

KENTUCKY COMPOST MANUAL

2011



Kentucky Department of Environmental Protection

Division of Compliance Assistance

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Certification and Licensing Program

Mission

Promote responsible environmental stewardship.

Goal

Provide operators with the basic knowledge required to manage drinking water, wastewater and solid waste systems.

The Division of Compliance Assistance offers free compliance assistance. Our services are available to all individuals, communities and businesses regulated by the Kentucky Department for Environmental Protection. We want to help you succeed!

Hotline and Website for regulatory, technical or operational concerns
800-926-8111
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Other programs administered by the Division of Compliance Assistance:

Kentucky Excel Program
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Kentucky Environmental Compliance Assistance Program

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COMPOSTING IN KENTUCKY

Section I - Introduction to Waste Disposal

Some method of waste disposal has been a necessity throughout mankind's existence. However, in earlier ages, because of lower population over the earth's surface, nature was able to recycle mankind's waste, rendering it into reusable material and nutrients for plant growth. With the advent of industrial society and concentration of populations in cities and towns, along with the increased production of paper and packaging materials, mankind has created a solid waste disposal problem. Alternatives and new ideas for solid waste treatment and disposal must be considered.

In general, three to five pounds of solid waste are generated nationally per capita per day. In Kentucky, it has been estimated that residential and commercial waste generated is 4.67 pounds per capital per day. A community with a population of 40,000 would generate over 93 tons of waste per day or 34,000 tons per year. Each county in Kentucky has developed a solid waste management plan with the goal of reducing by 25% the amount of solid waste annually going to landfills. Composting is one important means to achieve this goal for wastes that are naturally biodegradable.

A. Waste Definitions

In general, waste includes (a) hazardous waste, (b) special waste, and (c) solid waste. Hazardous waste is not suitable for composting. "Special waste" includes sludge from both water treatment and wastewater treatment facilities as well as a few other waste streams. "Solid waste" includes municipal solid waste and industrial solid waste. "Municipal solid waste" includes household and commercial (restaurant, office, warehouse) solid waste. Any reference to special

waste in this manual will refer only to sludge. However, all appropriate definitions are included in the GLOSSARY.

