstorming discussion on the next steps for the group. The first question posed was "Who can you collaborate with?" The discussion leaders suggested the following groups should be in attendance at meetings on composting and recycling:

1. Generators
2. Organics recyclers
3. Scientists
4. Game changers
5. Doers
6. Regulators
7. Haulers

Following are responses from the audience:

- The storm water professionals (end users) and those who write the manuals
- U.S. Department of Agriculture
- Homebuilders, Homebuilders Association of Georgia
- Trade associations
- Georgia Green Industry Association
- "Green" builders
- Nursery and landscape associations
- Universities
- Governors, political representatives
- National Governors Association, NACO, city, county
- Media/green media
- Environmental activists
- Land use planners
- Trade magazines (What are decision makers reading/watching?)
- Landscape architects

Ms. Schwab requested that each member of the audience share an action item. Following are the responses:

- The term “waste management” seems like a self-defeating prophecy. It is time for a paradigm shift. We’re not waste processors, we’re resource managers. Change our vernacular. If the public perceives it as waste, it will never work.
- Stop using term “yard trash.” Try and identify composts and grouping by use.
- Tracking.
- Training and education programs on the benefits of compost use. Train-the-trainer, hands-on programs.
- Go find someone who is responsible for water supply and storm water management and start building bridges.
- Be more aggressive when it comes to politics. We need to argue the case for composting. Mention it as a climate solution.
- Focus on the supply side as well. Developers ask for a list of suppliers, and the list is small. You can’t have demand without supply, it needs to be catalogued and tracked.
- Get the word out about composting. Have another meeting with lessons learned.
- Get younger people involved since they are the future.
- Perception is reality when it comes to local governments. Political will is the driver. In Georgia, the economy is important. It’s not just about disposal.
- We have to deal with supply side. Everyone has to come together when it comes to standing volumes. Get in a competitive market.
- Education and training. Many people do not understand compost and its uses and applications. On the consumer end, more education is needed. Use social media, forums, blogs, and ways to make information accessible to young people. It’s a fascinating topic for any age.
- Education. Not many people understand exactly what compost is. We should make definition more clear—it is not manure, it is not trash, it is a high-end product that is desirable.
- Existing permitting needs to create an incentive. The EPA has an opportunity to be a facilitator. Get stakeholders to realize how important it is and make it user friendly. Make it easy to understand and affordable.
- Create demand for the product. Pull together waste, water, air people.
- Make it more straightforward, streamlined, and cost-effective. Time is money. They don’t have time to put together the information for an application and wait for a permit that is sitting on someone’s desk. We need to be efficient with permits. Get back to contacting people, doing outreach. Go to the CEOs.
- Use the term “waste” to our benefit. We say in business that “waste is a sign of inefficiency.” It is important to show businesses how much waste they are creating, and that it can be converted to a resource.

- Drive the leadership of USCC to make it about organics management council. Pull together that theme and direct communications and public relations. No one across the board is managing organics, and that needs to be done. We need to maximize our resources for maximum benefit.

After brainstorming and action items discussion, Ms. Schwab and Ms. Goldstein adjourned the meeting.

Attachments

Attachment A: Agenda

Attachment B: List of Attendees

Attachment C: EPA Region 4 States' Composting Regulations

Attachment A
Agenda

Working Toward a Sustainable Tomorrow: Understanding and Expanding Compost Infrastructure

September 28–29, 2009

Agenda

Monday, September 28th

11:00–Noon Registration

Noon–1:30 Welcome

Welcome

Wayne King, Sr., U.S. Composting Council

Jon Johnston, U.S. EPA Region 4

Keynote Presentations

The State of Organics Recycling in America

Jean Schwab, Office of Resource

Conservation and Recovery, U.S. EPA

Compost Infrastructure: A View from

30,000 Feet

Nora Goldstein, Editor, *BioCycle*

1:30–1:45 Break

1:45–3:45 Market and Business Development

Composting: The Art of Successfully

Managing Your Operations and Marketing

Craig Coker, Coker Composting and

Consulting

Building Soil: Basics of Organics

Management in Sustainable Communities

David McDonald, Seattle Public Utilities

Facilitated Audience Discussion on

Building a Compost Business

3:45–4:30 USCC Education, Training and State

Affiliation

Certification of Compost Operations and

Operators

Frank Franciosi, Novozymes North America,

Inc.

Case Study: EPA Region 3 Best Management

Practices Guide

5:00 Leave for Tour and Reception at Serenbe

Tuesday, September 29th

7:30–8:15 Continental Breakfast

8:15–9:45 Compost Infrastructure Challenges

and Opportunities in EPA Region 4

EPA Region 4 states

9:45–10:00 Break

10:00–Noon Building Composting Infrastructure

Food Waste Diversion & Compost

Manufacturing

Tim Lesko, GreenCo

Holly Elmore, Green Foodservice Alliance

Georgia's Rule Revision Process

Stephanie Busch, Georgia EPD

The "New" Business As Usual: How to

Institutionalize Organics Diversion and

Compost Use in Local Government

Programs

David McDonald, Seattle Public Utilities

Noon–1:00 Lunch

U.S. EPA Partnership Award for Downtown

Atlanta's Zero Waste Zone

Facilitated Brainstorming on Next Steps

Nora Goldstein, *BioCycle*

Jean Schwab, U.S. EPA

1:00–2:00 Roles and Coordination

Discussion of the roles of local, state and

federal agencies, universities, US Green

Building Council, and trade associations in

building infrastructure and promoting the

use and benefits of compost

2:00 Adjourn

Attachment B
List of Attendees

Working Toward a Sustainable Tomorrow: Understanding and Expanding Compost Infrastructure

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Attachment C
EPA Region 4 States' Composting Regulations

Florida

CHAPTER 62-709 CRITERIA FOR THE PRODUCTION AND USE OF COMPOST MADE FROM SOLID WASTE

- (1) General provisions relating to solid waste management may be found in Chapter 62-701, F.A.C., including statements of intent, definitions, prohibitions, general permitting requirements, alternate procedures, and forms. Except where the context indicates otherwise, these general provisions apply to this chapter.
- (2) No solid waste management facility whose purpose is or includes the production of compost shall be constructed, operated, expanded or modified without an appropriate or currently valid permit issued by the Department unless specifically exempted by Chapter 403, F.S., Chapter 62-701, F.A.C., or this chapter.
- (3) Application for a permit shall be pursuant to the requirements specified in Rules 62-701.320(5), (6), (7)(a)-(g) and (8), F.A.C., except that Form 62-701.900(10) shall be used.
- (4) The Department, after evaluation of a permit application and all supporting information, shall issue or deny a permit pursuant to Rules 62-701.320(9)(a), (b), or (d), F.A.C. The supporting information shall provide sufficient detail to allow evaluation of the permit application. A copy of the Department-approved engineering drawings, plans, reports, operational plans, and supporting information shall be kept at the facility at all times for reference and inspections.
- (5) Simple exposure of solid waste with little to no mechanical handling that results in natural decay is considered disposal and is subject to the requirements of Chapter 62-701, F.A.C.
- (6) Solid waste which is composted as a volume reduction measure prior to intended disposal is not regulated by this rule, but is regulated under Chapter 62-701, F.A.C.
- (7) Compost produced outside of the State of Florida which is used or sold for use within the state shall comply with the requirements specified in Rules 62-709.530, 62-709.550 and 62-709.600, F.A.C.
- (8) Composting facilities that process domestic wastewater residuals with yard trash are not regulated under this chapter, but are regulated under Chapter 62-640, F.A.C.
- (9) Composting facilities that process domestic wastewater residuals with other solid wastes are regulated under this chapter. However, nothing in this chapter shall relieve such facilities from complying with other applicable federal or state rules or regulations regarding domestic wastewater residuals management.
- (10) The following activities are not regulated by this rule provided no public nuisance or any condition adversely affecting the environment or public health is created and the activity does not violate other state or local laws, ordinances, rules, regulations, or orders.
 - (a) Backyard composting and the resulting compost.
 - (b) Normal farming operations. For purposes of this rule, composting of only yard trash or manure by persons on their own property for their own use on that property as part of agronomic, horticultural or silvicultural operations will also be considered as normal farming operations. Any compost which is sold for use by persons other than the generator shall meet the requirements of Rules 62-709.530 through .600, F.A.C.
- (11) No person shall cause or allow the discharge of air pollutants which cause objectionable odor in violation of Chapter 62-296, F.A.C.
- (12) The prohibitions of Rule 62-701.300(2), F.A.C., as well as the siting restriction of Rule 62-701.320(12), F.A.C., apply to the siting of composting facilities.
- (13) No compost made from solid waste shall be used as fill material in any natural or artificial body of water, open sinkhole, or a dewatered pit.
- (14) Any compost made from solid waste which cannot be used pursuant to the requirements of this rule shall be reprocessed or disposed of pursuant to the requirements of Chapter 62-701, F.A.C.
- (15) No treated or untreated biomedical waste, as regulated by Chapter 64E-16, F.A.C., shall be accepted at composting facilities.

(16) Used oil, hazardous waste and asbestos-containing waste shall not be processed into compost except for small quantities normally found in household waste.

(1) Applicability.

(a) Owners or operators of yard trash processing facilities that meet the criteria of this rule shall register with the Department in accordance with Rule 62-709.320(5), F.A.C., in lieu of obtaining a permit under Rule 62-709.300(2), F.A.C. However, if these criteria are not met then a solid waste management facility permit is required:

1. In accordance with Chapter 62-701, F.A.C., for disposal operations or transfer stations; or
2. In accordance with Chapter 62-709, F.A.C., for recycling operations. In this case, the provisions for composting facilities in this chapter shall apply to the recycling operations, including permitting, design and operating criteria, testing, recording and reporting.

(b) Owners or operators of yard trash processing facilities that meet the criteria of this rule are not subject to the requirements of Rules 62-709.500, 62-709.510 and 62-709.530, F.A.C. However, they are subject to the requirements in Rules 62-709.300, 62-709.550, and 62-709.600, F.A.C.

(c) Owners or operators of existing yard trash processing facilities shall register in accordance with subsection (5) of this rule by April 22, 2001, and comply with the remaining provisions of this rule by October 22, 2001. However, if a yard trash processing facility is already authorized under another Department solid waste management facility permit, then facility registration under this rule is not required as long as that permit remains valid.

(2) Definitions. The following terms as used in this rule, unless the context indicates otherwise, shall have the following meaning:

(a) "Clean wood" means wood, including lumber, tree and shrub trunks, branches, and limbs, which is free of paint, glue, filler, pentachlorophenol, creosote, tar, asphalt, other wood preservatives or treatments.

(b) "Yard trash" has the meaning given in Rule 62-701.200, F.A.C., and solely for purposes of this rule, it includes cleanwood.

(c) "Yard trash processing facility" means a yard trash transfer station or a yard trash recycling facility, but does not include a facility used for the disposal of yard trash.

(d) "Yard trash recycling facility" means a facility at which yard trash is mulched, composted, or otherwise processed into useable materials, but does not include a facility used for the disposal of yard trash.

(e) "Yard trash transfer station" means a facility at which yard trash is stored or held for transport to a processing or disposal facility or for use at another site. It does not include green boxes, compactor units, permanent dumpsters, or other containers from which such wastes are transported to a landfill or other solid waste management facility.

(3) Prohibitions. Owners or operators of yard trash processing facilities shall comply with the prohibitions specified in Rules 62-701.300(1), (2)(a), (d), (e), (f), (h), and (3), F.A.C. In addition, the following apply to yard trash processing facilities, although it is the intent of the Department to repeal these paragraphs if and when Rule 62-701.300, F.A.C., is amended to address yard trash processing facilities.

(a) No yard trash or processed yard trash shall be placed within 100 feet of any existing or approved off-site potable water well unless this activity takes place at a facility for which a complete registration was filed or which was originally registered before the potable water well was in existence. This prohibition shall apply to lateral expansion of the registered facility.

(b) No yard trash or processed yard trash shall be placed within 200 feet of any existing or approved potable water well serving a community water system as defined in Rule 62-550.200(9), F.A.C., unless this activity takes place at a facility for which a complete registration was filed or which was originally registered before the potable water well was in existence. This prohibition shall apply to lateral expansion of the registered facility.

(c) No yard trash or processed yard trash shall be placed within 50 feet of any natural or artificial body of water. For purposes of this paragraph, a “body of water” includes wetlands within the jurisdiction of the Department, but does not include impoundments or conveyances that are part of a permitted stormwater management system, or water bodies contained completely within the property boundaries of the facility that do not discharge from the site to surface waters.

(4) Design and operating requirements.

(a) The facility shall have the operational features and equipment necessary to maintain a clean and orderly operation, including:

1. An effective barrier to prevent unauthorized entry and dumping into the facility site;
2. Dust control methods; and
3. Fire protection and control provisions to deal with accidental burning of solid waste, including:
 - a. There shall be an all-weather access road, at least 20 feet wide, all around the perimeter of the site;
 - b. There shall be interior lanes at least 15 feet wide; and
 - c. No part of the area that is occupied by processed or unprocessed material shall be more than 50 feet from access by motorized fire fighting equipment.

(b) The facility shall be operated in a manner to control disease vectors, and to control objectionable odors in accordance with Rule 62-296.320(2), F.A.C.

(c) Any yard trash received at the facility shall be processed or removed within 6 months, or within the period required to receive 3,000 tons or 12,000 cubic yards, which ever is greatest. To be considered processed, material must pass a 6-inch sieve. However, logs with a diameter of 6 inches or greater may be stored for up to 12 months before they are processed or removed, provided the logs are separated and stored apart from other materials on site.

(d) Processed material shall be removed from the facility within 18 months. However, if a yard trash processing facility is authorized under another Department solid waste management facility permit, then the department shall authorize on-site storage of processed material for longer than 18 months if the owner or operator demonstrates that there is a quantifiable use for such material for cover, erosion control, closure, or other similar activities at that permitted facility.

(e) Only yard trash, and bags used to collect yard trash, shall be accepted at the facility. Any other material shall be containerized, with all putrescible material removed within 48 hours. Further, if any of the following materials are discovered, they shall be immediately containerized and removed from the facility: treated or untreated biomedical waste; hazardous waste; or any materials containing a polychlorinated biphenyl (PCB) concentration of 50 parts per million or greater.

(5) Registration. Owners or operators of yard trash processing facilities shall register with the Department before beginning operation, or in accordance with paragraph (1)(c) of this rule.

(a) Registration shall be submitted on Form 62-709.320(7)(a).

(b) The registrant shall provide the facility name, physical address, mailing address, contact name and telephone number, and affirm that facility design and operations comply with the requirements of this rule. The registrant shall also provide documentation that the registrant either owns the land or has legal authorization from the landowner to operate a yard trash processing facility on that site.

(c) Renewal applications for registrations shall be submitted annually by April 1.

(d) The application for registration shall include the annual report required in subsection (6) of this rule. Owners and operators of yard trash processing facilities that are submitting their first registration before beginning operations are not subject to this requirement.

(e) The processing fee for registration is \$35. The fee shall be submitted with the registration application in accordance with the provisions of Rule 62-4.050, F.A.C.

(6) Record keeping and reporting. Monthly records of incoming and outgoing material shall be kept on site or at another location as indicated on the registration form for at least three years. The values may be in cubic yards or tonnage, but the same unit of measurement shall be used to

record both incoming and outgoing material. An annual report, based on the preceding calendar year, shall summarize the monthly records and shall be submitted to the Department using Form 62-709.320(7)(b) with the application for registration. The initial annual report for existing facilities shall also include a current site inventory of materials.

(7) Forms. The forms used by the Department in this rule are adopted and incorporated by reference in this subsection. The form is listed by rule number, which is also the form number, and with the subject, title and effective date. Copies of forms may be obtained from a local District Office or by writing to the Florida Department of Environmental Protection, Solid Waste Section, Mail Station 4565, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

(a) Form 62-709.320(7)(a): Application for Registration of a Yard Trash Processing Facility, effective 10-22-00.

(b) Form 62-709.320(7)(b): Annual Report for a Yard Trash Processing Facility, effective 10-22-00.

62-709.500 Design Criteria.

(1) The facility site shall have sufficient structural support for the operation including total waste received, material processed, compost stored, equipment, and structures to be built on site.

(2) Facility design plans shall include:

(a) A map or aerial photograph of the area at a scale of not over 500 feet to the inch showing land use and zoning within one mile of the facility. This map or photograph shall be no more than one year old, unless no substantial changes have occurred since the map or photograph was made. All significant features such as buildings, wells, natural and artificial bodies of water, watercourses and roads shall be indicated and labeled;

(b) A site plan at a scale of not over 200 feet to the inch showing dimensions, details of the proposed areas for receiving, processing, production, curing and storage, and fencing;

(c) Topographic maps at the same scale as the site plan with no less than one-foot and no greater than five-foot contour intervals showing contour interval used, original elevations and proposed final contours, general outline of facility area, access roads, grades required for proper drainage, any special drainage devices, and all other pertinent information;

(d) A report on:

1. Designed capacity of the proposed composting facility;

2. Anticipated type and source of solid waste to be received; and

3. A general description of any additives to be used in the production of compost with reasonable assurances that they will not endanger the environment or public health, safety and welfare.

(3) Stormwater management system design standards.

(a) Stormwater controls shall be designed, constructed, and maintained to meet the requirements of Chapters 62-25 and 62-330, F.A.C., or requirements of the water management district where the Department has delegated stormwater permitting to a water management district.

(b) Stormwater management systems shall be designed to prevent run-off from entering the receiving, processing, curing or storage areas. Stormwater or other water which comes into contact with the solid waste received, being stored, processed or composted, or which mixes with leachate shall be considered leachate and shall be reused in the process or treated to meet applicable standards of Chapters 62-25, 62-302 and 62-330, F.A.C., at the point of discharge.