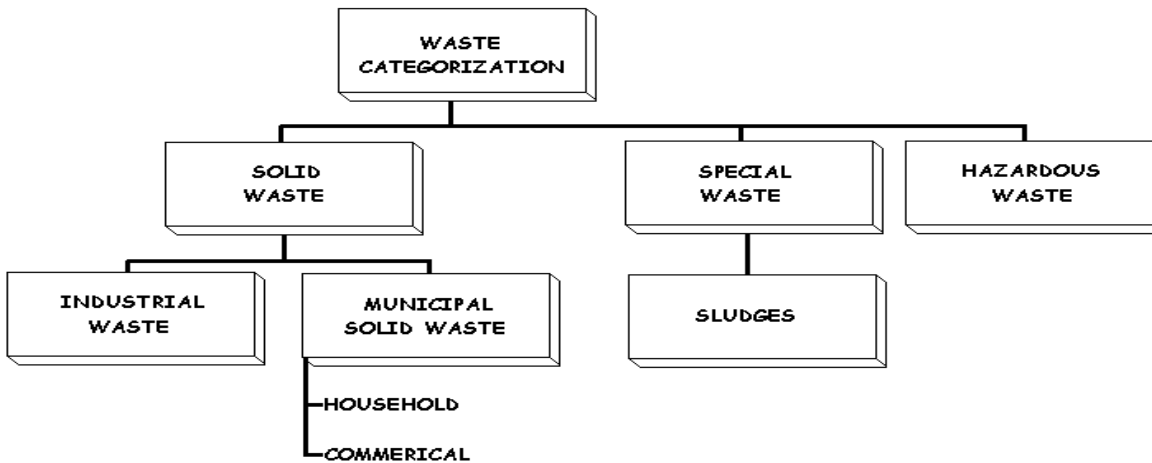


Figure 1-1 Waste Categorization

B. Regulatory Overview

Kentucky Revised Statute 224.43-010 states that it is the policy of the Commonwealth to provide for the management of solid waste, including reduction, collection, transportation, beneficial reuse, and disposal, in a manner that will protect public health and welfare, prevent the spread of disease and creation of nuisances, conserve our natural resources, and enhance the beauty and quality of our environment. The Commonwealth further has as its policy the reduction of solid waste disposed through reuse, waste recycling or yard waste composting, and resource recovery. Kentucky Revised Statutes 224 requires the Energy and Environment Cabinet to adopt regulations for the handling of solid waste. The regulations and requirements of the general design and operation of landfarming and composting facilities are set forth in 401 KAR 48:200 and 401 KAR 45:100.

C. Compost Operator Certification

The Division of Compliance Assistance (DCA) is responsible for the certification of compost operators. DCA will provide at least one scheduled training session each year. Certification will be granted at the end of the session if the applicant achieves a score of at least 70 percent on the examination. The objectives of this program are to promote environmentally sound solid and special waste practices by training and certifying facility operators. The program includes sessions on waste characteristics, site selection, permitting, marketing, and operating requirements for a compost facility.

Who Must Attend: All compost facilities in Kentucky must have a certified operator. Any individual who is acting as the operator of a composting facility must register to attend the training session.

Upon successful completion of the examination, operators will become certified by the Commonwealth of Kentucky for a five-year period. Wallet sized certificates will be issued to all successful certification candidates. These certifications must be available for inspection whenever these individuals are operating a composting site. A certificate may be revoked if DCA determines:

- The certificate was obtained by fraud, deception, or submission of inaccurate data;
- The certificate holder failed to perform required duties, including failure to comply with permit conditions; or
- The certificate holder failed to use reasonable care and judgment in performance of required duties.

Study Questions – Section 1

1. _____ to _____ pounds of solid waste is generated nationally per capita per day.
2. _____ waste includes sludge from both water treatment and wastewater treatment facilities.
3. _____ waste includes municipal and industrial solid waste.
4. _____ solid waste includes household and commercial solid waste.
5. The _____ _____ requires the Energy and Environment Cabinet to adopt regulations for the disposal of solid waste.
6. All compost facilities in Kentucky must have a _____.
7. Upon adequate completion of the examination, compost operators will be certified for a _____ year period.
8. If DCA determines that a certificate was obtained by fraud; that the certificate holder failed to perform required duties; or failed to use reasonable care and judgment during the performance of duties, the certificate may be _____.

Section II - Components of Solid Waste

Municipal solid waste can be divided into two categories: one that cannot be composted (residuals) and one that can be composted (biodegradable).

Non-compostable waste includes items such as metals, glass, and most plastics. Typically, these materials may make up around thirty percent of a community's waste stream. Much of this material can be marketed through recycling programs and represents a significant potential reduction in waste going to landfills. Compostable wastes, then, make up around seventy percent of the municipal solid waste stream. Twelve and a half percent of the total is food waste, and nearly thirteen percent is yard waste.

Total Municipal Solid Waste Generation by Material (2007)

Paper	32.7%
Yard trimmings	12.8%
Food scraps	12.5%
Plastics	12.1%
Metals	8.2%
Rubber, leather, and textiles	7.6%
Wood	5.6%
Glass	5.3%
Other	3.2%

Source: U.S.EPA, Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2007.

Compostable wastes include all items that will rot, decay, or readily decompose. In general, this waste is organic in nature (i.e., remains of once living plants or animals). Paper and yard waste, which includes grass clippings, leaves, limbs, branches, and other wood products, usually make up the bulk of compostable material. With proper management, these organic materials can be diverted from the waste mainstream and converted into compost. Special waste such as sludge from wastewater treatment facilities is also generally compostable. However, the

inclusion of sludge with other municipal solid waste requires greater composting management skills and is subject to different permitting requirements.

Often materials from industry and manufacturing plants contain a sizable portion of organic components that can be composted. While these sources may not be included in municipal planning estimates, they can represent a significant source of materials for a compost operation. Like waste from municipalities, they should be adequately sorted before arriving at the compost facility. If questions arise about waste quality or elemental content, analysis of the materials should be conducted before composting.

Study Questions – Section 2

1. Non compostable solid waste includes items such as _____, _____, _____, and _____.
2. Yard waste makes up ____ percent of an average community's garbage.
3. Compostable solid waste includes all items that will _____, _____ or _____.
4. _____ and _____ usually make up the bulk of compostable materials.
5. Special waste such as _____ is generally compostable.

Section III - Why Compost?

By Kentucky statute, composting is defined as the biological decomposition of organic solid waste under controlled aerobic conditions. Composting is an important option for waste disposal since reuse, in the form of compost, is the result. Since as much as seventy percent of the waste stream may be compostable, this option can significantly reduce the amount of waste going to landfills. Thus, composting is one viable aspect of waste management with positive environmental results.

Compost (the product) may be used as mulch, soil amendment or as a minor source of nutrient addition. The use of compost as mulch may be the largest single use and it has many benefits. Placing the compost around shrubs, trees, flowers, and garden plants as mulch provides a means of reducing runoff through higher percolation and higher water holding or water retention capacities. By increasing water infiltration and retention in the soil, erosion is reduced. Eroded soil is the number one pollutant in waters in Kentucky and in the nation. In addition, mulch also reduces the amount of water evaporation by restricting the amount of sunlight reaching the soil thus cooling the soil surface. This cooler soil surface reduces the evaporative rate and loss of water resulting in less frequent watering. During times of extended drought or high temperatures, the mulch may even prevent plant death. A layer of organic mulch will also reduce competition from weed growth.

Compost may also be incorporated into the soil as an amendment. Mixing compost into the soil increases pore space allowing increased water permeability and aeration. Both result in an enhanced environment for plant root growth. As incorporated material continues to undergo further decomposition, the fertility of the soil may be enhanced. However, most organic waste does not have large quantities of nutrients, but compost does have the advantage of releasing nutrients slowly. Compost has also been shown to suppress common plant diseases such as

Fusarium and *Phytophthora*. In general, compost produced from green materials like yard clippings is dominated by bacteria and more suitable for amending garden soils. Compost produced from brown, woody materials is high in fungi and therefore more suitable for placement around shrubs and trees. For more on this, the book *Teaming with Microbes* is a great resource.

Composting also preserves landfill space for wastes that cannot be recycled or easily biodegraded. The elimination of yard waste from the landfill may reduce the municipal waste stream by as much as 13 percent. Many communities understand this opportunity and have banned leaves and grass clippings from landfills. Yard waste is probably the most easily compostable material and the most logical waste for communities to initially divert from landfills. As yard waste and other materials are diverted from landfills to composting, tipping fees are often reduced for those materials. Transportation costs may also be reduced, depending on site location.

Composting operations may require “start-up” funding for land, operation or equipment. Profitable private operations require a “tipping fee” on the front end as well as sales revenues generated on the end product. In most instances, if fees allotted for composting approach fifty percent of the tipping fees for landfills, the composting operation will likely be financially successful. As the level of sophistication of composting increases, from windrow to static pile to in-vessel, costs increase as do required management skills. The up-front “tipping fee” needs to cover the operational costs of the composting method.