(c) The facility site shall be graded to minimize ponding of water where the solid waste or compost is received, processed, cured or stored.

(4) The facility site shall be provided with operational features and appurtenances necessary to maintain a clean and orderly operation. These minimum features are:

(a) An effective barrier to prevent unauthorized entry and dumping into the facility site;

(b) An all-weather access road to the site;

(c) Signs indicating name of operating authority, contact person and telephone number in case of emergency, and traffic flow. If the facility receives solid waste from the general public, the signs shall also indicate hours of operation, and charges (if any);

- (d) Dust control methods where needed to control problems;
 - (e) Litter control devices as needed;
 - (f) Fire protection and control provisions to deal with accidental burning of solid waste or compost at the facility; and
 - (g) Odor control devices, methods or practices.
- (5) An operation plan shall be submitted with all facility construction permit applications. The operation plan shall provide written instructions for the daily operation and maintenance of the facility. The plan shall be revised when operational procedures change. The plan shall include the following detailed procedures at a minimum:
- (a) Designation of persons responsible for operation and maintenance of the facility;
 - (b) Proposed equipment;
 - (c) Controlling the type of waste received at the site. The plan shall specify inspection procedures, number and location of spotters and procedures to be followed if prohibited wastes are discovered;
 - (d) Weighing or measuring incoming waste pursuant to (6) below;
 - (e) Vehicle traffic control and unloading;
 - (f) Method and sequence of processing the waste;
 - (g) Operations of leachate and stormwater controls;
 - (h) Designation of permitted backup receiving and disposal areas; and
 - (i) Contingency operations, including reserve or alternate equipment, or alternate waste handling and disposal methods in case of emergency such as a natural disaster or equipment failure or receipt of prohibited materials such as used oil, asbestos-containing material or hazardous or biomedical waste.
- (6) Scales, or access to scales, for weighing solid waste received are required for all facilities owned or operated by or on behalf of a county or municipality.
- (7) In addition to the requirements specified in (1) through (6) above, the following requirements apply to composting facilities which process solid waste other than only yard trash or manure.
- (a) The waste receiving and storage areas, and the processing and curing areas shall be located on surfaces, such as asphalt or concrete, to minimize release of leachate into groundwater. The surfaces shall be capable of withstanding wear and tear from normal operations.
 - (b) The facility shall have a leachate collection and removal system designed, constructed, maintained and operated to collect and remove leachate from the waste receiving and storage areas and the processing and curing areas. Washdown from these areas and equipment, stormwater coming into contact with solid waste or compost in these areas, and condensate will be considered leachate.
 - (c) Leachate shall be reused in the process or treated in a leachate treatment system to meet applicable standards of Chapters 62-25, 62-302 and 62-330, F.A.C., at the point of discharge.

62-709.510 Operation Criteria.

- (1) The following operation requirements apply to all composting facilities.
 - (a) The design features pursuant to Rule 62-709.500, F.A.C., shall be properly operated and maintained.
 - (b) The facility shall be operated in a manner, with any needed measures taken, to control vectors and odors.
 - (c) To insure proper staffing and suitable processing facilities, the following shall be required:
 1. During hours when solid waste is received, an attendant at all facility sites; and
 2. Communication facilities for use in emergencies at all facilities.
 - (d) Measures shall be taken to avoid mixing incoming solid waste with finished compost ready to be used or sold for use to discourage the re-introduction of weed seeds and pathogens.
 - (e) More than half of the compost stored at the facility shall be used or sold for use within each year beginning the third year after facility startup. Further, any compost remaining at the facility

for three years after it was produced shall be disposed of pursuant to the requirements of Chapter 62-701, F.A.C., or shall be reprocessed so that it can be sold or used.

(f) The amount of compost stored at the facility shall not exceed the designed storage capacity.

(2) In addition to the requirements specified in (1) above, the following requirements apply to composting facilities that process only yard trash or manure.

(a) Yard trash or manure which will not be made into compost or processed into other usable material shall be removed at least monthly.

(b) Solid waste other than yard trash or manure received at the facility shall be separated and stored in a manner that prevents vector problems, and shall be removed within 72 hours.

However, recovered material which is stored in a manner that prevents vector problems may remain at the facility for up to one year.

(3) In addition to the requirements specified in subsection (1) above, the following requirements apply to composting facilities that process solid waste, other than only yard trash or manure.

(a) All waste delivered to the facility shall be confined to a designated delivery or storage area until processed. Any material not processed within 72 hours shall be removed and disposed of pursuant to Chapter 62-701, F.A.C. Any recovered materials removed from the solid waste stream shall be stored in a manner that prevents vector problems, and shall be removed from the facility at least annually.

(b) The temperature of the composting solid waste shall be monitored at a depth of two feet into the pile on a daily basis during the initial week of composting and then on a weekly basis until the finished compost is produced. The temperature readings and the length of the composting period shall be recorded. These records shall be kept for at least three years and shall be made available for inspection by Department personnel.

(4) When a solid waste management facility that produces compost ceases operation, all residuals, solid waste, and recyclable materials shall be removed from the site and recycled, or disposed of pursuant to the requirements of Chapter 62-701, F.A.C. Any remaining compost shall be used in accordance with the requirements of this rule or disposed of pursuant to the requirements of Chapter 62-701, F.A.C.

62-709.530 Testing, Recording and Reporting Requirements.

(1) The compost product shall be sampled and analyzed as follows.

(a) A composite sample of the compost produced at each composting facility shall be analyzed at intervals of every 20,000 tons of compost produced or every three months, whichever comes first, for:

Parameter Unit Method

Moisture % EPA 160.3

Total Nitrogen % dry weight EPA 351 and 353

Total Phosphorus % dry weight EPA 365

Total Potassium % dry weight EPA 3050/7610

Reduction in Organic Matter % EPA 160.4

Organic Matter % EPA 160.4

pH Standard units EPA 9045

(b) Compost produced by persons for their own use, where the compost is made from yard trash or manure, is not required to be sampled and analyzed as specified in (a) above.

(c) In addition to (a) above, compost made from solid waste, other than only yard trash or manure shall be analyzed at intervals of every 20,000 tons of compost produced or every three months, whichever comes first, for:

Parameter Unit Method

Foreign Matter % see (f) below

Cadmium mg/kg dry weight EPA 3050/7130

Copper mg/kg dry weight EPA 3050/7210

Lead mg/kg dry weight EPA 3050/7420

Nickel mg/kg dry weight EPA 3050/7520

Zinc mg/kg dry weight EPA 3050/7950

Fecal Coliform most probable number (MPN)

per gram of volatile suspended solids (VSS) SM 908

(d) The Department may decrease or increase the parameters to be analyzed for or the frequency of analysis based on monitoring data, changes in the waste stream or processing, or the potential presence of toxic substances.

(e) Sample collection, preservation, and analysis shall assure valid and representative results pursuant to a

Department-approved quality assurance plan. Composite samples shall consist of at least three individual samples of equal volume taken from separate areas along the side of the pile of the compost produced. Each sampling point shall be at a depth of two feet into the pile from the outside surface of the pile. U.S. Environmental Protection Agency (EPA) Methods 160.3, 160.4, 351, 353 and 365 are contained in Methods for Chemical Analysis of Water and Waste, 1979; EPA Methods 160.3, 160.4, 351, 353 and 365 are contained in Methods for Chemical Analysis of Water and Waste, 1979; EPA Methods 3050, 7130, 7210, 7420, 7520, 7610, 7950 and 9045 are contained in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA SW-846), 3rd Edition, September 1986, updated December 1987; Standard Method (SM) 908 is contained in Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985. Sampling shall be performed in accordance with guidance contained in Chapter 9 of EPA SW-846 and Section 4.0 of Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, EPA Region IV, April 1, 1986. Analytical results shall be submitted to the appropriate District office within 30 days of sample collection.

(f) Foreign matter content shall be determined by passing a dried, weighed sample of the compost product through a

one-quarter inch or six millimeter screen. EPA Method 160.3 shall be used to dry the sample. The material remaining on the screen

shall be visually inspected, and the foreign matter that can be clearly identified shall be separated and weighed. The weight of the separated foreign matter divided by the weight of the total sample multiplied by 100 shall be the % dry weight of the foreign matter content.

(g) The organic matter is determined by measuring the volatile solids content using EPA method 160.4.

(h) The reduction of organic matter is determined by comparing the organic matter content of the feedstock into the composting process and the organic matter content of the compost product. The amount of reduction is determined as a percent of the original amount contained in the feedstock using the following calculation:

$\% \text{ ROM} = [1 - (\text{OMK}(100 - \text{OM})/\text{OM}(100 - \text{OMK}))]100$ where: % ROM = reduction of organic matter, OM = % organic matter content of dry matter before decomposition, and OMK = % organic matter content of dry matter after decomposition.

(2) Facility owners or operators shall record and maintain for three years the following information regarding their activities for each month of operation of the facility. Records shall be available for inspection by Department personnel during normal business hours and shall be sent to the Department upon request:

(a) Analytical results on compost testing;

(b) The quantity, type and source of waste received;

(c) The quantity and type of waste processed into compost;

(d) The quantity and type of compost produced by product classification; and

(e) The quantity and type of compost removed for use or disposal, by product classification, and the market or permitted disposal facility.

(3) Owners and operators of facilities producing compost made from solid waste shall submit to the Department an annual report by June 1. The report shall be submitted on Form 62-701.900(11), and shall include:

- (a) The facility name, address and permit number;
- (b) The year covered;
- (c) The total quantity in tons, with sludge values expressed in dry weight, and type of waste received at the facility during the year covered by the report;
- (d) The total quantity in tons, with sludge values expressed in dry weight, and type of waste processed into compost at the facility during the year covered by the report;
- (e) The total quantity in tons and type of compost produced at the facility, by product classification, during the year covered by the report; and
- (f) The total quantity in tons and type of compost removed for use or disposal from the facility, by product classification, along with a general description of the market if for use during the year covered by the report.

62-709.550 Classification of Compost.

(1) Compost shall be classified based on the type of waste processed, product maturity, the amount of foreign matter in the product, the particle size and organic matter content of the product, and the concentration of heavy metals as specified in the following sections. The following characteristics shall be used:

(a) Type of waste processed.

- 1. Yard trash only.
- 2. Manure or yard trash with manure.
- 3. Solid waste, other than only yard trash or manure.

(b) Product maturity.

- 1. Mature.
- 2. Semi-mature.
- 3. Fresh.

(c) Foreign matter content.

- 1. $\leq 2\%$ dry weight.
- 2. $> 2\%$, but $\leq 4\%$ dry weight.
- 3. $> 4\%$, but $\leq 10\%$ dry weight.

(d) Particle size, using the screen size that the compost passed through. Organic matter content shall be associated with particle size.

- 1. Fine: $\leq 10\text{mm}$, and an organic matter content of $\geq 25\%$.
- 2. Medium: $\leq 15\text{mm}$, and an organic matter content of $\geq 30\%$.
- 3. Coarse: $\leq 25\text{mm}$, and an organic matter content of $\geq 35\%$.

(e) The codes in the following table for heavy metal concentrations shall be used in classifying the compost produced. The concentrations are expressed in mg/kg dry weight. In determining the appropriate classification code for parameter concentrations, if any one parameter falls in a higher concentration grouping, the code for that higher grouping will apply.

Concentration codes

Parameter 1 2 3 4

Cadmium < 15 $15- < 30$ $30-100$ > 100

Copper < 450 $450- < 900$ $900-3,000$ $> 3,000$

Lead < 500 $500- < 1,000$ $1,000-1,500$ $> 1,500$

Nickel < 50 $50- < 100$ $100-500$ > 500

Zinc < 900 $900- < 1,800$ $1,800-10,000$ $> 10,000$

(2) Compost shall be classified as follows.

(a) Type Y is compost made only from yard trash, which is mature or semi-mature, and is fine, medium or coarse. For such compost, a foreign matter content of less than 2% and a metal concentration equivalent to code 1 is assumed.

(b) Type YM is compost made from only manure or yard trash with manure which is mature or semi-mature and is fine, medium or coarse. For such compost, a foreign matter content of less than 2% and a metal concentration equivalent to code 1 is assumed.

(c) Type A is compost made from solid waste, other than only yard trash and manure, which is mature and is fine. The foreign matter content shall be less than or equal to 2%, and the metal concentration shall fall under code 1. Further, it shall contain no foreign matter, such as glass or metal shards, of a size and shape that can cause injury.

(d) Type B is compost made from solid waste, other than only yard trash or manure, which is mature or semi-mature and is fine or medium. The foreign matter content shall be less than or equal to 4%, and the metal concentration shall fall under codes 1 or 2. Further, it shall contain no foreign matter, such as glass or metal shards, of a size and shape that can cause injury.

(e) Type C is compost made from solid waste, other than only yard trash or manure, which is mature or semi-mature and is fine, medium or coarse. The foreign matter content shall be less than or equal to 10%, and the metal concentration shall fall under codes 1, 2 or 3.

(f) Type D is compost made from solid waste, or from only yard trash or manure, which is fresh and is fine, medium or coarse. It shall have a foreign matter content of less than or equal to 10%, and the metal concentration shall fall under codes 1, 2 or 3. Foreign matter content and metal concentration is assumed for fresh compost made from only yard trash or manure.

(g) Type E is compost made from solid waste, other than only yard trash or manure, which has a metal concentration that falls under code 4.

(3) Compost maturity shall be determined as follows:

(a) Mature compost is a highly stabilized compost material that has been exposed to prolonged periods of decomposition. It will not reheat upon standing to greater than 20°C above ambient temperature. It has beneficial use and can be used in direct contact with roots. The material should be brown to black in color. This level of maturity is indicated by a reduction of organic matter of greater than 60%.

(b) Semi-mature compost is compost material that is at the mesophilic stage. It will reheat upon standing to greater than 20°C above ambient temperature. It has beneficial use, although direct contact with roots should be avoided. The material should be a light to dark brown in color. This level of maturity is indicated by a reduction of organic matter of greater than 40% but less than or equal to 60%.

(c) Fresh compost is compost material that has been through the thermophilic stage and has undergone partial decomposition. The material will reheat upon standing to greater than 20°C above ambient temperature. It has beneficial use, but proper care is needed as further decomposition and stabilization will occur. The material should be similar in texture and color to the feed stock into the composting process. This level of maturity is indicated by a reduction of organic matter of greater than 20% but less than or equal to 40%.

62-709.600 Criteria for the Use of Compost.

(1) Compost classified as Types Y, YM or A shall have unrestricted distribution.

(2) Compost classified as Types B or C shall be restricted to use by commercial, agricultural, institutional or governmental operations. However, if it is used where contact with the general public is likely, such as in a park, only Type B may be used.

(3) Compost classified as Type D shall only be used at landfills or land reclamation projects. However, such use shall not be allowed if contact with the general public is likely.

(4) Type E must be disposed of pursuant to 62-701, F.A.C., unless demonstrated that use of this material will not endanger the public or the environment.

(5) The total amount of heavy metal applied to soils shall be (in pounds per acre) as follows.

(a) Cadmium – 4.45.

(b) Nickel – 111.

(c) Copper – 111.

(d) Zinc – 222.

(e) Lead – 445.

(6) For applications where repeated use of the compost can be expected, such as in agricultural applications, the amount of heavy metal applied to soils shall be no more than one-tenth of the amount listed in (5) above per acre per year. For applications where repeated use of the compost is not expected, such as land reclamation or as a soil amendment on highway medians, the amount listed in (5) above may be applied within a one-year period.

(7) If a person wishing to apply compost to the soil can demonstrate through an analysis of the cation exchange capacity and other physical and chemical characteristics of the receiving soil that a higher application rate will provide an equal degree of protection to the public and the environment, the Department may approve such application rates pursuant to Rule 62-709.700, F.A.C.

(8) Compost shall not be used in any manner that will endanger public health and welfare, and the environment, or would violate the provisions of this rule.

Specific Authority 403.061, 403.704, 403.7043 FS. Law Implemented 403.7043 FS. History– New 11-21-89, Formerly 17-709.600.

Georgia

391-3-4-.16 Composting. Amended.

(1) Composting is a desirable means of reducing the amount of solid waste destined for disposal and, as such, shall be regulated in the following manner:

(a) Yard trimmings composting operations are excluded from regulation as solid wastes handling facilities. To be considered exempt from regulation, yard trimmings must be kept separate from solid waste and must be converted to a usable compost or mulch product.

(b) Any person involved in the composting of solid waste or special solid waste, other than yard trimmings as provided in paragraph (a) above or covered by a permit-by-Rule, shall comply with the following permit requirements:

1. Design Standards: a design and operation plan prepared by a professional engineer registered to practice in Georgia and proposed as a part of the permit application must include, but is not limited to, the following standards:

(i) Capacity. The facility shall be adequate in size and capacity to manage the projected incoming solid waste and residue volumes.

(ii) Equipment. The equipment must be capable of producing a compost or mulch that is nonpathogenic, free of offensive odors, biologically and chemically stable, and free of injurious components or particles.

(iii) Storage Time. The facility shall provide for a minimum storage capacity of at least three (3) times the daily capacity of the composting equipment. No incoming shall be stored in excess of the permitted capacity.

(iv) Types of Waste. The application must include the sources, types, and weight or volumes of solid waste to be processed, including data on the moisture content of the waste, and information concerning special environmental pollution or handling problems that may be created by the solid waste.

(v) Air Quality. The facility shall be designed in such a manner as to meet any air quality standards of the Division.

(vi) Wastewater. Any wastewater generated by the facility shall be discharged to a wastewater treatment system and, before final release, shall be treated in a manner approved by the Division.

(vii) Fire Protection. Facility design shall provided for fire control equipment placed near the storage and charging area and elsewhere as needed, and additional fire fighting equipment shall be made available for emergencies.