Table 1. Densities of Yard Wastes

<u>Material</u>	<u>Condition</u>	<u>Typical Density (lbs./cu yd)</u>
Brush and dry leaves	loose and dry	100
Leaves	loose and dry	200-260
Leaves	shredded and dry	250-450
Green grass	compacted and moist	500-1100
Green grass	loose and moist	350-500
Yard waste	as collected	350-930
Yard waste	shredded	450-600
Sewage sludge	very moist	1100-1700
Wood chips	variable	400-650

Study Questions - Section 3

1. _____ is the natural decomposition of organic materials at an accelerated rate.
2. Compost _____ the surface, restricting the amount of sunlight reaching the soil.
Thus, the temperature in the soil remains _____.
3. The process of mixing organic waste into the soil tends to _____ pore space
allowing _____ water permeability and aeration.
4. Most organic waste does not have _____ quantities of nutrients.
5. _____ and _____ are generally reduced through the use of compost
as mulch.
6. _____ is the number one pollutant in the waters of Kentucky and the nation.
7. _____ preserves landfill space.
8. Composting operations may require start up funding for _____, _____, or
_____.
9. _____ _____ is probably the most easily compostable materials.

Section IV - Essential Components of Composting

Composting Process

Composting is a biological process influenced by the basic conditions that affect all living beings. The composting process is directly dependent upon the well-being of the microorganisms which do the majority of the biodegradation. Air, water, temperature, particle size, and pH are all important environmental factors in composting. By Kentucky statute, composting involves the biological decomposition of organic materials in controlled aerobic conditions.

In composting, “decomposition” is used because the process is rarely carried to complete “stabilization”, meaning no further breakdown of materials will occur. The term “biological” distinguishes the process from chemical and physical treatment. The “organic” term describes materials of a carbon source that are capable of being broken down biologically. “Controlled” distinguishes composting from the natural rotting, putrefaction, or other decomposition, that takes place in an open, unmanaged condition. “Aerobic” means that composting must occur in an oxygenated environment as opposed to anaerobic decomposition which occurs when materials are flooded with water or otherwise deprived of oxygen.

A. Microorganisms

The microorganisms that readily decompose or compost organic materials are naturally occurring throughout nature, including on the waste material. Thus, there is no need to purchase “compost starter” materials. The microbes responsible for composting are in two main classes: bacteria, and fungi.

The bacteria responsible for decomposing organic matter aerobically come from many different genera. These include *Bacillus*, and *Thermus* among others. Bacteria are mainly responsible for decomposing materials such as leaves and grass clippings which are referred to as

“greens” in composting. Bacteria are usually present throughout the various stages of composting, and their decomposition byproducts are the sticky organic compounds responsible for binding soil particles together into stable aggregates.

Actinomycetes are a special kind of bacteria that form long filaments. They are more common in the latter stages of composting. They tolerate a drier environment and release compounds that give finished compost the characteristic “earthy” odor.

Fungi also appear in the later stages of composting. Like actinomycetes, they also form threads easily visible in the compost which are called hyphae. Both fungi and actinomycetes bind soil particles together with their mesh-like growth forms. Fungi found in compost include *Aspergillus* and *Thermophilum*. Fungi are responsible for breaking down materials that are harder to decompose, such as woody materials and thick, leathery leaves. The rate of composting for woody materials begins to slow above 130° F, however, and fungi will not survive at temperatures above 140° F.

The microbe populations may double several times per hour when favorable conditions exist (Table 2) resulting in accelerated organic matter decomposition. This decomposition, actually the metabolism of a food source for the microorganisms, results in the generation of heat. Thus, the temperature of the composting material will rise, which is the most obvious indicator that composting is occurring.

Table 2. Optimal Composting Conditions

Oxygen	5 to 20%
Moisture	40 to 60%
Carbon:Nitrogen	25:1 to 40:1
Temperature	90 to 140° F (32 to 60° C)
pH	6 to 8

B. Aeration

Composting can either be carried out aerobically (with oxygen) or anaerobically (without oxygen). Most conventional composting methods use the aerobic process in which oxygen is essential (Table 2). Air contains about 21% oxygen and microbes need at least 5% oxygen in the thin films around them to remain active. When oxygen levels go below 5%, the oxygen-requiring microbes shut down and other microbes not requiring oxygen (anaerobes) begin to multiply. This group of microbes produces volatile compounds that have a high odor and the temperature of the interior immediately decreases to the mesophilic range. Aerobic composting is therefore characterized by high temperatures, the absence of foul odors, and is more rapid than the anaerobic process. By definition, Kentucky statutes consider only aerobic processes to be “composting”.

Oxygen is added to the composting materials either by passive or active means. If the pile size remains small to moderate and particle size is medium to large, fresh air can passively diffuse in from outside the pile. Materials such as grass clippings must be placed in smaller piles or windows, or have a significant amount of “bulking agent” to create larger pores to allow passive movement of enough oxygen into the decomposing materials.

One method to actively manage the oxygen in a compost pile is to regularly turn or mix the materials. The frequency of turning or mixing depends on the internal temperature of the material, the outside temperature, and the need to provide enough oxygen to the material. The first turning should occur when internal temperatures reach 140-150°F following a steady temperature increase. However, if the internal temperature “peaks” or levels off at 100-120°F before the first turning or mixing, the pile should be turned immediately to avoid going anaerobic as oxygen may be limiting. As the number of turnings increase, the peak temperature reached, after each turning, may be lower than the previous peak temperature. Also, as the number of times the material is turned or mixed increases, the particle size becomes smaller making it more important that close attention be given to temperature and aeration.

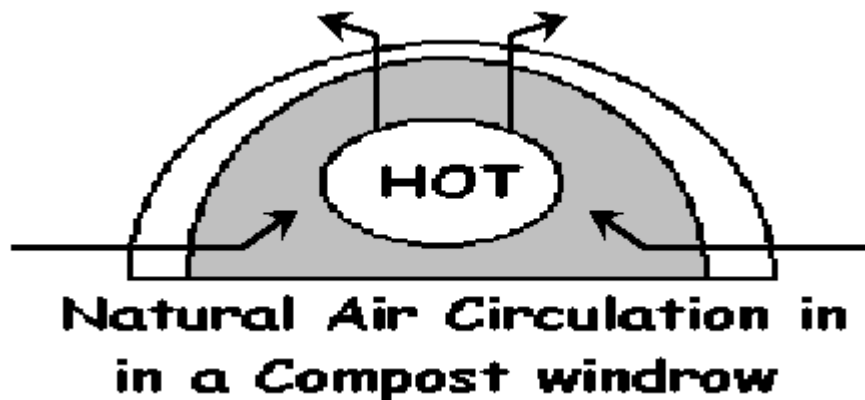


Figure 4-1 Air Circulation Through a Compost Windrow

Anaerobic decomposition is characterized by low internal temperatures, the production of odorous immediate products, and a slower rate of decomposition. This system is usually not economically feasible, and frequently produces compounds that may be toxic to living plants. The most common complaint of neighbors to compost operations is offensive odors, which can occur when the process goes anaerobic. Once the process goes anaerobic, the compounds produced take a long time to be converted back to aerobic conditions to make a desirable

product. When anaerobic-type odors are released during the composting process, this usually indicates poor management.

C. Temperature

The activity of biological systems is temperature sensitive. Up to a point, as temperature increases, activity also increases. Consequently, composting rates are determined, at least partially, by the temperature within the pile or windrow. Table 2 suggests the optimum temperature is between 90° F and 140° F. As the temperature approaches 140° F, fewer microorganisms can tolerate those temperatures and composting rates will decrease.



Size of the pile or windrow and porosity of the material determine how readily heat escapes. Larger windrows and smaller particles provide greater insulating effect and slower heat loss. Figure 4-1 shows general temperature concentrations in a windrow. “Turning” the composting material permits the excessive heat to escape. After “turning” the composting material, the temperature will start to rise again. When only a slight heat increase (10° F above atmospheric temperature) or no increase, in windrow temperature occurs after several times of turning, and if all other environmental factors are favorable, stabilization of the compost has occurred.