(viii) Disposal of Surplus Compost. Any composted material not sold or otherwise beneficially reused must be disposed in a manner approved by the Division.

2. Performance Standards: all persons owning and/or operating composting facilities shall comply with the following requirements:

(i) Supervision. Operation and management of the facility shall be under the supervision and control of a

responsible operator properly trained in the operation of such facilities at all times during operation. This operator shall be present at all times during operation of this facility.

(ii) Compost. The compost resulting from composting operations shall be nonpathogenic, free of offensive odors, biologically and chemically stable, and free of injurious components or particles and able to sustain plant growth. Rejects generated by the composting process shall be disposed of in accordance with these rules.

(iii) Information Posted. Signs shall be posted at the entrance to the facility indicating the days and hours of operation. Access to the facility shall be limited to those times when authorized personnel are on duty.

(iv) Cleanliness and Sanitation. Composting facilities shall be maintained in a clean and sanitary condition. Solid waste shall be confined to the unloading area, which shall be maintained free of dust. Accumulations of putrescible materials and rubbish shall be controlled in a manner so as to

minimize odors and prevent infestation by insects or rodents. Insect and rodent control measures shall be applied as needed. Sanitary facilities shall be provided for employees and shall be kept clean and in good repair.

Kentucky

401 KAR 48:200. Landfarming and composting.

RELATES TO: KRS 224.01, 224.10, 224.40, 224.43, 224.70, 224.99

STATUTORY AUTHORITY: KRS 224.10-100

NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.10-100 and the waste management provisions of KRS Chapter 224 require the Natural Resources and Environmental Protection Cabinet to adopt administrative regulations for the disposal of solid waste. This chapter establishes standards for

solid waste sites or facilities. This administrative regulation sets forth the permit application requirements and general design and operating requirements for landfarming facilities, composting, and sludge giveaway programs.

Section 1. Applicability. (1) The requirements in this administrative regulation apply to any person disposing of solid waste by landfarming and composting.

(2) The cabinet shall not permit the land application of a solid waste that may present a threat to human health and the environment. The land application suitability of solid wastes shall be evaluated by the cabinet on a case-by-case basis. The applicant shall submit a request for a determination of waste

classification with the submittal of a notice of intent to apply. The cabinet may base a decision as to the land application suitability of a particular waste upon the ability of the waste to biodegrade in the environment, the potential for the waste to be managed in a manner consistent with 401 KAR 47:030, the likelihood that waste constituents shall contaminate surface water or groundwater, the potential for nuisances from odors or unsightly conditions, and the potential for the waste to harm human health or the environment.

(a) Municipal water treatment sludges, municipal wastewater treatment sludges, or food service industry wastes shall be classified according to the maximum dry weight concentration of heavy metals based on the average concentration of metals in a minimum of two (2) consecutive samples taken no

closer than thirty (30) days apart. The cabinet may deny the landfarming of a solid waste based upon health considerations in addition to the presence in the waste of excessive concentration of the five (5) heavy metals listed below. The sludges shall be placed in classes based on the concentration of the following heavy metals:

1. Cadmium;
2. Copper;
3. Lead;
4. Nickel; and
5. Zinc.

(b) Sludges or solid wastes other than municipal water treatment sludges, municipal wastewater treatment sludges, or food services industry solid wastes shall be classified using additional parameters based upon the source, chemical and physical characteristics of the waste and their potential for adverse impact on human health or the environment.

(3) The concentration for heavy metals in each class of sludge or solid waste shall be those indicated in Table 1 of this subsection. A single metal parameter shall be sufficient to require a solid waste to be classified as Class II or III.

Table 1. Heavy Metal Concentrations

Parameters for Class I Concentration

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

Parameters for Class II Concentration

Cadmium Greater than 10 mg/kg and less than or equal to 30 mg/kg

Copper Greater than 450 mg/kg and less than or equal to 900 mg/kg

Lead Greater than 250 mg/kg and less than or equal to 500 mg/kg

Nickel Greater than 50 mg/kg and less than or equal to 100 mg/kg

Zinc Greater than 900 mg/kg and less than or equal to 1800 mg/kg

Parameters for Class III Concentration

Cadmium Greater than 30 mg/kg

Copper Greater than 900 mg/kg

Lead Greater than 500 mg/kg

Nickel Greater than 100 mg/kg

Zinc Greater than 1800 mg/kg

(4) Sludge or solid waste classifications shall be reevaluated based upon the annual analyses submitted in the annual landfarming review.

(5) A registered permit-by-rule may be issued based upon the information submitted in the registration on a form prescribed by the cabinet in Section 18 of this administrative regulation for landfarming of solid waste classified as Class I wastes, composted solid waste sludge, or sludge giveaway programs.

(6) A landfarming permit may be issued based upon the information submitted in the application for solid wastes classified as Class II or III.

(7) Solid waste heavy metal concentration values are determined on a dry weight basis. Analysis shall be accomplished by determining the heavy metal concentration of the undried sample and determining the heavy metal content using the solids content of the original sample and computing the heavy metals

content of the sludge on a dry weight basis. Results of the laboratory determination shall include the solids content, the wet weight and dry weight content when they are submitted to the cabinet. Section 2. Notice of Intent to Apply. All applicants for a landfarming permit or a registered permit-by-rule shall submit a notice of intent to apply for a landfarming permit that shall contain the following information:

(1) Names, addresses, and telephone numbers of the landowner, applicant and waste producer. If the applicant is a government agency, corporation, company or partnership, include the name, address and telephone number of the process agent or contact individual;

(2) Sludge analyses in accordance with Section 1(2)(a) of this administrative regulation to receive a classification rating;

(3) An original, current 7.5 minute United States Geological Survey quadrangle topographic map with the proposed landfarming site boundary clearly marked;

(4) A soil conservation service soils map with the proposed landfarming site boundary clearly marked;

(5) A survey of all groundwater wells and springs within a one-fourth (1/4) mile radius of the proposed landfarming site boundary;

(6) A description of the water or wastewater treatment processes including design capacity, current hydraulic operating conditions, and the sludge treatment systems. A schematic diagram showing the treatment plant processes shall be included. All chemicals used in the treatment process shall be listed

by type and amount used;

(7) For publicly owned treatment works with pretreatment programs, a list of facilities which discharge waters to the treatment system and the quantities and characteristics of the wastes that are discharged to the facility;

(8) Any other additional information required by the cabinet.

Section 3. Contents of Permit Applications. Any person desiring a landfarming facility permit shall submit a complete application to the cabinet. The applications shall be on a form and

presented in a manner prescribed by the cabinet, and shall include, but not be limited to the following:

(1) Names, addresses and telephone numbers of the landowner, applicant, waste producer and person who completed the application form. If the applicant is a government agency, corporation, company or partnership, include the name, address and telephone number of process agent or other contact individual;

(2) A written description of the location of the proposed landfarming site and the address of the property on which the proposed landfarming site is located;

(3) A copy of the deed to the property and a copy of the proposed landfarming lease agreement if the landowner is not the applicant;

(4) A geological report of the site, including:

(a) A physical description of soils in the uppermost five (5) feet identifying the soil texture, erodibility, available moisture capacity, and permeability;

(b) A current soil analysis to determine the soil pH and cation exchange capacity (CEC) value;

(c) A delineation of soil by series on a U.S. Soil Conservation Service soils map, or on a map prepared by the soil conservation officer or a soil scientist; and

(d) A description of the surface and subsurface geology including depth to bedrock, depth to seasonal high groundwater table, karst formations, and names and descriptions of geologic formations.

(5) A description of the solid wastes to be disposed, including the inventory of industrial users and pollutants required in Section 9(7) of 401 KAR 5:055, including:

(a) The type, waste producer and total estimated quantity of solid waste per year to be disposed;

(b) A description of stabilization methods utilized to reduce pathogens in accordance with Section 11 of this administrative regulation; and

(c) A physical and chemical analysis including: percent total solids; volatile solids; total potassium; total phosphorus; total nitrogen; ammonium nitrogen (NH₄-N); nitrate nitrogen (NO₃-N); pH; and the amount of cadmium, copper, nickel, zinc, lead, chromium, and polychlorinated biphenyls (PCBs).

(6) An original current United States Geological Survey topographic map within the land application unit clearly marked;

(7) An enlargement of a current United States Geological Survey topographic map. The enlarged map shall have a minimum scale of one (1) inch equals 400 feet and the contour interval as published. This map shall contain the following:

(a) The property lines and the boundaries of the proposed site;

(b) Proposed land application unit and subplots, numbered sequentially, with the land application unit;

(c) Access and proposed or existing roads;

(d) Streams, areas of standing water such as lakes, ponds or marshes, and sinkholes on the site and within 1000 feet of the proposed site boundary;

(e) All existing manmade features within 1000 feet of the proposed site boundary including structures, public roads, utilities and water wells;

(f) The boundaries of the 100 year flood plain if applicable;

(g) The delineation of existing site surface water drainage, and existing and proposed run-off/run-on structures;

(h) Steepest slope of each subplot (numerical value) on the proposed landfarming site;

(i) Boundaries of any and all buffer zones with the distance marked; and

(j) Map legend showing all symbols used, total site acreage, and quadrangle name.

(8) The complete application narrative shall include:

(a) A description of the application method(s), equipment, and transportation method from the point of waste production to the proposed site;

- (b) Waste storage provisions to be utilized during adverse weather conditions or equipment breakdowns;
- (c) Annual application rates per acre based on waste quality as specified in Section 9 of this administrative regulation;
- (d) The cropping program for each subplot and the schedule of waste application for each subplot for a period of two (2) years from the date of permit issuance;
- (e) A farm management plan for the area to be landfarmed;
- (f) A description of the proposed site including any previous waste applications;
- (g) Written recommendations of the county agricultural extension agent for crop nitrogen requirements, and any additional fertilizer and soil amendment needed;
- (h) A description of how land application units and subplot boundaries shall be marked to ensure that the units and subplots can be identified during the life of the permit;
- (i) A description of where the landfarming records shall be maintained and the person who is responsible for their upkeep;
- (j) The name, address, phone number, and certification number of the state certified landfarming operator of the proposed landfarming site;
- (k) Additional information necessary for the cabinet to make a determination that the proposed activity shall not adversely affect human health or the environment; and
- (l) A statement from the owner or operator that the landfarming of solid waste in the county where the landfarm facilities are located is consistent with the requirements of the solid waste management plans pursuant to KRS Chapters 109 and 224. When landfarming is not determined to be consistent with local requirements, the inconsistencies shall be identified.

Section 4. Requirements for Registered Permits-by-rule. Registered permits-by-rule shall complete the registration, prescribed on a form approved by the cabinet, containing the information in Section 18 of this administrative regulation. Owners and operators shall not be required to submit an application as specified in Sections 2, 3, 5 and 6 of this administrative regulation.

Section 5. Additional Requirements for Class II Sludge Permit Applications. In addition to the requirements for an application in Section 3 of this administrative regulation, applicants for landfarming permits for Class II sludge shall submit in the application the following:

- (1) A list of all surface water bodies within a one-half (1/2) mile radius of the proposed land application unit boundary;
- (2) The usage of each surface water body listed in accordance with subsection (1) of this section;
- (3) A list of all groundwater wells, springs and sinkholes within a one-half (1/2) mile radius of the proposed land application unit boundary;
- (4) The name of the owner of the property on which the surface water body, well, spring, or sinkhole is located; and
- (5)(a) The applicant shall prepare a groundwater quality assurance plan. The plan shall include but not be limited to:
 - 1. A description of the surface and subsurface geology of the site; and
 - 2. A description of the hydrologic characteristics of the site.

(b) Upon examination of geological aspects and other relevant factors by the cabinet, the applicant 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 48:300.

Section 6. Additional Requirements for Class III Sludge Permit Applications. In addition to the requirements for an application in Section 3 of this administrative regulation, applicants for landfarming permits for Class III sludge shall submit in the application the following:

- (1) A list of all surface water bodies within a one-half (1/2) mile radius of the proposed land application unit boundary;
- (2) The usage of each surface water body listed in accordance with subsection (1) of this section;

(3) A list of all groundwater wells, springs and sinkholes within a one-half (1/2) mile radius of the proposed land application unit boundary;

(4) The name of the owner of the property on which the surface water body, well, spring, or sinkhole is located; and

(5)(a) The applicant shall prepare a groundwater quality assurance plan. The plan shall include but not be limited to:

1. A description of the hydrologic characteristics of the site; and

2. A description of the surface and subsurface geology of the site.

(b) The applicant shall submit a groundwater monitoring plan to include location and specifications of wells, monitoring parameters, and monitoring schedules in accordance with 401 KAR 48:300.

Section 7. Siting Considerations. (1) Solid waste shall not be applied in the 100 year flood plain unless the waste is injected or incorporated.

(2) The land application unit shall have a minimum of four (4) feet of soil between the soil surface and both the seasonal high water table and bedrock.

(3) Solid waste application shall not be located on soils with a permeability rate greater than six (6) inches per hour or less than two-tenths (0.2) inches per hour.

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

Section 8. Operating Requirements. (1) The owner or operator shall cause, suffer, or allow all of the requirements, specifications and standards of this section to be met.

(a) Prior to applying sludges to the land, all sludges shall be processed to significantly reduce pathogens. Approved processes to reduce pathogens are aerobic digestion, air drying, anaerobic digestion, composting or lime stabilization as specified in Section 11 of this administrative regulation.

(b) Other methods or operating conditions may be acceptable as processes to significantly reduce pathogens. Such processes shall be deemed equivalent based upon the reduction of pathogens and volatile solids.

(2) A certified landfarming operator shall be available to the landfarming site during sludge application. All sludge applications are to 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, discharged to or placed in a landfarming site.

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

(7) The following agricultural use restrictions apply:

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

(b) Land spreading shall not occur on land where crops for direct human consumption, other than leafy vegetables or root crops, are 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) When the annual application rate of cadmium exceeds 0.44 pound per acre, food chain crops shall not be utilized in the following cropping season; and

(e) Solid waste shall not be land spread where tobacco is harvested within five (5) years of 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.
- (9) Solid waste shall not be land spread on frozen, snow-covered, ice-covered, or water-saturated soil, or during any precipitation event.
- (10) No solid waste shall be applied in excess of schedules and rates of waste application approved by the cabinet.
- (11) No raw or unstabilized solid waste shall be landfarmed. No person shall cause, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor.
- (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 determined in Section 3(8)(h) of this administrative regulation shall be staked or otherwise clearly marked in the field.
- (15) Buffer zone distances shall be maintained in accordance with Table 2 of this subsection.

Table 2

Required Buffer Zones

Minimum Distance in Feet from the Boundary of the Application Zone

Structure or Object Surface Injection All Other Means of Application

Residences & occupied

Buildings 250 500

Drinking water well 250 500

Surface water body 250 500

Intermittent stream 250 500

Karst feature 250 500

Public road 30 50

Intermittent stream 30 50

Ephemeral stream 30 50

Property line 30 50

- (16) Surface water or solid waste ponding within the application zone shall be prohibited.
- (17) Surface run-off/run-on shall be controlled to minimize the possibility of applied solid waste contaminating nearby surface water or adjacent land areas.
- (18) The permit or registered permit-by-rule holder shall maintain records of all landfarming activities on forms provided by the cabinet throughout the operation of the site. The records shall at a minimum contain the schedules and rates of waste application and all laboratory analyses. Records shall be made available to the cabinet upon request.
- (19) An annual report of landfarming activities shall be submitted to the cabinet sixty (60) days prior to the anniversary date of the permit or registered permit-by-rule issuance. The report shall be submitted on forms provided by the cabinet.
- (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) Solid waste from municipal wastewater treatment, municipal water treatment facilities and food service industry wastes shall be sampled in accordance with Table 3 of this paragraph or more frequently if required by the cabinet. Other solid waste shall be sampled in accordance with a schedule approved by the cabinet. Solid waste shall be analyzed for solids content, pH, ammonium nitrogen (NH₄-N), nitrate nitrogen (NO₃-N), total 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.

Table 3

Required Sampling Schedule

Design Treatment Capacity (gallons per day)

Samples Per Year

Less than 100,000 1

100,001 - 1,000,000 2

1,000,001 - 10,000,000 4

More than 10,000,000 12

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

(22) Solid waste containing concentrations of polychlorinated biphenyls greater than one (1) milligram per kilogram shall not be landfarmed.

(23) The maximum amount of metals from solid wastes that may be applied during the life of the site shall be based upon the cation exchange capacity of the soil and shall be those in Table 4 of this subsection.

Table 4

Maximum Amount of Metals

Cation Exchange Capacity (meg/100g)

Parameter 0.5 5-15 15+

Lead 500 lbs/ac. 1000 lbs/ac. 2000 lbs/ac.

Cadmium 4.46 lbs/ac. 8.02 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 solid waste per acre that may be land spread without exceeding the above limitations:

Tons waste/acre = (lbs per acre for each parameter from Table 4)

(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) 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 permittee 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 permittee. 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 solid 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, an owner or operator who is landfarming Class I sludges shall limit the annual application rate to a maximum of fifteen (15) dry tons of sludge per acre per year.

(27)(a) In addition to the operating requirements in this section, the owner or operator who is landfarming Class II sludge shall sample surface water quarterly. Parameters to be monitored shall include pH, ammonium nitrogen (NH₄-N), fecal coliform bacteria, chromium, biological oxygen demand, total

organic carbon, and total dissolved solids. A minimum of one (1) upgradient and one (1) downgradient sampling point is required.

(b) Groundwater monitoring, if required, shall be conducted in accordance with 401 KAR 48:300.