D. Moisture

Adequate moisture levels in the composting material are another necessary component of efficient composting. Biological systems require adequate moisture or a moist environment. When the material is too dry, microbial population expansion will be slow, temperature will not rise as quickly, and composting will proceed more slowly. Sometimes if the moisture level is too low, the material will “mold” and not proceed to compost.

Excess water or moisture in the material reduces the aerobic microbial population. Also, some of the excess moisture fills pore spaces between the particles which restricts normal passive flow of oxygen into the material and promotes the more rapid development of anaerobic conditions. This suggests that more attention must be given to managing aeration and temperature during the early stages of composting.

The balance between adequate moisture and aeration is an important management consideration. Combinations of materials that include significant amounts of paper products may need to start the process at 65% moisture. Composting mainly non-woody yard waste, a mixture of leaves, and grass clippings, may not need an addition of water in a humid climate such as Kentucky's. Conversely, woody material will very likely need additional moisture, unless freshly cut, as it tends to contain less moisture upon delivery and is very porous. Porous materials often dry faster, especially in warmer weather. This drying can be reduced by the addition of finer materials (leaves, grass clippings, or sewage sludge). These finer materials not only reduce the rate of drying, but also help the total mixture retain moisture for a longer period.

E. Carbon : Nitrogen Ratio

The two most important nutrients needed for microbes to grow and reproduce are carbon and nitrogen. Carbon, the building block of materials such as sugars and carbohydrates, is dominant in cellulose materials such as paper, wood, branches, some plant residues, and leaves. These materials are often referred to as “browns”. The microbes in the compost pile obtain energy by breaking down these substances and releasing carbon dioxide. If the C is in a form that is difficult to decompose, such as lignin from wood or paper, the rate of stabilization will be slow. Green wood is an exception as the sugars in the sap are more available to microbes thus allowing more rapid composting.

Nitrogen, found primarily in proteins, is necessary for the development of microbial proteins that balances the carbon for rapid growth and expansion of microbial populations to ensure a reasonable rate of composting. The nitrogen content of organic materials is often the most limiting factor in composting. Nitrogen content is high in grass clippings, sewage sludge, animal manures, and some food waste. Materials high in nitrogen are also known as “greens”. Understanding the importance of the C:N ratio and knowing the C:N ratio of various materials for composting enables a good manager to maintain optimum composting conditions. Consequently, the concept of carbon to nitrogen (C:N) ratio must be understood if composting is to be successful in recycling some of the waste stream. For optimum composting, the C:N ratio should be in the range of 25-40:1 (Table 2). Keeping the range in the low 30’s is more beneficial when starting the composting. If the total C:N of the material in the piles or windrows is less than 20:1, they will give off ammonia. The microbes release the extra nitrogen as ammonia in the process of breaking down the carbon containing materials which can generate odor complaints from neighbors. As the C:N moves toward 40:1, the microbes may slow slightly until

the excess C has been oxidized. Generally, supplying C and N at the suggested ratio ensures that other nutrients will be available to the microbes in the correct amounts.

Estimates for some materials are contained in Table 3. Keep in mind that these values will vary. For example, grass clippings from highly fertilized lawns will have lower ratios, and unfertilized lawns will have higher ratios. In addition, C:N ratios in leaves from some hardwoods (oak) will be higher than from some other trees (maples).