(28)(a) In addition to the operating requirements in this section, the owner or operator who is landfarming Class III sludge shall sample surface water quarterly. Parameters to be monitored shall include pH, ammonium nitrogen (NH₄-N), fecal coliform bacteria, chromium, biological oxygen demand, total

organic carbon, and total dissolved solids. A minimum of one (1) upgradient and one (1) downgradient sampling point is required.

(b) Groundwater monitoring shall be conducted in accordance with 401 KAR 48:300.

Section 9. Application Rates. (1) The annual application rate shall be the lesser of the application rates as determined for cadmium and for nitrogen utilization.

(2) Determine the percent of available organic nitrogen in the waste using the following calculation:

Percent available organic N = (percent total N) - (percent NH₄-N) - (percent NO₃-N)

(3) 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 NO₃-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).

Tons/acre = Nitrogen utilization rate of vegetative cover Lbs available organic N/ton

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

Tons/acre = pounds of allowable cadmium per acre (mg per kg of cadmium in sample) x 0.002

Section 10. Closure. An owner or operator of a permitted landfarming site shall submit to the cabinet a closure report to include:

(1) The results of final soil samples taken in accordance with the operational permit between twelve (12) and thirteen (13) months following the last application of solid waste;

(2) The results of final surface water samples taken in accordance with the operational permit between twelve (12) and thirteen (13) months following the last application of solid waste for all Class II and Class III permit holders;

(3) A historical summary of all landfarming by subplot showing the allowable and actual rates of solid waste application, heavy metals and nitrogen;

(4) When heavy metal applications exceed the amounts listed in Table 4 in Section 8(23) of this administrative regulation, the owner shall immediately commence closure of the facility and submit a copy of the notice in the deed that shall advise all future landowners in perpetuity that heavy metal concentrations exceed those allowed by this administrative regulation; and

(5) The results of final groundwater samples in accordance with the operational permit taken between twelve (12) and thirteen (13) months following the last application of solid waste by all Class III and those Class II permits required to monitor groundwater.

Section 11. Processes to Significantly Reduce Pathogens. (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 (15) degrees celsius to forty (40) days at twenty (20) degrees celsius, 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 underdrained sand beds, or 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.

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

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

(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. Permit Modification. (1) Landfarming permits shall be issued to the operator and may include application zones which are not located contiguously.

(2) Class II and Class III sludge landfarming permit holders may add sites through permit modification procedures with the following conditions:

(a) The permit holder shall submit the appropriate information in accordance with Section 3 of this administrative regulation; and

(b) A public notice shall be published and no permit modification granted until a minimum of thirty (30) days has passed from the date publication of the notice and the condition of Section 2 of 401 KAR 47:140 and 401 KAR 47:130 have been met.

Section 13. Distribution of Sludge. (1) A municipal water or wastewater treatment sludge producer may give away Class I or Class II sludge to individuals for subsequent use as a soil conditioner. This program shall be operated under a registered permit-by-rule in accordance with 401 KAR 47:110. The maximum

amount of sludge that may be distributed annually to any individual is limited to 2000 pounds (dry weight).

(2) Producers of Class I or Class II municipal water or wastewater sludge shall submit the following application requirements for the sludge giveaway program:

(a) A sludge analysis as required in Section 1 of this administrative regulation that demonstrates the sludge is Class I or II;

(b) A description of the distribution system;

(c) A recordkeeping system to include the name and address of individuals receiving sludge and the total quantity of sludge received; and

(d) A description of the process to significantly reduce pathogens.

(3) During operation of the giveaway program the producer shall:

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

(b) Submit annually to the cabinet the sludge analysis performed in accordance with the schedule contained in Table 3 in Section 8(20) of this administrative regulation;

(c) Provide to individuals receiving waste, copies of the sludge analyses and a brochure, to be published 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.

Section 14. Sludge Composting. Sludge shall be composted under a registered permit-by-rule in accordance with 401 KAR 47:110.

(1) Producers of Class I or Class II municipal wastewater sludge shall register on a form prescribed by the cabinet containing the following information:

(a) A sludge analysis as required in Section 1 of this administrative regulation that demonstrates the sludge is a Class I or II;

(b) A description of the system and the manufacturer's performance data for mechanical composting systems;

(c) A site layout, including an enlarged topographic map with a scale of one (1) inch equals 400 feet along with calculations for area requirements;

(d) A sludge analysis for the following parameters (by dry weight): percent total solids; volatile solids; total potassium; total phosphorus; total nitrogen; ammonium nitrogen (NH₄-N); nitrate nitrogen (NO₃-N); pH; and total cadmium, copper, nickel, zinc, lead, chromium, and polychlorinated biphenyls (PCBs);

- (e) A process design that shall describe:
 1. Use of bulking agents, moisture control, or feed amendments;
 2. Temperature ranges and residence times;
 3. Storage of compost during curing after the primary composting operation;
 4. Provision for additional drying and screening;
 - (f) A marketing and distribution plan;
 - (g) Specifications for the final product;
 - (h) A description of closure procedures for the composting site; and
 - (i) A narrative detailing the methods that the owner or operator shall use to comply with the environmental performance standards in 401 KAR 47:030.
- (2) Any person who composts wastewater treatment or water treatment sludge shall:
- (a) Use only Class I or Class II sludges for composting;
 - (b) Use a composting process to further reduce pathogens in accordance with subsection (3) of this section;
 - (c) Keep a record of all recipients who receive more than twenty (20) cubic yards in any given month;
 - (d) After the composted sludge has completed the curing process, distribute or dispose within one (1) year at least seventy-five (75) percent of the compost; and
 - (e) Dispose of any materials that do not meet standards for distribution within one (1) month of such a determination in an approved facility.

Section 15. Solid Waste Composting. Solid wastes shall be composted under a registered permit-by-rule as allowed by 401 KAR 47:110.

- (1) This section shall apply to any and all persons who compost solid waste other than wastewater treatment sludge for distribution.
- (2) Owners and operators of registered permit-by-rule solid waste composting facilities shall register on a form prescribed by the cabinet containing the following information:
 - (a) A complete description of the solid waste to be composted;
 - (b) A description of the system and the manufacturer's performance data for mechanical composting systems;
 - (c) Site layout, including a map;
 - (d) A process description which shall include the appropriate items as follows:
 1. Use of bulking agents, moisture control or feed amendments;
 2. Temperature ranges and residence times;
 3. Storage of compost during curing after the primary composting operation; and
 4. Provision for additional drying and screening.
 - (e) A marketing and distribution plan;
 - (f) Specifications for the final product;
 - (g) A plan for the closure of the composting site; and
 - (h) A narrative of the methods that the owner or operator shall use to comply with the environmental performance standards in 401 KAR 47:030.
- (3) Any person who composts solid waste other than wastewater treatment or water treatment sludge shall:
 - (a) Keep a log of recipients who receive more than twenty (20) cubic yards in any given month;
 - (b) Maintain a record of the amount of solid waste that is composted and the date it is initiated and completed; and
 - (c) After the composted solid waste has completed the curing process, distribute or dispose within one (1) year at least seventy-five (75) percent of the compost.

Section 16. Compliance Schedule. This section applies to all persons who were issued a landfarming permit prior to the effective date of this administrative regulation and continue operation of their landfarming facility. Such persons shall do the following:

- (1) Comply with the environmental performance standards of 401 KAR 47:030;

- (2) Implement the operational requirements of Section 8 of this administrative regulation and continue with the monitoring requirements as prescribed in the landfarming permit;
- (3) Submit the annual landfarming review for the landfarming permit sixty (60) days prior to the anniversary date of the permit issuance;
- (4) Upon receipt and review of the annual landfarming review, the cabinet shall assign a classification rating to the solid waste and notify the permit holder of any additional information needed to amend the landfarming permit such that it complies with the terms of 401 KAR 48:200.
- (5) Any person who qualifies for a registered permit-by-rule for landfarming shall notify the cabinet of his intent to continue operation of the facility by submitting a registration by October 1, 1990. Failure to submit the registration form shall result in the appropriate enforcement actions pursuant to KRS Chapter 224.
- (6) Persons who were issued a permit prior to the effective date of this administrative regulation, except those qualifying for a registered permit-by-rule, and fail to file the required information or respond to correspondence pertaining to their permit within the dates established in the correspondence, shall no longer hold a permit for landfarming. Prohibited by KRS 224.40-100, such sites shall be considered to be open dumps, should any additional solid waste be disposed without securing a valid permit.

Section 17. Public Information Process. Once the cabinet has made a preliminary determination to issue or deny a landfarming permit application, the permit applicant shall issue a public notice for approvals. The cabinet shall issue the public notice for denials. This notice shall be distributed by the cabinet as

specified in 401 KAR 47:140. The contents of the public notice shall include those items listed in 401 KAR 47:140. The cabinet shall make available a thirty (30) day comment period commencing with the date the notice is published. This section does not apply to registered permits-by-rule.

Section 18. Registration. Persons who landfarm Class I sludge shall file a registration for a registered landfarming permit-by-rule that shall contain the following information:

- (1) Names, addresses, and telephone numbers of the landowners, registrant and waste producer. If the applicant is a government agency, corporation, company or partnership, include the name, address and telephone number of the process agent or contact individual;
- (2) Solid waste analyses in accordance with Section 1(2)(a) and (b) and Section 3(5)(c) of this administrative regulation to receive a classification rating;
- (3) An original, current seven and five-tenths (7.5) minute United States Geological Survey quadrangle topographic map with the proposed landfarming site boundary clearly marked;
- (4) A list of all known groundwater wells and springs within a one-fourth (1/4) mile radius of the proposed landfarming site boundary;
- (5) A description of the water or wastewater treatment processes including design capacity, current hydraulic operating conditions, and the sludge treatment systems. A schematic diagram showing the treatment plant processes shall be included. All chemicals used in the treatment process shall be listed by type and amount used;
- (6) Other additional information required by the cabinet; and
- (7) Owners or operators shall submit revisions to the registration form for subsections (1) and (6) of this section, when necessary. (16 Ky.R. 1789; Am. 2221; 2383; eff. 5-8-90.)

Note from 9/28/09

Kentucky is currently revising our compost regulations. The new reg includes maturity standards, inert materials and soluble salts limits, 1,000 ft. setback from schools 7 public areas, to name some of the high points. We retained for the most part our relatively stringent heavy metals limits, however this rule doesn't cover sewage sludge. We didn't see any need to raise the numbers (we considered the 503 Table 3 limits) since yard and food waste compost doesn't generally have any problems with our low limits. There will also be time and temp and pathogen testing standards for compost that includes manure or animal flesh. A little tiering - like facilities composting more than 50,000 cu. yds. per year will need to do so in a building or on an impermeable pad. We have required state certified operators using a agency directive in the past, now that requirement will be incorporated in the rule.

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Mississippi

http://www.deq.state.ms.us/MDEQ.nsf/page/SW_General_Solid_Waste_Guidance?OpenDocument

SECTION IX. COMPOSTING FACILITY REQUIREMENTS

A. 1. An individual permit or a certificate of coverage under a general permit is required for the operation of a composting facility. The individual permit or certificate of coverage under any applicable general permit must be issued prior to the receipt of any waste.

2. An applicant for a new composting facility shall complete a notification of intent for coverage under any applicable general permit or an application for an individual permit on forms provided by the Department. Such submittal shall demonstrate that the facility will comply with all applicable requirements of Sections II, III and IX of these regulations and the terms and conditions of a general permit or an individual permit.

3. Owners of existing composting facilities, which have been issued an individual permit, may request that their permit be revoked and that they be issued a certificate of coverage under any applicable general permit. Likewise, owners of existing composting facilities which have been previously issued a certificate of coverage under a general permit may request that their certificate of coverage be revoked and that they be issued an individual permit.

B. Requirements for facilities that receive only yard waste or rubbish.

1. Access to the facility shall be closed to the general public unless an attendant is on site.

2. Non-biodegradable bags, as well as all unauthorized waste materials, as determined by the Department, shall be removed from the compost and stored in appropriate containers for ultimate disposal or management at a facility approved by the Department.

3. Open burning of solid waste, except for land clearing debris generated on the site of the facility, shall be prohibited. Immediate action shall be taken to extinguish any accidental fire and the Department shall be notified as soon as possible.

4. Compost offered for use must be produced by a process that encompasses turning on a regular basis to aerate the waste, maintain temperatures, and/or reduce pathogens. Similar technologies that accomplish the same may also be considered by the Department.

5. Surface water drainage shall be diverted around and away from the composting area and controlled to prevent any washing or escape of waste from the property. If the Department deems it necessary, a leachate collection and treatment system may be required.

6. An annual report shall be submitted to the Department on or before February 28th of the following calendar year, which includes the following information:

a. the facility name, address, and permit number;

b. the total quantity, by weight or volume, of the waste received for composting;

c. the total quantity, by weight or volume, of all residuals and recyclables separated from the waste or compost, and a description of how these materials were disposed or managed;

d. the total quantity, by weight or volume, of the compost produced;

e. the total quantity, by weight or volume, of the compost removed from the facility, and a description of how the compost was distributed or used; and,

f. the remaining capacity for storage of compost at the facility based upon the amount of compost on site at the beginning of the year, the amount of compost produced, and the amount removed during the year.

C. Requirements for facilities that receive household garbage, wastewater sludge, animal wastes and manures and/or other solid waste with similar properties or characteristics, as determined by the Department.

1. Design requirements

a. Specifications for site preparation must be included in the engineering design report developed for the site, such as clearing and grubbing, berm construction, drainage control structure, access roads, screening, fencing, etc.

b. Surface water drainage shall be diverted around and away from the composting area and controlled to prevent any escape of waste from the property. Washdown water, leachate and any other contaminated water generated in the facility other than domestic wastewater shall be directed to sumps for use within the process. No discharge of contaminated water shall occur unless specifically allowed by the issuance of a wastewater permit.

c. For facilities which process household garbage, the receiving area and the composting area must be covered with a roof capable of preventing rainfall from directly contacting the waste or compost. Final curing areas are not required to be roofed.

2. Operational Requirements

a. The individual(s) responsible for making the decisions critical to the composting process such as turning, wetting, screening, etc., shall have a knowledge of the biological processes at work and the expertise and knowledge capable of operating the facility in compliance with the requirements of this sections.

b. All waste delivered to the facility must be confined to a designated delivery or receiving area. For facilities which receive household garbage, the waste must be processed within 72 hours or removed and disposed in another appropriate facility.

c. Access to the facility shall be controlled by a permanent fence and gate or enclosed buildings. All access points shall be secured whenever the facility is not open for business or when no authorized personnel are on site.

d. Residuals and recyclables shall be stored in a manner to prevent vector intrusion and aesthetic degradation. Appropriate steps shall be taken as necessary to alleviate any problems with flies, mosquitoes, or other vectors. Recyclables shall be removed at least annually; non-recyclable residuals shall be removed at least weekly.

e. Unless the Permit Board authorizes different operating conditions based upon a sufficient demonstration that such conditions would result in a compost of equal or better quality, the following conditions shall apply:

(1) Where the windrow method of composting is utilized, a temperature of at least 55 °C must be maintained in the windrow for at least three weeks. Aerobic conditions must be maintained during the compost process. The windrow must be turned at least twice weekly during the three-week period.

(2) Where the static aerated pile method of composting is utilized, a temperature of at least 55 °C must be maintained for at least seven days. Aerobic conditions must be maintained during the compost process.

(3) Where the in-vessel method of composting is utilized, a retention time in the vessel must be at least 24 hours with the temperature maintained at 55 °C or higher. A stabilization period of at least seven days must follow the minimum retention period. Temperature in the compost pile must be maintained at least at 55 °C for at least three days during the stabilization period.

3. Testing and Monitoring

a. A composite sample of the compost produced shall be taken and analyzed at intervals of every 20,000 tons of compost produced or every three months, whichever comes first. At a minimum, the following tests shall be conducted:

Parameter Units to be Expressed

Moisture %

Total Nitrogen (as N) % dry weight

Ammonia Nitrogen (as N) % dry weight

Nitrate Nitrogen (as N) % dry weight

Total Phosphorous % dry weight

Total Potassium % dry weight

Organic Matter % dry weight

Reduction in Organic Matter %

pH standard units

Arsenic, Total mg/kg dry weight
Arsenic, TCLP ppm
Barium, Total mg/kg dry weight
Barium, TCLP ppm
Cadmium, Total mg/kg dry weight
Cadmium, TCLP ppm
Chromium, Total mg/kg dry weight
Chromium, TCLP ppm
Copper, Total mg/kg dry weight
Lead, Total mg/kg dry weight
Lead, TCLP ppm
Mercury, Total mg/kg dry weight
Mercury, TCLP ppm
Nickel, Total mg/kg dry weight
Selenium, Total mg/kg dry weight
Selenium, TCLP ppm
Silver, Total mg/kg dry weight
Silver, TCLP ppm
Zinc, Total mg/kg dry weight

c. In addition to the test parameters required in paragraph E.3.b of this section where sewage sludge, animal manures and wastes or other similar wastes are composted, a fecal coliform count shall be conducted before and after composting.

d. The Permit Board may require additional or fewer test parameters or may increase or decrease the frequency of analysis based upon the quantity or characteristics of the waste, the location of the facility, or other factors which the Permit Board deems relevant.

e. Composite samples of the compost taken pursuant to this section shall consist of at least five individual samples of equal volume taken from separate areas along the side of each pile of compost. Each sampling point shall be at a depth of two feet into the pile from the outside surface.

f. Analytical methods for all tests shall be approved by the U.S. Environmental Protection Agency or the Department.

g. The Permit Board may require other monitoring activities such as groundwater and/or surface water monitoring.

h. The reduction in organic matter required pursuant to paragraph E.3.b of this section shall be determined by comparing the organic matter content of the feedstock and the organic matter content of the compost product, using the following calculation:

$$\% \text{ ROM} = \left[\frac{100 - \text{OMP}}{100 - \text{OMF}} \right] \times 100$$

$$\text{OMF} = 100 - \text{OMP}$$

where % ROM = reduction in organic matter

OMF = % organic matter of the feedstock (before decomposition)

OMP = % organic matter of the compost product (after decomposition)

4. Recordkeeping and Reporting.

a. Records shall be maintained at the facility of the quantity of incoming waste, residuals and recyclables, and the quantity and quality of compost produced.

b. Records of analytical testing and monitoring shall be maintained for a period of at least five (5) years, including:

(1) the date of measurement and the person measuring the quantity of incoming waste, residuals, recyclables, and compost produced, and the results thereof;

- (2) the dates all analyses were performed;
 - (3) the person or contract lab who performed all analyses;
 - (4) the analytical techniques or methods used; and
 - (5) the results of all analyses.
- c. Records shall be available for inspection by Department personnel during normal business hours and shall be sent to the Department upon request.
- d. An annual report shall be submitted to the Department on or before February 28th of the following calendar year, which includes the following information:
- (1) the facility name, address, and permit number;
 - (2) the total quantity in weight or volume of waste received at the facility;
 - (3) the total quantity in weight or volume of all residuals and recyclables separated from the waste or compost, and a description of how these materials were disposed or managed;
 - (4) the total quantity in tons (dry weight) or volume of waste processed for composting at the facility;
 - (5) the total quantity in tons (dry weight) or volume of compost produced at the facility;
 - (6) the total quantity in tons (dry weight) or volume of compost removed from the facility, and a description of how the compost was distributed, used, or disposed; and
 - (7) the remaining capacity for storage of compost at the facility based upon the amount of compost on site at the beginning of the year, the amount of compost produced, and the amount removed during the year.

D. Classification of Compost

1. Compost shall be classified based upon the type of waste processed, product maturity, particle size, moisture content, and chemical quality.

a. Types of waste processed shall include the following:

- (1) yard waste or rubbish only;
- (2) sewage sludge;
- (3) animal manures and wastes,
- (4) household garbage, or other solid waste.
- (5) some combination of the above wastes

b. Product maturity.

(1) Mature compost is a highly stabilized compost material that has been exposed to prolonged periods of decomposition. It will not reheat upon standing to greater than 20°C above ambient temperature. The material should be brown to black in color. This level of maturity is indicated by a reduction in organic matter of greater than 60%.

(2) Semi-mature compost is compost material that is at the mesophilic stage. It may reheat upon standing to greater than 20°C above ambient temperature. The material should be light to dark brown in color. This level of maturity is indicated by a reduction in organic matter of greater than or equal to 40% but less than or equal to 60%.

(3) Fresh compost is compost material that has not completed the thermophilic stage and has undergone only partial decomposition. The material will reheat upon standing to greater than 20°C above ambient temperature. The material is usually similar in texture and color to the feedstock of the composting process. This level of maturity is indicated by a reduction in organic matter of greater than or equal to 20% but less than or equal to 40%.

c. Particle size.

(1) Fine compost is compost that will pass a 10mm screen.

(2) Coarse compost is compost that will not pass a 10mm screen, but will pass a 25mm screen.

(3) Material, which will not pass a 25mm screen, shall be considered as residuals and not compost. It may be placed back into the compost process for additional reduction in size and decomposition.

d. Moisture content.

Any finished compost which is not mature shall have a moisture content no higher than 60% at the time it is released from the facility for distribution or use.

e. Chemical Quality.

The chemical quality of the compost shall be determined by the toxicity characteristics leaching procedure (TCLP) for the following metals, and shall be defined as either good or poor:

Metal Good Quality Poor Quality

Arsenic < 0.5 ppm 0.5 - 5.0 ppm

Barium <10.0 ppm 10.0 - 100 ppm

Cadmium < 0.1 ppm 0.1 - 1.0 ppm

Chromium < 0.5 ppm 0.5 - 5.0 ppm

Lead < 0.5 ppm 0.5 - 5.0 ppm

Mercury <0.02 ppm 0.02 - 0.2 ppm

Selenium < 0.1 ppm 0.1 - 1.0 ppm

Silver < 0.5 ppm 0.5 - 5.0 ppm

2. Compost shall be classified as follows:

a. Class I is compost made only from yard waste and/or other rubbish, which is mature or semi-mature, and is fine or coarse. For such compost, the chemical quality is assumed to be good, and no analytical testing is required unless the Department has reason to believe that the quality of the compost may not be good. If the compost is semi-mature, the moisture content must be less than or equal to 60%

b. Class II is compost made from sewage sludge, or from yard waste/rubbish mixed with sewage sludge, which is mature, fine, and has a good chemical quality.

c. Class III is compost made from household garbage or any other solid wastes with similar properties or characteristics, which is mature, fine, and has a good chemical quality.

d. Class IV is compost made from household garbage or any other solid wastes with similar properties or characteristics, which is mature or semi-mature, and is fine or coarse, and has a good chemical quality. If the compost is semi-mature, the moisture content must be less than or equal to 60%.

e. Class V is compost made from any solid waste which is fresh, or which has a poor chemical quality.

E. Compost distribution and use.

1. Compost classified as Class I or II shall have unrestricted distribution.

2. Compost classified as Class III or IV shall be restricted to use by commercial, agricultural, institutional, or governmental operations. However, if it is used where contact with the general public is likely, such as in a park, only Class III compost may be used.

3. Compost classified as Class V shall only be used as landfill cover, with the specific approval of the Department.

4. Compost, which cannot be processed to meet the definition of one of the five classifications in Part F.2 of this section, must be disposed in a facility approved by the Department.

5. A release form shall be provided to every person who receives for distribution or use compost classified as Class II, III, or IV, which contains, at a minimum, the following information:

a. the name of the person to whom the compost is released, and the date released;

b. the classification and quantity of compost released;

c. the results of the latest chemical analysis of the compost conducted pursuant to paragraph E.3. of this section;

d. the amount of total cadmium, copper, nickel, lead and zinc present in the compost, expressed in pounds per dry ton of compost;

e. the maximum allowable compost application rate (MACAR), in tons per acre, based upon the concentration of total cadmium, copper, nickel, lead and zinc, as computed and restricted in paragraph G.6 of this section;

- f. a statement that any application of the compost in excess of the maximum allowable compost application rate as shown on this form is a violation of the laws of the State of Mississippi;
- g. if the compost is classified as Class IV, a statement that the compost shall not be applied where contact with the general public is likely, such as in a park.
- h. the signature of a representative of the compost facility and the person to whom the compost is released.

If the person listed in paragraph G.5.a of this section indicates in the release form that he/she will not distribute or use the compost within the State of Mississippi, or, if the compost will only be used for landfill cover, the information in paragraph G.5.d, G.5.e, or G.5.f of this section are not required to be provided.

6. The maximum allowable compost application rate (MACAR) shall be computed according to the following equation:

$$\{MACAR\}M = \{MAMAR\}M \\ \{CONC\}M \times 10^{-6} \times 2000$$

where {MACAR}M = maximum allowable compost application rate, in tons/ac/yr, based upon the specific metals listed in paragraph G.7.a of this section.

[MAMAR}M = maximum allowable metal application rate, in lbs/ac/yr, for each of the metals listed in paragraph G.7.a of this section.

{CONC}M = the total metal concentration, in mg/kg dry weight, for each of the metals listed in paragraph G.7.a of this section.

After computing the MACAR for each of the metals listed in paragraph G.7.a. of this section, the lowest value computed shall be the MACAR to be provided in the release form pursuant to paragraph G.5.e. of this section.

7. a. Except as provided in paragraphs G.7.b. and G.7.c. of this section, no person who applies or uses compost on land within the State of Mississippi, other than for landfill cover, shall do so in a manner that exceeds the following maximum allowable metal application rates (MAMAR's):

Metal MAMAR (lbs/ac/yr)

Cadmium 0.45

Copper 11.1

Lead 44.5

Nickel 11.1

Zinc 22.2

b. For applications where repeated use of the compost is not expected, such as land reclamation or as a soil amendment on highway right-of-ways, request for higher application rates may be made to the Department. Such request must be made in writing to the Department, stating the site upon which the compost will be used. The request must be approved in writing by the Department. In no case will the Department allow an application rate of more than 10 times the MAMAR's listed in this part, except as provided in paragraph G.7.c of this section.

c. If a person wishing to apply compost to the soil can demonstrate through an analysis of the soil cation exchange capacity and other physical or chemical characteristics of the soil that a higher MAMAR will provide an equal degree of protection to the environment, the Department may approve such application rates.

North Carolina

SECTION .1400 - SOLID WASTE COMPOST FACILITIES

15A NCAC 13B .1401 REQUIREMENT FOR PERMIT

(a) All persons whose purpose is or includes the production of compost from solid waste or solid waste co-composted with other wastes shall not construct, operate, expand or modify a facility until a currently valid permit for a solid waste compost facility is issued by the Division. This provision also applies to facilities that accept, store, or produce compost or mulch from yard waste or from residues from agricultural products and processing. General Provisions, Siting, design, application, operational, distribution, and reporting requirements shall be in accordance with Rules .1402, .1403, .1404, .1405, .1406, .1407, and .1408 of this Section.

(b) Plans for a Large Type 3 or Type 4 Solid Waste Compost Facility Permit, or a permit for any facility located over a closed out disposal area shall be submitted in accordance with Rule .0201(a)(3) of this Subchapter. A minimum of four sets of plans shall be submitted within each application.

15A NCAC 13B .1402 GENERAL PROVISIONS FOR SOLID WASTE COMPOST FACILITIES

(a) Applicability. The provisions of this Rule apply to compost facilities that compost solid waste or co-compost solid waste with sludges that are not classified as a solid waste, functioning as a nutrient source. Facilities that co-compost with sewage sludge shall comply with all applicable Federal regulations regarding sludge management at 40 CFR 501 and 503. 40 CFR 503, subpart B is hereby incorporated by reference, including subsequent amendments or additions. Copies of the Code of Federal Regulations may be obtained from the Solid Waste Section at 401 Oberlin Road, Suite 150, Raleigh, NC 27605 at no cost.

(b) The provisions of this Section do not apply to compost facilities that compost sludge with municipal solid waste functioning only as a bulking agent.

(c) Solid Waste Compost Facilities that have been permitted prior to the effective date of this Rule shall meet the requirements of this Section within one year of the effective date of this Rule, or, within two years if more than one hundred thousand dollars (\$100,000) of capital investment is necessary to comply with changes.

(d) Solid waste compost produced outside the State of North Carolina and imported into the state shall comply with the requirements specified in Rule .1407 of this Section.

(e) Compost that is disposed shall not count toward waste reduction goals.

(f) Solid waste compost facilities shall be classified based on the types and amounts of materials to be composted.

(1) Type 1 facilities may receive yard and garden waste, silvicultural waste, untreated and unpainted wood waste or any combination thereof.

(2) Type 2 facilities may receive pre-consumer meat-free food processing waste, vegetative agricultural waste, source separated paper or other source separated specialty wastes, which are low in pathogens and physical contaminants. Waste acceptable for a Type 1 facility may be composted at a Type 2 facility.

(3) Type 3 facilities may receive manures and other agricultural waste, meat, post consumer-source separated food wastes and other source separated specialty wastes or any combination thereof that are relatively low in physical contaminants, but may have high levels of pathogens. Waste acceptable for a Type 1 or 2 facility may be composted at a Type 3 facility.

(4) Type 4 facilities may receive mixed municipal solid waste, post collection separated or processed waste, industrial solid waste, non solid waste sludges functioning as a nutrient source or other similar compostable organic wastes or any combination thereof. Waste acceptable for a Type 1, 2 or 3 facility may be composted at a Type 4 facility.

(5) The listed waste types in Subparagraph (f)(2) of this Rule shall be considered to be low in pathogens and physical contaminants if handled so as to prevent development of contaminants or

exposure to physical contamination. The listed waste types in Subparagraph (f)(3) of this Rule are likely to have high pathogens and low physical contamination. In determining whether a specific waste stream is acceptable for composting in a Type 2 or Type 3 facility, the Division shall consider the method of handling the waste prior to delivery to the facility as well as the physical characteristics of the waste. Testing for pathogens and physical contaminants may be required where a determination cannot be made based upon prior knowledge of the waste. Test methods shall be in accord with Appendices A and B to Table 3.

(6) Small facilities are those that receive less than 1000 cubic yards of material for composting per quarter, and occupy less than two acres of land, except that a Small Type 1 facility shall process or store less than 6,000 cubic yards of material per quarter.

(7) Large facilities are those that receive 1000 cubic yards or more of material for composting per quarter or occupy two acres or more of land, except that a Large Type 1 facility shall process or store more than 6,000 cubic yards of material per quarter.

(g) A permit is not required for the following operations:

(1) Backyard Composting.

(2) Farming operations and silvicultural operations where the compost is produced from materials grown on the owner's land and re-used on the owner's land or in his associated farming operations and not offered to the public.

(3) Small Type 1 Facilities meeting the following conditions:

(A) Notification of the Solid Waste Section prior to operation and on an annual basis as to:

(i) Facility location;

(ii) Name, address and phone number of owner and operator;

(iii) Type and amount of wastes received;

(iv) Composting process to be used; and

(v) Intended distribution of the finished product.

(B) Agreement to operate in accordance with operational requirements as set forth in Rule and the setbacks in Rule .1404(a)(1) - (9) of this Section.

(C) Facility operates in accordance with all other state or local laws, ordinances, rules, regulations or orders.

(D) Facility is not located over closed-out disposal site.

(E) Safety measures are taken to prevent fires and access to fire equipment or fire fighting services is provided.

15A NCAC 13B .1403 GENERAL PROHIBITIONS FOR SOLID WASTE COMPOST FACILITIES

(a) Neither hazardous waste nor asbestos containing waste shall be accepted at a facility or processed into compost.

(b) Household hazardous waste shall not be accepted by a facility, except in an area designated by facility site plans for storage, and shall not be processed into compost.

(c) Any compost made from solid waste which cannot be used pursuant to the requirements of this Rule shall be reprocessed or disposed of pursuant to the requirements of 15A NCAC 13B.

15A NCAC 13B .1404 SITING/DESIGN REQUIREMENTS FOR SOLID WASTE COMPOST FACILITIES

(a) A site shall meet the following requirements at the time of initial permitting and shall continue to meet these requirements throughout the life of the permit only on the property owned or controlled by the applicant or by the landowner(s) at the time of permitting:

- (1) A site located in a floodplain shall not restrict the flow of the 100-year flood; reduce the temporary storage capacity of the floodplain; or result in washout of solid waste so as to pose a hazard to human life, wildlife, land or water resources;
- (2) A 100-foot minimum buffer is required between all property lines and compost areas for Type 3 and 4 facilities, 50-foot for Type 1 or 2 facilities;
- (3) A 500-foot minimum buffer is required between compost areas and residences or dwellings not owned and occupied by the permittee, except that Type 1 and Small Type 2 and 3 facilities shall have a 200-foot minimum buffer;
- (4) A 100-foot minimum buffer is required between all wells and compost areas, except monitoring wells;
- (5) A 50-foot minimum buffer is required between perennial streams/rivers and compost areas;
- (6) A compost facility shall be located in accordance with 15A NCAC 2B .0200, Classification and Water Quality Standards Applicable to Surface Waters in North Carolina;
- (7) All portions of any compost facility located over a closed-out disposal area shall be designed with a pad adequate to protect the disposal area cap from being disturbed, as defined in Part (a)(10)(E) of this Rule, and there shall be no runoff from the pad onto the cap or side slopes of the closed out area;
- (8) A 25-foot minimum distance is required between compost areas and swales or berms to allow for adequate access of fire fighting equipment;
- (9) A site shall meet the following surface water requirements:
 - (A) A site shall not cause a discharge of materials or fill materials into waters or wetlands of the state that is in violation of Section 404 of the Clean Water Act;
 - (B) A site shall not cause a discharge of pollutants into waters of the state that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES), under Section 402 of the Clean Water Act; and
 - (C) A site shall not cause non-point source pollution of waters of the state that violates assigned water quality standards;
- (10) A site shall meet the following groundwater requirements:
 - (A) A site shall not contravene groundwater standards as established under 15A NCAC 2L;
 - (B) Portions of a site used for waste receipt and storage, active composting, and curing shall have a soil texture finer than loamy sand and the depth to the seasonal high water table shall be maintained at least 12 inches for a Type 1 or 2 facility and 24 inches for a Type 3 facility, unless a pad is provided;
 - (C) A pad shall be provided for portions of a Type 4 facility used for waste receiving and storage, active composting, and curing;
 - (D) A pad is not required for storage of finished product that is dried so as to pass the Paint Filter Liquids Test (EPA Method 9095), and for which the storage area is prepared in such a manner that water does not collect around the base of the stored material, and where the depth to the seasonal high watertable is maintained at least 12 inches; and
 - (E) The linear coefficient of permeability of pads required in accordance with this Rule shall not be greater than 1×10^{-7} centimeters per second. If natural soils are used, the liner must be at least 18 inches thick.
- (b) For Subparagraphs (a)(2) through (a)(4) and Part (a)(10)(B) of this Rule, (dependent upon waste type, facility design, and regional topography) alternative minimum buffers or requirements may be increased if deemed necessary by the Division in order to protect public health and the environment or to prevent the creation of a nuisance.
- (c) A site shall meet the following design requirements:
 - (1) A site shall not allow uncontrolled public access;
 - (2) A site shall meet the requirements of the Sedimentation Pollution Control Law (15A NCAC 4);

- (3) A site shall meet the requirements of the Air Pollution Control Requirements (15A NCAC 2D) to minimize fugitive emissions and odors; and
- (4) A site shall be designed to minimize odors at the property boundary.