Blending of low C:N materials with high C:N materials or commercial nitrogen fertilizer is important to avoid some problems, and to speed decomposition. Sawdust or finely ground wood can be combined effectively with an appropriate amount of grass clippings, sewage sludge, or animal manure to optimize the C:N ratio. When using sawdust in composting, the high C:N ratio of wood should be taken into account when estimating C:N of the total mixture. When large (3/4 inches or larger) wood chips are used as a bulking agent (maybe 10% of the mixture), passive airflow into the composting material will increase. This volume of high C:N material is usually not accounted for as microbes decompose these larger wood chips very slowly. The addition of commercial sources of fertilizer nitrogen may be used to lower the C:N ratio if low C:N materials are not available. This may significantly add to the composting cost, and may not be acceptable for some “organically” inclined gardeners or homeowners. As an example, mixing leaves with a high nitrogen waste, such as grass clippings, animal manure, or commercial nitrogen fertilizer will accelerate composting. Adding 1 part grass clippings to 3 parts leaves, or 1 to 2 lbs. of ammonium nitrate or urea fertilizer per yd³ of leaves, will balance the C:N ratio. However, the addition of commercial sources of fertilizer nitrogen is usually not necessary for most non-woody or non-paper wastes. Online compost calculators can be used to explore mixtures of materials that will give a C:N ratio of 30:1.

Table 3. Carbon to Nitrogen Ratios of Compostable Materials

Sewage sludge: Activated	6:1
Laying hen manure	6:1
Poultry manure	10:1
Vegetable waste	11:1
Swine waste	13:1
Food waste	15:1
Sheep manure	16:1
Sewage sludge: Digested	16:1
Grass clippings	19:1
Cow manure*	20:1
Horse manure*	25:1
Fruit wastes	35-40:1
Leaves, fresh	37:1
Leaves, dry	47:1
Wheat straw	53:1
Newsprint	54:1
Corn stalks	60:1
Straw	80:1
Bark	100-130:1
Paper	170:1
Cardboard	378:1
Sawdust 450:1	
Wood	600:1

* C:N ratio includes bedding

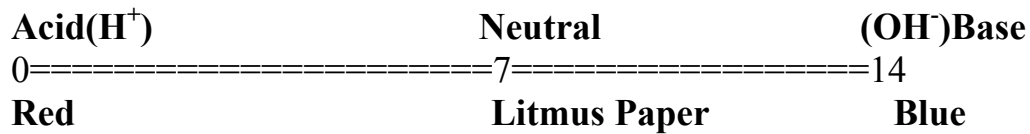
F. Particle Size

Particle size of the materials to be composted influences the rate of composting. Small particles, that create a high surface area per unit of volume, allow the nutrients and energy to be more available to the microorganisms for successful, efficient composting. Shredding, chopping, and grinding create smaller particles, which expose more surfaces to microbial activity. Because these smaller particles may restrict passive air flow and increase oxygen demand of the microbes, finer materials need to be turned more frequently to prevent anaerobic conditions during composting.

The major problem with the absence of grinding, shredding, or chopping is the lack of a homogenous product. A homogeneous compost is often important in establishing a good market. If a small particle material, such as sewage sludge, is mixed with a larger particle-bulking agent, grinding may not be necessary. When the rate of composting is not a critical issue, then more time can be allowed for composting larger particles. Unless the compost is screened, though, this will require a larger site for composting and delay the formation of uniform, marketable compost. Some compost facility operators have found that shredding leaves will reduce time required to produce stable compost. This shredding can occur as part of collection or it can be performed at the composting site.

G. pH

pH is an indicator of the acidity or alkalinity of the composting materials, and is measured on a scale of 0 (extremely acid) to 14 (extremely basic), with 7 being neutral. The composting process is most efficient when pH is between 6 and 8, which are normal values (Table 2). This factor can be very useful in diagnosing and correcting certain operating problems.



During the initial stages of decomposition, organic acids are formed that are normally consumed by the microbes. However, without sufficient oxygen available to the microbes, these acids will not be converted to usable carbon or carbon dioxide as quickly. Thus, excess acidity may lower the pH below 6, and in turn slow down the composting process. This is more likely to happen when larger amounts of easily composted organic compounds are present such as undiluted animal manure, or some green wastes. Extra aeration through use of more bulking agent or more frequent turning will usually solve the problem. In extreme cases, it may be helpful to add some lime or other neutralizing agent to raise the pH back to a desirable range. It is also important to avoid raising the pH above 8, which can cause the release of odorous ammonia. If the starting materials were balanced for C:N, ammonia release in this instance may rob the composting process of sufficient nitrogen, which will slow the process.