15A NCAC 13B .1405 APPLICATION REQUIREMENTS FOR SOLID WASTE COMPOST FACILITIES

(a) The following information is required for an application for a permit to construct and operate a proposed Type 1, or a Small Type 2 or 3 solid waste compost facility; unless the permitting requirements are exempted by Paragraph (g) of Rule .1402 of this Section:

- (1) An aerial photograph or scaled drawing, where one inch is less than or equal to 400 feet, accurately showing the area within one-fourth mile of the proposed site's boundaries with the following specifically identified:
 - (A) Entire property owned or leased by the person proposing the facility;
 - (B) Location of all homes, wells, industrial buildings, public or private utilities; roads; watercourses; dry runs; and other applicable information regarding the general topography within 500 feet of the proposed facility; and
 - (C) Land use zoning of the proposed site.
- (2) A letter from the unit of government having zoning jurisdiction over the site which states that the proposed use is allowed within the existing zoning, if any, and that any necessary zoning approval or permit has been obtained.
- (3) An explanation of how the site complies with siting and design standards in Rule .1404 of this Section.
- (4) A detailed report indicating the following:
 - (A) Waste type(s), source and estimated quantity of the solid waste to be composted, including the source and expected quantity of any bulking agent or amendment (if applicable), any expected recycle of bulking agent or compost, and any seasonal variations in the solid waste type or quantity; and
 - (B) For facilities that utilize natural soils as a pad, a soil evaluation of the site conducted by a soil scientist down to a depth of four feet, or to bedrock or evidence of a seasonal high water table, to evaluate all chemical and physical soil properties and depth of the seasonal high water table.
- (5) Site plan at a scale where one inch is less than or equal to 100 feet to the inch that delineates the following:
 - (A) Existing and proposed contours, at intervals appropriate to the topography;
 - (B) Location and elevations of dikes, trenches, and other water control devices and structures for the diversion and controlled removal of surface water;
 - (C) Designated setbacks and property lines;
 - (D) Proposed utilities and structures; and
 - (E) Areas for unloading, processing, active composting, curing, and storing of material.
- (6) A description of the operation of the facility, which must include at a minimum:
 - (A) Name, address and phone number for the person responsible for the operation of the facility;
 - (B) List of personnel required and the responsibilities of each position;
 - (C) Operation plan for the facility;
 - (D) Special precautions or procedures for operating during wind, heavy rain, snow, freezing or other adverse conditions;
 - (E) A description of actions to be taken to minimize noise, vectors, air borne particulates, and odors; and (F) A description of the ultimate use for the finished compost, method for removal from the site, and a contingency plan for disposal or alternative usage of residues or finished compost that cannot be used in the expected manner due to poor quality or change in market conditions.
- (7) A report on the design of the facility, including:
 - (A) Design capacity of the facility;

- (B) A process flow diagram of the entire facility, including the type, size, and location of all major equipment, and feedstock flow streams. The flow streams shall indicate the quantity of materials on a wet weight and volumetric basis;
- (C) The means for measuring, shredding, mixing, and proportioning input materials;
- (D) Anticipated process duration, including receiving, preparation, composting, curing, and distribution;
- (E) A description of the location of all temperature, air and any other type of monitoring points, and the frequency of monitoring;
- (F) A description of how the temperature control and monitoring equipment will demonstrate that the facility meets the requirements in Rule .1406 Items (10), (11), or (12) of this Section, as appropriate for the feedstock;
- (G) The method of aeration provided and the capacity of aeration equipment; and
- (H) A description of the method to control surface water run-on and run-off; and the method to control, collect, treat, and dispose of leachate generated.
- (8) A description of the label or other information source that meets the requirements of Rule .1407(k) of this Section.
- (9) Plans and specifications for the facility, including manufacturer's performance data for all equipment selected.
- (10) A detailed operation and maintenance manual outlining:
 - (A) A quality assurance plan for the process and final product which lists the procedures used in inspecting incoming material; monitoring, sampling and analyzing the compost process and final product, testing schedule, and recordkeeping requirements;
 - (B) Contingency plans detailing corrective or remedial action to be taken in the event of equipment breakdown; non-conforming waste delivered to the facility; spills, and undesirable conditions such as fires, vectors and odors; and
 - (C) An explanation of how the facility will comply with operational requirements as outlined in Rule .1406 of this Section, detailed operational information and instruction, an outline of reports to be submitted in compliance with this Section, and safety instructions.
- (11) As built drawings where applicable.
 - (b) The following information is required for an application for a permit to construct a proposed Large 2 or 3 or a Type 4 solid waste compost facility:
 - (1) An aerial photograph or scaled drawing, where one inch is less than or equal to 400 feet, accurately showing the area within one-fourth of the mile of the proposed site's boundaries with the following specifically identified:
 - (A) Entire property owned or leased by the person proposing the site;
 - (B) Location of all homes, wells, industrial buildings, public or private utilities and roads, watercourses, dry runs, and other applicable information regarding the general topography within one-fourth mile; and
 - (C) Land use and zoning of the proposed site.
 - (2) A letter from the unit of government having zoning jurisdiction over the site which states that the proposed use is allowed within the existing zoning, if any, and that any necessary zoning approval or permit has been obtained.
 - (3) An explanation of how the site complies with siting and design standards in Rule .1404 of this Section.
 - (4) A detailed report indicating the following:
 - (A) Waste type(s), source and quantity of the solid waste to be composted, including the source and expected quantity of any bulking agent or amendment (if applicable), any expected recycle of bulking agent or compost, and any seasonal variations in the solid waste type or quantity;
 - (B) For facilities which utilize natural soils as a pad, a soil evaluation of the site conducted by a soil scientist down to a depth of four feet or to bedrock or evidence of a seasonal high water table, to evaluate all chemical and physical soil properties and depth of the seasonal high water table.

- (5) Site plans at a scale where one inch is less than or equal to 100 feet to the inch that delineates the following:
- (A) Existing and proposed contours, at intervals appropriate to the topography;
 - (B) Location and elevations of dikes, trenches, and other water control devices and structures for the diversion and controlled removal of surface water;
 - (C) Designated setbacks, buffer zones and property lines;
 - (D) Proposed utilities and structures;
 - (E) Access roads, details on traffic patterns;
 - (F) Areas for unloading, processing, active composting, curing, and storage of material;
 - (G) Areas for unloading, processing, and storing recyclables, household hazardous waste, and other materials, where applicable;
 - (H) Proposed surface and groundwater monitoring locations;
 - (I) Flood plains and wetlands; and
 - (J) Benchmarks.
- (6) A description of the operation of the facility, which must include at a minimum:
- (A) Name, address and phone number for the person responsible for the operation of the facility;
 - (B) Operation plan for the facility;
 - (C) List of personnel required and the responsibilities of each position;
 - (D) A schedule for operation, including days and hours that the facility will be open, preparations before opening, and procedures to be followed after closing for the day;
 - (E) For mixed waste processing facilities, plan for removing and disposal of household hazardous waste from the waste stream;
 - (F) Special precautions or procedures for operating during wind, heavy rain, snow, freezing or other adverse conditions;
 - (G) A description of actions to be taken to minimize noise, vectors, air borne particulates, and odors; and
 - (H) A description of the ultimate use for the finished compost, method for removal from the site, and a contingency plan for disposal or alternative usage of residues or finished compost that cannot be used in the expected manner due to poor quality or change in market conditions.
- (7) A report on the design of the facility, including:
- (A) Design capacity of the facility;
 - (B) A process flow diagram of the entire facility, including the type, size, and location of all major equipment, and feed stock flow streams. The flow streams shall indicate the quantity of material on a wet weight and volumetric basis;
 - (C) A description and sizing of the storage facilities for amendment, bulking agent, solid waste, recyclables, household hazardous waste and finished compost;
 - (D) The means for measuring, shredding, mixing, and proportioning input materials;
 - (E) Anticipated process duration, including receiving, preparation, composting, curing, and distribution;
 - (F) The separation, processing, storage, and ultimate disposal of non-compostable materials, if applicable;
 - (G) A description of the location of all temperature, air and any other type of monitoring points, and the frequency of monitoring;
 - (H) A description of how the temperature control and monitoring equipment will demonstrate that the facility meets the requirements in Rule .1406 Items (10), (11), or (12) of this Section, as appropriate for the feedstock;
 - (I) The method of aeration, including turning frequency or mechanical aeration equipment and aeration capacity;
 - (J) A description of the air emission and control technologies;
 - (K) A description of the method to control surface water run-off; and the method to control, collect, treat, and dispose of leachate generated; and

- (L) A description of any recycling or other material handling processes used at the facility.
- (8) A description of the label or other information source that meets the requirements of Rule .1407(k) of this Section.
- (9) Engineering plans and specifications for the facility, including manufacturer's performance data for all equipment selected.
- (c) The following information is required for reviewing an application for a permit to operate a Type 4 or Large Type 2 or 3 solid waste composting facility:
 - (1) Contingency plans detailing corrective or remedial action to be taken in the event of equipment breakdown; air pollution; non-conforming waste delivered to the facility; spills, and undesirable conditions such as fires, particulates, noise, vectors, odors, and unusual traffic conditions;
 - (2) A detailed operation and maintenance manual. The manual must contain general design information, a discussion of compliance with operational requirements as outlined in Rule .1406 of this Section, detailed operational information and instruction, equipment maintenance, list of personnel, required personnel training, outline of reports to be submitted in compliance with this Section, and safety instructions;
 - (3) A quality assurance plan for the process and final product which lists the procedures used in inspecting incoming materials; monitoring, sampling and analyzing the compost process and final product, testing schedule, and record keeping requirements;
 - (4) A fact sheet and process flow diagram that summarizes actual equipment sizing, aeration capacity, detention times, storage capacity, and flow rates (wet weight and volumetric) for the system and equipment chosen;
 - (5) As-built drawings;
 - (6) A copy of all applicable local, state, and Federal permits and approvals necessary for the proper operation of the facility; and
 - (7) Product marketing and distribution plan.
- (d) An application for a permit modification shall be required for changes in facility ownership, an increase in facility capacity, or the addition of new feedstock materials.

15A NCAC 13B .1406 OPERATIONAL REQUIREMENTS FOR SOLID WASTE COMPOST FACILITIES

Any person who maintains or operates a solid waste compost facility shall maintain and operate the site to conform with the following practices:

- (1) Plan and Permit Requirements:
 - (A) Construction plans and conditions of permit shall be followed; and
 - (B) A copy of the permit, plans, and operational reports shall be maintained on site at all times.
- (2) Adequate erosion control measures shall be practiced to prevent on-site erosion and to control the movement of silt or contaminants from the site.
- (3) Surface water shall be diverted from the operational, compost curing, and storage areas.
- (4) Leachate shall be contained on site treated to meet the standards of the off-site disposal method.
- (5) Access and Security Requirements:
 - (A) Large sites shall be secured by means of gates, chains, berms, fences, or other security measures demonstrated to provide equivalent protection approved by the Division, to prevent unauthorized entry.
 - (B) An operator shall be on duty at the site at all times while the facility is open for public use to ensure compliance with operational requirements and access to such facilities shall be controlled.
 - (C) The access road to the site shall be of all-weather construction and maintained in good condition.
- (6) A site shall only accept those solid wastes that it is permitted to receive.
- (7) Safety Requirements:

- (A) Open burning of solid waste is prohibited.
 - (B) Equipment shall be provided to control accidental fires and arrangements made with the local fire protection agency to immediately provide fire-fighting services when needed.
 - (C) Personnel training shall be provided to insure that all employees are trained in site specific safety, remedial, and corrective action procedures.
- (8) Sign Requirements:
- (A) Signs providing information on waste that can be received, dumping procedures, the hours during which the site is open for public use, the permit number and other pertinent information shall be posted at the site entrance.
 - (B) Traffic signs/markers shall be provided as necessary to promote an orderly traffic pattern to and from the discharge area and to maintain efficient operating conditions.
 - (C) Signs shall be posted stating that no hazardous waste, asbestos containing waste, or medical waste can be received at the site.
- (9) Monitoring Requirements:
- (A) Specified monitoring and reporting requirements shall be met.
 - (B) The temperature of all compost produced shall be monitored sufficiently to ensure that the pathogen reduction criteria is met.
- (10) Compost process at Type 1 facilities shall be maintained at or above 55 degrees Celsius (131 degrees F) 3 days and aerated to maintain elevated temperatures.
- (11) Types 2, 3 and 4 facilities shall maintain the compost process at a temperature above 40 degrees Celsius (104 degrees F) for 14 days or longer and the average temperature for that time shall be higher than 45 degrees Celsius (113 degrees F) or, Types 2, 3 and 4 facilities shall meet the vector attraction reduction requirements in 40 CFR 503.33(b)(4) or (7). Requirements of 40 CFR 503.33(b)(4) and (7) are hereby incorporated by reference, including any subsequent amendments or additions.
- (12) The composting process shall qualify as a process to further reduce pathogens for all Type 3 and Type 4 facilities. The following are acceptable methods:
- (A) The windrow composting method, in which the following requirements apply: Aerobic conditions shall be maintained during the compost process. A temperature of 131 degrees F (55 degrees Celsius) or greater shall be maintained in the windrow for at least 15 days. During the high temperature period, the windrow shall be turned at least five times.
 - (B) The static aerated pile composting method, in which the following requirements apply: Aerobic conditions shall be maintained during the compost process. The temperature of the compost pile shall be maintained at 131 degrees F (55 degrees Celsius) or greater for at least three days.
 - (C) The within-vessel composting method, in which the temperature in the compost piles shall be maintained at a minimal temperature of 131 degrees F (55 degrees Celsius) for three days.
- (13) Nitrogen bearing wastes shall be incorporated as necessary to minimize odor and the migration of nutrients.
- (14) Miscellaneous Requirements:
- (A) The finished compost shall meet the classification and distribution requirements outlined in Rule .1407 of this Section.
 - (B) The quality of the final product shall determine the allowable uses as outlined in Rule .1407 of this Section.
 - (C) The final product shall be approved by the Solid Waste Section as outlined in Rule .1407 Subparagraph (6)(b) of this Section.
- (i) Non-compostable solid waste and unacceptable compost shall be disposed in a solid waste management facility permitted to receive the particular type of waste under 15A NCAC 13B.
 - (ii) The amount of compost stored at the facility shall not exceed the designed storage capacity.

15A NCAC 13B .1407 CLASSIFICATION/DISTRIBUTION OF SOLID WASTE COMPOST PRODUCTS

(a) Compost shall not be applied to the land or sold or given away if the concentration of any metal exceeds the concentration in 40 CFR 502.13(b)(3) [See Table 1 below], unless the concentration of all metals are less than the values in 40 CFR 503.13(b)(1) and records are maintained to show compliance with the cumulative and annual metal levels in 40 CFR 503.13(b)(2) and (4).

Table 1

Metals Concentration mg per kg

Arsenic

Cadmium

Copper

Lead

Mercury

Nickel

Selenium

Zinc

41

39

1500

300

17

420

36

2800

(b) Solid Waste shall be classified based on Table 2:

Table 2

Grade

Manmade Inerts % dry wt. of inerts Pathogen Reduction Metal Concentration

A

B

#6

>6

PFRP

NA

Table 1

40 CFR 503.13(b)(1)

(c) Man made inerts shall not exceed 1 inch in size.

(d) Distribution of the defined grades shall be as follows:

(1) Grade A compost shall have unlimited, unrestricted distribution. This product may be distributed directly to the public;

(2) Grade B compost shall be restricted to distribution for land and mine reclamation, silviculture, and agriculture (on non-food chain crops) projects; and

(3) Compost or mulch that is produced at a Type 1 facility and that contains minimal pathogenic organisms, is free from offensive odor, and contains no sharp particles that would cause injury to persons handling the compost, shall have unrestricted applications and distributions if directions are provided with the compost product.

(e) Solid waste compost products may not be distributed or marketed until the permittee has provided adequate test data to the Division as outlined in Rule .1408 of this Section. Within 30 days of receipt of the test data, the Division shall approve or deny the distribution and marketing of the product based upon the compost classification and distribution scheme. As long as the test

data required in Rule .1408 of this Section continues to verify that compost is produced to the specifications of this Rule, the Division's approval to distribute the compost shall be ongoing.

(f) The applicant is responsible for meeting any applicable requirements of the North Carolina Department of Agriculture, Fertilizer Section concerning the distribution of this product.

(g) If the owner intends to distribute the product, the owner shall provide instructions to the user on any restrictions on use and recommended safe uses and application rates. The following information shall be provided on a label or an information sheet and a copy of the label or information sheet shall be submitted to the Solid Waste Section:

(1) Classification grade as outlined in Paragraph (d) of this Rule;

(2) Recommended uses;

(3) Application rates;

(4) Restrictions on usage; and

(5) Total N (for products containing sludge).

15A NCAC 13B .1408 METHODS FOR TESTING AND REPORTING REQUIREMENTS

(a) The compost product from Type 2, 3, and 4 facilities shall be sampled and analyzed as follows:

(1) A composite sample of the compost produced at each compost facility shall be analyzed at intervals of

every 20,000 tons of compost produced or every six months, whichever comes first, for test parameters for each Type of facility as designated in Table 3 of this Rule. Standard methods equivalent to those in Table 3 may be approved by the Division.

Table 3

Parameter Unit Facility Test Method

Foreign Matter % all see Subparagraph (d) of this Rule

Arsenic mg/kg dry wt. Type 4 See Appendix A

Cadmium mg/kg dry wt. all

Chromium mg/kg dry wt. Type 4

Copper mg/kg dry wt. all

Lead mg/kg dry wt. all

Mercury mg/kg dry wt. Type 4

Nickel mg/kg dry wt. all

Selenium mg/kg dry wt. Type 4

Zinc mg/kg dry wt. all

Pathogens See Appendix B all See Appendix B

Total N % see * Kjeldahl

* Total N required for products containing sludge subject to 40 CFR 503.

The parameters listed in Table 3 of this Rule may also be determined by methods accepted by the North Carolina Department of Agriculture.

(2) Sample collection, preservation, and analysis shall assure valid and representative results pursuant to a Division-approved quality assurance plan. At least three individual samples (of equal volume) shall be taken from each batch produced in separate areas along the side of the batch. Each sampling point shall be at a depth of two to six feet into the pile from the outside surface of the pile. Samples that have been analyzed for metals shall be composited and accumulated over a six month period or at intervals of every 20,000 tons of product produced, whichever comes first. Any sample collected for testing for pathogens and nutrients shall be a representative composite sample of the compost and shall be processed within a period of time required by the testing procedure.

(3) Compost containing sewage sludge shall be tested in accordance with 40 CFR 503, Subpart B.

(4) The Division may decrease or increase the parameters to be analyzed or the frequency of analysis based upon monitoring data, changes in the waste stream or processing, or information

regarding the potential for presence of toxic substances that are not on the list of monitoring parameters.

(5) Foreign matter content shall be determined by passing a dried, weighed sample of the compost product through a one-quarter inch screen. EPA Method 160.3 shall be used to dry the sample. The material remaining on the screen shall be visually inspected, and the foreign matter that can be clearly identified shall be separated and weighed. The weight of the separated foreign matter divided by the weight of the total sample shall be determined and multiplied by 100. This shall be the percent dry weight of the foreign matter content.

(b) Record Keeping: All facility owners or operators shall record and maintain records for a minimum of five years. Records shall be available for inspection by Division personnel during normal business hours and shall be sent to the Division upon request:

(1) Daily operational records must be maintained, which include, at a minimum, temperature data (length of the composting period) and quantity of material processed;

(2) Analytical results on compost testing;

(3) The quantity, type and source of waste received;

(4) The quantity and type of waste processed into compost;

(5) The quantity and type of compost produced by product classification; and

(6) The quantity and type of compost removed for use or disposal, by product classification, and the market or permitted disposal facility.

(c) Annual Reporting: An annual report for the period July 1 to June 30 shall be submitted by all facility owners or operators to the Division by August 1, 1996 and every August 1 thereafter and shall contain:

(1) The facility name, address, and permit number;

(2) The total quantity in tons, with sludge values expressed in dry weight, and type of waste received at the facility during the year covered by the report, including tons of waste received from local governments of origin;

(3) The total quantity in tons, with sludge values expressed in dry weight, and type of waste processed into compost during the year covered by the report;

(4) The total quantity in tons and type of compost produced at the facility, by product classification, during the year covered by the report;

(5) The total quantity in tons and type of compost removed for use or disposal from the facility, by product classification, along with a general description of the market if for use during the year covered by the report;

(6) Monthly temperature monitoring to support Rule .1406 of this Section; and

(7) Results of tests required in Table 3 of this Rule.

(d) Yearly totals of solid waste received and composted shall be reported back to the local government of origin for annual recycling reporting.

15A NCAC 13B .1409 APPROVAL OF ALTERNATIVE PROCEDURES AND REQUIREMENTS

(a) An owner or operator of a composting facility, subject to the provisions of this Rule, may request in writing the approval of an alternative procedure for the facility or the compost that is produced. The following information shall be submitted to the Solid Waste Section:

(1) The specific facility for which the exception is requested;

(2) The specific provisions of this Section for which the exception is requested;

(3) The basis for the exception;

(4) The alternate procedure or requirement for which the approval is sought and a demonstration that the alternate procedure or requirement provides equivalent protection of the public health and the environment; and

(5) A demonstration of the effectiveness of the proposed alternate procedure.

(b) An individual may request in writing the approval of a solid waste composting pilot or demonstration project for the purpose of evaluating the feasibility of such a project. The following information shall be submitted to the Solid Waste Section:

- (1) The owner, operator, location, and contact numbers for the project;
- (2) The specific primary waste stream for which the project is to be evaluated;
- (3) The specific time frame for the project;
- (4) The estimated amount of each type of waste or bulking material to be composted;
- (5) The basis for running the pilot or demonstration project;
- (6) A description of all testing procedures to be used;
- (7) A description of the process to be used, including the method of composting and details of the method of aeration;
- (8) The expected final usage or disposal of the final product; and
- (9) An outline of the final report to be submitted to the Solid Waste Section upon completion of the project.

(c) For Paragraph (a) of this Rule, the Division will review alternative procedures only to the extent that adequate staffing is available.

(d) Permits shall not be required for primary and secondary school educational projects that take place on the school grounds and that receive less than one cubic yard of material per week.

South Carolina

Regulation 61-107.4

Statutory Authority: 1976 Code

Sections 44-96-190 and 44-96-380 (1991)

R.61-107.4. Solid Waste Management: Yard Trash and Land-Clearing Debris; and Compost.

A. Applicability. This regulation is to ensure the proper disposal and management of yard trash and landclearing debris, and to encourage and regulate the production and use of compost made from yard trash and land-clearing debris.

B. Definitions.

1. "Backyard Composting" means the on-site composting of yard waste from residential, commercial, or industrial property by the owner or tenant for non-revenue generating use when all materials are generated and composted on-site.
2. "Biodegradable" means capable of being decomposed by natural biological processes.
3. "Buffer" means the space between two (2) entities reserved for non-activity.
4. "Compost" means the humus-like end product of the process of composting waste.
5. "Composting" means the process of making compost.
6. "Composting facility" means any facility used to provide aerobic, thermophilic decomposition of the solid organic constituents of solid waste to produce a stable, humus-like material.
7. "Composting Pad" means a surface, whether soil or manufactured, where the process of composting takes place, and where raw and finished materials are stored.
8. "Degradable" with respect to any material, means that the material, after being discarded, is capable of decomposing to components other than heavy metals or other toxic substances after exposure to bacteria, light, or outdoor elements.
9. "Department" means the South Carolina Department of Health and Environmental Control.
10. "Hygienically" means promoting health; sanitary.
11. "Land-clearing debris" means solid waste which is generated solely from land-clearing activities, but does not include solid waste from agricultural or silvicultural operations.
12. "Leachate" means the liquid that has percolated through or drained from solid waste or other man-emplaced materials and that contains soluble, partially soluble, or miscible components removed from such waste.
13. "Mesophilic stage" means a biological stage in the composting process characterized by active microorganisms which favor a moderate temperature, range of 20o to 45o C (68o to 113o F). It occurs later in a composting process after the thermophilic stage and is associated with a moderate rate of decomposition.
14. "Mulch" means wood chips, leaves, straw, etc., spread on the ground around plants to prevent evaporation of water from soil, freezing of roots, etc.
15. "Municipal solid waste landfill" means any sanitary landfill or landfill unit, publicly or privately owned, that receives household waste. The landfill may also receive other types of solid waste, such as commercial waste, nonhazardous sludge, and industrial solid waste.
16. "Owner/operator" means the person who owns the land on which a solid waste management facility is located or the person who is responsible for the overall operation of the facility, or both.
17. "Person" means an individual, corporation, company, association, partnership, unit of local government, state agency, federal agency, or other legal entity.
18. "Resource recovery facility" means a combination of structures, machinery, or devices utilized to separate, process, modify, convert, treat, or prepare collected solid waste so that component materials or substances or recoverable resources may be used as a raw material or energy source.
19. "Runoff" means any rainwater, leachate, or other liquid that drains over land from any part of a facility.
20. "Silviculture Waste" means waste materials produced from the care and cultivation of forest trees, including bark and woodchips.

21. "Solid Waste" means any garbage, refuse, or sludge from a waste treatment facility, water supply plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities. This term does not include solid or dissolved material in domestic sewage, recovered materials, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to NPDES permits under the Federal Water Pollution Control Act, as amended, or the Pollution Control Act of South Carolina, as amended, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1964, as amended. Also excluded from this definition are application of fertilizer and animal manure during normal agricultural operations or refuse as defined and regulated pursuant to the South Carolina Mining Act, including processed mineral waste, which will not have a significant adverse impact on the environment.

22. "Solid waste management facility" means any solid waste disposal area, volume reduction plant, transfer station, or other facility, the purpose of which is the storage, collection, transportation, treatment, utilization, processing, recycling, or disposal, or any combination thereof, of solid waste. The term does not include a recovered materials processing facility or facilities which use or ship recovered materials, except that portion of the facilities which is managing solid waste.

23. "Thermophilic stage" means a biological stage in the composting process characterized by active microorganisms which favor a high temperature range of 45o to 75o C (113o to 167o F). It occurs early in a composting process before the mesophilic stage and is associated with a high rate of decomposition.

24. "Untreated woodwaste" means wood that has not undergone any type of treatment for preservation, etc.

25. "Vector" means an animal or insect that may transmit disease producing organisms from one host to another.

26. "Windrow" means an elongated compost pile.

27. "Yard trash" means solid waste consisting solely of vegetative matter resulting from landscaping maintenance.

C. General Provisions.

1. Effective May 27, 1993, disposal of yard trash and land-clearing debris in a municipal solid waste landfill or a resource recovery facility shall be prohibited, unless the landfill provides and maintains a separate yard trash and land-clearing debris composting area and the yard trash and land-clearing debris have been separated from other municipal solid waste.

2. Prior to the construction, operation, expansion or modification of a composting facility using yard trash and land-clearing debris and/or a wood chipping facility that chips untreated wood waste, the facility shall be registered by the Department.

3. This regulation does not apply to the following activities provided no public nuisance or any condition adversely affecting the environment or public health is created, and the activity complies with all other State and local laws, ordinances, rules, regulations, and orders:

- a. Backyard composting where the compost is produced from materials grown on site;
- b. Farming operations where the compost is produced from materials grown on the owner's land;
- c. Mobile chipping/shredding equipment which chips/shreds woodwaste, e.g., the type used by utilities to clear rights-of-way or manage storm debris, and which may spread the woodwaste on rights-of-way after it has been chipped or shredded. Chipped/shredded woodwaste or storm debris, temporarily stockpiled in lieu of spreading after the effective date of this regulation, shall be removed within ninety (90) days in order to be exempt from the requirements of this regulation. The Department shall be notified in writing within ten (10) working days of the establishment of these stockpiles. In addition, any active piles as of the effective date of this regulation shall be removed within one hundred eighty (180) days of the effective date of this

regulation. Inactive piles as of the effective date of this regulation are exempt from the requirements of this regulation;

- d. Temporary chipping/shredding and storage of woodwaste for distribution to the public, e.g., Grinding of the Greens and other similar programs, as approved by the Department;
- e. Shredding or chipping of untreated wooden pallets or other wooden packaging utilized by industry in its own operations that have not been in direct contact with hazardous constituents, e.g., petroleum products, pesticides, lead-based paint, etc.; and,
- f. Composting at industrial sites where the compost is produced from materials grown on properties under the same ownership or control within one fourth (¼) mile of each other, unless otherwise approved by the Department and where the compost product is used for noncommercial purposes.

4. All State agencies, all political subdivisions using State funds to procure items, and all persons contracting with such agency or political subdivision where such persons procure items with State funds shall procure composted materials and products where practicable, subject to the provisions of Section 44-96-140(D) of the South Carolina Solid Waste Policy and Management Act of 1991.

5. Compost shall not be used in any manner that will endanger public health and welfare, and the environment, or would violate the provisions of this regulation.

D. Registration Requirements for Composting and Wood Chipping Facilities. Prior to the construction, expansion, or modification of a composting and/or wood chipping facility a report shall be submitted to and be approved by the Department. This report shall contain the following information:

- 1. Name and telephone number of the owner of the facility;
- 2. Name and telephone number of the person responsible for operation of the facility;
- 3. Procedure for prevention of fires;
- 4. Procedure for control of vectors;
- 5. Procedure for odor control;
- 6. Procedure for control and inspection of incoming waste;
- 7. Method for measuring incoming waste;
- 8. Procedure for control of storm water drainage;
- 9. Anticipated type, source, and composition of waste to be received; and,
- 10. Outline of a financial assurance mechanism for closure and post-closure procedures. Financial assurance requirements do not apply to local governments or regions comprised of local governments unless and until such time as federal regulations require such local governments and regions to demonstrate financial responsibility for such facilities.

E. Design Criteria for Composting and Wood Chipping Facilities.

- 1. Facilities located over closed-out landfills shall have sufficient structural support for the operation including total waste received, material processed, compost stored, equipment, and structures to be built on site.
- 2. The design of the facility shall follow acceptable management practices for composting methods which result in the aerobic, thermophilic decomposition of the solid organic constituents of solid waste to produce a stable, hygienically safe humus-like material.
- 3. The site for the facility shall meet the following standards:
 - a. A site located in a flood plain shall not restrict the flow of the 100-year flood;
 - b. A site shall be maintained and operated in a manner which protects the established water quality standards of the surface waters and ground waters;
 - c. A 50-foot minimum buffer shall be required between all property lines and compost pad or storage area;
 - d. A 200-foot minimum buffer shall be required between compost pad or storage area and residences or dwellings;

- e. A 200-foot minimum buffer shall be required between streams and rivers and compost pad or storage area;
 - f. A 100-foot minimum buffer shall be required between all drinking water wells and the active composting area;
 - g. The bottom elevation of the compost pad and storage areas shall be a minimum of two (2) feet above seasonal high water table as it exists prior to construction of the disposal area. The seasonal high water table shall be determined based on interpretation of the data from a representative number of geotechnical type borings, unless alternate information can be provided to the Department to ensure that a two (2) foot separation from groundwater will be maintained throughout the life of the disposal, i.e. compost, area;
 - h. A site shall comply with all of the requirements of the local zoning ordinance;
 - i. Access to the site shall be controlled through the use of fences, gates, berms, natural barriers, or other means;
 - j. A site shall not be located within any wetlands as delineated and defined specifically as wetlands according to the methodology accepted by the U. S. Army Corps of Engineers and the U. S. Environmental Protection Agency;
 - k. Alternative buffers for a covered facility shall be approved by the Department on a case by case basis; and,
 - l. Access to fire equipment and fire fighting services shall be provided.
- F. Operation Criteria. The operational requirements of this section apply to all facilities that compost yard trash and land-clearing debris and/or chip untreated wood waste.
- 1. The facility shall be operated in a manner to control vectors.
 - 2. Only yard trash and land clearing debris waste shall be accepted at the facility.
 - 3. If solid waste other than yard trash or land clearing debris is left at the facility, it shall be separated and stored in a manner that prevents vector problems and shall be properly disposed within seven (7) days of its receipt.
 - 4. Odors shall be controlled and minimized.
 - 5. Dust shall be controlled and minimized.
 - 6. Waste with a low carbon to nitrogen ratio, e.g., grass clippings, etc. shall be incorporated into piles within forty-eight (48) hours of on-site arrival.
 - 7. Drainage Control Requirements:
 - a. Storm water shall be diverted from the operational area;
 - b. Windrows shall be constructed parallel to topographical slopes; and,
 - c. The site shall be graded to prevent ponding of water in the active composting areas.
 - 8. Surface Water Protection Requirements: An NPDES permit may be required prior to discharge of any storm waters to surface waters.
 - 9. Access and Security Requirements:
 - a. The site shall be secured by means of gates, chains, berms, fences, or other security measures, to prevent unauthorized entry; and,
 - b. An all-weather road to the site shall be maintained in good condition;
 - 10. Sign Requirements:
 - a. Signs shall be posted in conspicuous places which identify the owner, operator, or a contact person and telephone number in case of emergency, and the hours during which the site is open for public use;
 - b. Traffic signs or markers shall be provided as necessary to promote an orderly traffic pattern to and from the discharge area and to maintain efficient operating conditions; and,
 - c. Signs shall be posted stating that only yard trash and land-clearing debris can be accepted at the site (except in the event that the site is permitted by the Department for solid waste disposal in addition to being permitted for yard trash and land-clearing debris composting).
 - 11. Safety Requirements:

- a. Open burning of solid waste at the composting facility shall be prohibited;
- b. Equipment shall be provided to control accidental fires and/or arrangements shall be made with the local fire protection agency to immediately provide fire-fighting services when needed; and,
- c. Space shall be provided between piles to allow access for vehicles, including fire equipment.

12. Monitoring and Reporting Requirements:

- a. Should the Department confirm environmental and/or health problems associated with the facility, monitoring (including groundwater, surface water, waste components, soil, and/or plant tissue analyses) may be required by the Department to ensure protection of the environment; and,
- b. An annual report shall be submitted to the Department and to the respective county or region in which the facility is located by October 15th, which includes the following information:
 - (1) Sources, type, and an estimate of the total quantity of waste received at the facility for the previous year;
 - (2) The amount of compost produced;
 - (3) The amount of compost removed from the facility;
 - (4) The amount of compost disposed in a landfill; and,
 - (5) Any changes in names of responsible parties, addresses, telephone numbers, etc., if applicable.

G. Closure and Post-closure Procedures.

- 1. Financial Assurance. All composting and wood chipping facilities shall fund a financial assurance mechanism for completing final closure prior to accepting yard waste. A final closure cost estimate, based on third party costs to complete closure by disposing of the maximum quantity of material at a facility shall be performed annually and adjusted annually, if necessary. The financial responsibility requirements shall not apply to any local government or region comprised of local governments which owns and operates a municipal solid waste management facility unless and until such time as federal regulations require such local governments and regions to demonstrate financial responsibility for such facilities; and,
- 2. Closure Procedures. All composting and wood chipping facilities shall be required to close the facility in accordance with the following procedures:
 - a. At least sixty (60) days prior to closure, provide written notice of intent to close and a proposed closure date to the Department;
 - b. Upon closing, immediately post closure signs at the facility;
 - c. Complete removal of compost material and cleaning of the waste handling areas within ten (10) days of closure and request Department inspection and approval of closure; and,
 - d. Within sixty (60) days of closure, grade land to promote positive drainage and seed with native grasses to prevent erosion.

Tennessee

1200-1-7-.11 REQUIREMENTS FOR COMPOST AND COMPOSTING FACILITIES.

(1) General

(a) Purpose - The purpose of this rule is to establish procedures, documentation, and other requirements which must be met in order for a person to operate a composting facility or offer for sale compost in Tennessee.

(b) Scope/Applicability

1. The requirements of this rule apply as specified to operators of composting facilities in Tennessee. Except as specifically provided elsewhere in these rules, no facility may compost solid waste without a permit as provided in rule 1200-1-7-.02(2). Composting facilities, subject to a full permit on the effective date of this rule, must submit a part I and part II permit application to describe how it will comply with this rule. The application must be filed within 180 days of the effective date of this rule and implemented upon approval. The Division will not charge an application fee, nor require public notice of the application for facilities which already have permit-by-rule for composting.

2. Compost produced from the solid waste classification criteria outside the State of Tennessee, which is used or sold for use within the state, shall comply with rule 1200-1-7-.11(4) subparagraphs (a) classification criteria; (b) labeling requirements; and (c) testing.

3. Composting facilities that process domestic sludge as a feedstock shall also comply with all other applicable federal or state laws regarding sludge management.

4. The following facilities or activities are not subject to the requirement to have a permit.

(i) Backyard composting and the resulting compost;

(ii) Normal farming operations. For the purpose of this rule, composting of only landscaping/land clearing waste, hereafter referred to as landscaping waste, or manure by persons on their own property for their own use on that property as part of agronomic or horticultural operations will be considered normal farming operations;

5. A composting facility processing up to 10,000 cubic yards per year of only landscaping waste and manure may receive a permit pursuant to rule 1200-1-7-.02(1)(c) Permits by Rule, for Solid Waste Processing.

6. A composting facility processing only landscaping waste may receive a permit pursuant to rule 1200-1-7-.02(1)(c) Permits by Rule, for Solid Waste Processing.

7. A processing facility composting sewage sludge that is one acre or less in size may apply for a permit by rule pursuant to rule 1200-1-7-.02(1)(c).

(2) General Facility Standards - Unless specifically noted otherwise, the standards of this paragraph shall apply to all compost facilities subject to a permit as provided at rule 1200-1-7-.02(2).

(a) Performance Standards - The facility must be located, designed, constructed, and maintained, and closed in such a manner as to minimize to the extent practicable:

1. The propagation, harborage, or attraction of birds, flies, rodents, or other vectors;

2. The potential for releases of solid waste, solid waste constituents, or other potentially harmful material to the environment except in a manner authorized by state law;

3. The exposure of the public to potential health and safety hazards through uncontrolled or unauthorized public access;

4. The presence of odors that constitute a nuisance.

(b) Control of Access and Use

1. The facility shall have a natural or an artificial barrier which completely surrounds the active portion of the facility and must have a means to control entry, at all times, through the gate or other entrances to the active portion of the facility.

2. If open to the public, the facility shall have clearly visible and legible signs at the points of public access which indicate the hours of operation, the types of waste materials that either will or

will not be accepted, emergency telephone numbers, schedules of charges (if applicable), and any other necessary information.

3. The facility shall have paved (paved includes compacted stone) access roads and parking areas. Traffic control signs shall be provided as necessary.

4. The facility shall have trained personnel present and on duty during operating hours to assure compliance with operational requirements and to prevent entry of unauthorized wastes.

5. There shall be no scavenging.

6. Scales for weighing all waste received at the facility shall be provided, unless the Commissioner approves an alternative method of measurement.

(c) Leachate Collection

1. The facility shall have a leachate collection and removal system that is designed, constructed, and maintained such that all leachate from the waste receiving, storage, processing, and curing areas is collected. All washdown, stormwater or other water coming into contact with solid waste or compost must be collected and properly managed.

2. Leachate shall be reused in the process or otherwise properly managed as per all applicable laws and rules.

(d) Waste Management

1. The type [defined at rule 1200-1-7-.11(4)(a)1] and source of solid waste to be received shall be determined and categorized for review. This listing shall be updated as appropriate.

2. The type and source of any additives to be used in the production of compost shall be specified.

3. The facility's waste inspection procedures shall be established to prevent the receipt of unauthorized or unacceptable waste. Inspection of all loads received is required.

4. Contingency operations shall identify proper management of all waste in the event of equipment failure, facility disaster, or receipt of unauthorized material such as oil, hazardous waste, etc.

5. The surfaces for all waste receiving areas, storage areas, and processing and curing areas shall be paved to minimize release of any contaminants to the groundwater. The paved areas shall be capable of withstanding wear and tear

(i) Facilities receiving waste types categorized as solid waste or landscaping waste and manure shall utilize a surface of asphalt or concrete or other surface approved by the Commissioner.

(ii) Facilities receiving only the landscape waste type may utilize a surface of compacted gravel or the surfaces authorized in subpart (i) above.

6. Landscaping waste shall be stored separately from other solid waste at the facility. Solid waste shall be stored in a manner to prevent vectors. Unusable material must be identified and removed within 48 hours.

7. Recovered materials removed from the solid waste stream shall be stored in a manner that prevents vector problems and shall be sent to a vendor or processor at least every thirty (30) days.

(e) Fire Safety

1. No open burning is allowed.

2. The facility shall have, on-site and continuously available, properly maintained fire suppression equipment capable of controlling accidental fires. If available, local fire fighting service shall be acquired.

(f) Litter Control - Fencing and/or other control shall be provided to confine loose waste to the area designated for storage or processing: Accidental dispersal from the designated areas shall be recovered daily.

(g) Personnel Facilities - There shall be provided:

1. A building or other shelter which is accessible to facility personnel which has adequate heating and light.

2. Potable water for washing and drinking.

3. Toilet facilities.

(h) Communication - The facility shall have available during operating hours equipment capable of summoning emergency assistance as needed.

(i) Operating Equipment - The facility shall have on-site operational and monitoring equipment capable of maintaining the waste processing as designed.

(j) Dust Control - The operator must take dust control measures as necessary to prevent dust from creating a nuisance or safety hazard to adjacent landowners or to persons engaged in supervising, operating, and using the site. The use of any dust suppressants (other than water) must be approved in writing beforehand by the Department.

(k) Run-on/Run-off Control

1. The operator shall design, construct, and maintain a run-on control system capable of preventing the 25 year, 24 hour storm from flowing onto all operational and storage areas.

2. The operator shall design, construct, and maintain a run-off management system capable of minimizing impact to adjoining properties during the 25 year, 24 hour storm.

3. Run-off shall be managed separately from leachate unless otherwise approved by the Commissioner.

(l) Endangered Species - Facilities shall be located, designed, constructed, operated, maintained, closed, and cared for during the post-closure care period in a manner that does not:

1. Cause or contribute to the taking of any endangered or threatened species of plants, fish, or wildlife; or

2. Result in the destruction or adverse modification of the critical habitat of endangered or threatened species.

(m) Location in Floodplains- Facilities shall not be located in a 100-year floodplain, unless the demonstration is made to the Commissioner as required at rule 1200-1-7-.04(2)(n).

(n) Wetlands - The facility shall not be located in a wetland unless the demonstration is made to the Commissioner as required at rule 1200-1-7-.04(2)(p).

(o) Closure - The facility must meet closure requirements described herein. The facility is finally closed by removal of all solid wastes and solid waste residues for proper disposal. The operator must notify the Commissioner in writing of his completion of closure of the facility. Such notification must include a certification by the operator that the facility has been closed by removal of all the solid waste and residues. Within 21 days of the receipt of such notice the Commissioner shall inspect the facility to verify that closure has been completed. Within 10 days of such verification, the Commissioner shall approve the closure in writing to the operator. Closure shall not be considered final and complete until such approval has been made.

(p) The owner/operator of a compost facility permitted pursuant to 1200-1-7-.02(2) shall file with the Commissioner a performance bond or equivalent cash or securities, payable to the State of Tennessee. Such financial assurance is intended to ensure that adequate financial resources are available to the Commissioner to insure 30 days operation and proper closure of the facility. The types of financial assurance instruments that are acceptable are those which are specified in rule 1200-1-7-.03(3)(d). Such financial assurance shall meet the criteria set forth in T.C.A. §68-211-116 and at rule 1200-1-7-.03(3)(b).

(q) Compost from facilities subject to a full permit in this rule must meet the appropriate criteria for "compost disinfection" as defined in definitions at rule 1200-1-7-.01.

(3) Buffer Zone Standards for Siting New Facilities - All waste management areas shall be located so as to conform to the distance standards at rule 1200-1-7-.04(3)(a).

(4) Classification of Compost - Compost shall be classified based on type of waste processed, product maturity, amount of foreign material, and the concentration of heavy metals.

(a) Classification Criteria

1. Type of waste processed

(i) Landscaping waste only

(ii) Landscaping waste and manure

(iii) Solid waste (may include sewage, sludge, and other solid waste)

2. Product maturity

(i) Mature compost is a highly stabilized compost material that has been exposed to prolonged periods of decomposition. It will not reheat upon standing to greater than 20o C above ambient temperature. The material should be brown to black in color. This level of maturity is indicated by a reduction of organic matter of greater than 60 percent.

(ii) Semi-mature compost is compost material that is at the mesophilic stage. It will reheat upon standing to greater than 20o C above ambient temperature. The material should be light to dark brown in color. This level of maturity is indicated by a reduction of organic matter of greater than 40 percent but less than or equal to 60 percent.

(iii) Fresh compost is compostable material that has been through the thermophilic stage and has undergone partial decomposition. The material will reheat upon standing to greater than 20o C above ambient temperature. It has beneficial use, but proper care is needed as further decomposition and stabilization will occur. This level of maturity is indicated by a reduction of organic matter of greater than 20 percent but less than or equal to 40 percent.

3. Compost shall be classified as either Type A Compost or Type B Compost according to its metal content characterization as shown in this part. Metal concentrations in finished compost shall not exceed the concentrations shown in Type B Compost below:

METAL

TYPE A COMPOST

TOTAL METAL

TYPE B COMPOST

TOTAL METAL

CONSTITUENT CONCENTRATION

(PPM)

CONCENTRATION

(PPM)

Arsenic 10 16

Cadmium 3 39

Chromium 210 1200

Cobalt 200 200

Copper 300 1500

Lead 100 250

Mercury 1.0 17

Molybdenum 10 18

Nickel 50 420

Selenium 3.0 36

Zinc 500 2800

4. Foreign matter shall be expressed as a percent as provided at part 4 of subparagraph (c).

(b) Labeling Requirements. Compost shall be labeled in accordance with the classification criteria of subparagraph

(a) above. This label shall be prominently displayed on individually packaged material, or a written statement providing the classification criteria and certifying its accuracy will be deemed sufficient on all bulk sales. This label shall be of sufficient contrast to the packaging to be easily visible and shall be a bordered label with dimensions of three inches by five inches. The lettering shall be one quarter inch block characters.

(c) Testing

1. Compost shall be sampled and analyzed as follows:

(i) A composite sample of the compost produced at each composting facility shall be analyzed at intervals of every 20,000 tons of compost produced or every three months, whichever comes first, for:

Parameter Unit Method

Moisture % EPA 160.3

Total Nitrogen % by dry weight EPA 351 and 353

Total Phosphorus % by dry weight EPA 365

Total Potassium % by dry weight EPA 3050/7610

Reduction in Organic Matter % EPA 160.4

PH Standard Units EPA 9045

(ii) In addition to (i) of this part all compost utilizing the solid waste classification at rule 1200-1-7-.11(4)(a)1(iii), shall be analyzed at intervals of every 20,000 tons of compost produced or every three months, whichever comes first, for:

Parameter Unit Method

All metals of Rule 1200-1-7- 11(4)(a)3.mg/kg of dry Weight SW-846 Method Foreign Matter %
See 4 Below **

Fecal Coliform most probable Number SM 9221***

Volatile Residue mg/l See 5 Below **

PCB part per million* SW-846 Method

* (detection above 1 ppm, the Commissioner shall be immediately notified by the operator and the source identified)

** Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), 1983.

*** Standard Methods For the Examination of Waste and Wastewater, 21st Edition, 2005.

2. The Department may decrease or increase the parameters to be analyzed for or the frequency of analysis based on monitoring data, changes in the waste stream or processing, or the potential presence of toxic substances. Sample collection, preservation, and analysis shall assure valid and representative results pursuant to a Department-approved quality assurance plan.

3. Composite samples shall consist of at least three individual samples of equal volume taken from separate areas along the side of the pile of the compost produced. Each sampling point shall be at a depth of two feet into the pile and four feet from the outside edge of the pile.

4. Foreign matter content shall be determined by passing a dried, weighed sample of the compost product through a one-quarter inch or six millimeter screen. EPA Method 160.3 shall be used to dry the sample. The material remaining on the screen shall be visually inspected, and the foreign matter that can be clearly identified shall be separated and weighed. The weight of the separated foreign matter divided by the weight of the total sample multiplied by 100 shall be the percent dry weight of the foreign matter content.

5. The organic matter reduction is determined by measuring the volatile solids content using EPA method 160.4.

(d) Reporting - Facility owner or operators shall record and maintain at the facility for three years the following information regarding their activities for each month of operation of the facility.

Records shall be available for inspection by Department personnel during normal business hours and shall be sent to the Department upon request to include:

1. Analytical results on composting testing;
2. The quantity, type [described at rule 1200-1-7-.11(4)(a)1] and source of waste received;
3. The quantity and type of waste [described at rule 1200-1-7-.11(4)(a)1] processed into compost;
4. The quantity and type of compost Type A or Type B [described at rule 1200-1-7-.11(4)(a)3] produced; and
5. The quantity and type of compost Type A or Type B [described at rule 1200-1-7-.11(4)(a)3] removed for use or for disposal, and the market or permitted disposal facility. The operator must identify the market for compost removed for use. The operator must identify the permitted disposal facility for compost removed for disposal.

(e) Annual Report Owners and operators of facilities producing compost made from solid waste shall submit to the Department an annual report by March 1 of each year. The report and shall include at a minimum:

1. The facility name, address and permit number;

2. The reporting year with all quantities expressed in tons (sludge expressed in dry weight);
3. The total quantity and type of waste [described at rule 1200-1-7-.11(4)(a)1] received at the facility during the year covered by the report;
4. The total quantity and type of waste [described at rule 1200-1-7-.11(4)(a)1] processed at the compost facility;
5. The total quantity and types of compost Type A or Type B [described at rule 1200-1-7-.11(4)(a)3] produced during the year covered by the report; and
6. The total quantity and types of compost Type A or Type B [described at rule 1200-1-7-.11(4)(a)3] removed for use or for disposal, and the market(s) or permitted disposal facility(s). The operator must identify the market for compost removed for use. The operator must identify the permitted disposal facility for compost removed for disposal.

(5) Design and Construction Plans

(a) Master Plan -A master plan shall be provided that is drawn at a scale of not less than 1" = 400' with not more than 20 foot contour interval and which clearly depicts:

1. The boundary of the proposed facility;
2. The existing drainage pattern of all site runoff;
3. Runoff monitoring stations;
4. Primary access roads;
5. Wells within one quarter mile of the site boundary;
6. The location of all 100-year floodplain boundaries; and
7. All residences within one quarter mile of the site boundary (If in an urban area residential properties may be delineated).

(b) Design Plans- Design plans shall be provided that are drawn at a suitable scale of not less than 1" = 50 feet and with contour intervals of not greater than five feet, which clearly depicts:

1. All structures;
2. Proposed waste processing areas;
3. Proposed waste storage areas;
4. All drainage appurtenances that control run-on/run-off and the direction of flow;
5. The location of all existing and proposed utilities and roads (defining surface material); and
6. The location of all leachate collection/treatment structures, piping, storage appurtenances, and any other associated unit.

(c) Narrative Description of the Facility and Operation - A narrative description of the facility and operation shall be provided that defines all procedures and activities pertinent to the design and operation of the facility. This narrative shall include, but not necessarily be limited to:

1. A description of how the facility will achieve the compliance of all standards defined in paragraphs (2), (3), (4), and (6) of this rule;
2. A description of the waste handling and processing equipment to be used;
3. A description of the management of run-on/runoff with design calculations of all appurtenances;
4. A description of the management of the leachate system and the disposition of the leachate;
5. A description of the odor control measures; and
6. A description of the procedures for the final closure of the facility.

(6) Technological Standards / Best Available Technology

In order to assure that the public health and environment of the State of Tennessee is provided the optimum protection from unwarranted releases of metals, as restricted by rule 1200-1-7-.11(4) (a) 3, these rules shall require that any facility permit incorporate the best available technology. This requirement is restricted to facility processing standards and shall not be interpreted to include source management of the waste stream. The applicant shall submit to the Department documentation of the most technologically advanced system that is currently in operation and is compatible with the proposed design criteria. Representative product analysis shall be provided in accordance with the testing requirements of rule 1200-1-7-.11(4)(c) "Testing" of this rule.

Authority: T.C.A. §§68-203-103(b)(3), 68-211-102(a), 68-211-105(b) and (c), 68-211-106(a)(1), 68-211-107(a), 68-211-111(d)(1), 68-211-111(d)(2), 68-211-116, 68-211-851(a), 68-211-852, 68-211-853, and 68-211-861. Administrative History: Original rule filed October 8, 1998; effective December 28, 1998. Amendment filed April 17, 2000; effective July 1, 2000. Amendment filed July 27, 2001; effective October 10, 2001. Amendment filed September 29, 2003; effective December 13, 2003. Amendment filed May 23, 2006; effective August 6, 2006.