Final compost pH can be a factor in marketing. Final pH above 8 can damage or even kill more acid-loving plants such as azaleas, rhododendrons, pine, or blueberries, especially if used in large quantities. Testing compost during decomposition or at the final stage can be very simple, and can be done on-site with a soil or plant media testing kit.

Study Questions – Section 4

1. The _____ of the waste to be composted determines the rate at which the materials compost.
2. Composting involves the decomposition activity of microorganisms such as _____ and _____.
3. The environmental conditions in which these microbes live determine the _____ and _____ of their degradative processes.
4. _____ is the most obvious indicator that composting is occurring.
5. The air we breathe has approximately _____ percent oxygen.
6. At least _____ percent oxygen must be present for materials to compost.
7. _____ is the vital component needed to maintain low levels of odors.
8. Turning the compost to maintain proper aeration should always receive _____ priority.
9. Composting _____ are determined partially by the _____ within the pile.
10. Optimum temperature for composting is between _____ and _____.
11. _____ of the pile and _____ of the material determines how readily heat escapes.
12. High _____ material may need more frequent turning for both aeration and temperature control.
13. Stabilization of the compost has occurred when heat _____ do not occur after turning.
14. Adequate moisture levels in the composting materials are another necessary component of _____ composting.
15. Excess water causes a deficient level of _____.

16. There will very likely be a need for additional _____ and _____ to compost woody materials.
17. Microorganisms involved in composting have a greater need for _____ and _____ than they do for other nutrients.
18. _____, found primarily in proteins, is necessary for the rapid growth and expansion of microbial populations to ensure a reasonable rate of composting.
19. Nitrogen content is high in _____ and low in _____ products.
20. _____ of the material to be composted influences the rate of composting.
21. Microorganisms need _____ surface areas to effectively decompose material. _____ particles have high surface area.
22. Failure to grind coarse materials _____ time required for composting.

APPENDIX

Contacts By Topic

The Division of Compliance Assistance is now responsible for the implementation of the landfarm certification. The Division of Waste Management is still responsible for the permits, annual review and reporting requirements. The information below offers the reader a contact person for various areas of assistance.

Division of Compliance Assistance

Phone Number: 502-564-0323 or 800-926-8111

Fax Number: 502-564-9720

- | | |
|--|-------------|
| • Certification (training, testing & fees) | Lisa Butler |
| • Compliance Assistance | Kenya Stump |
| • Open records requests related to certification | Julia Kays |
| • Regulations related to certification | Julia Kays |

Division of Waste Management

Phone Number: 502-564-6716

Fax Number: 502-564-3492

- | | |
|--|-----------------------------|
| • Technical assistance on permits | Ron Gruzesky |
| • Landfarm & Compost | Bob Bickner |
| • Annual review assistance | Frank Whitney |
| | Robin Green |
| • Solid Waste Landfills | Ron Gruzesky |
| | Lindsey Briggs |
| | Ken Melton |
| • Forms and fees not related to certification;
Bonding and reporting requirements | LeMoyne Pilcher |
| | Anita Young |
| | Stephen Kempf |
| | John Arnett |
| | Deborah DeLong |
| • Open records requests related to facilities | Tina Fisher |
| • Regulations related to facility requirements | Cassandra Jobe |
| • Complaints | Duke York |
| • Facility inspections | Jon Maybriar |
| • Enforcement | Jeff Cummins (502-564-2150) |

DWM Field Offices

Field Offices	Phone Number	Office Supervisor
Bowling Green	270-746-7475	Todd Johnston
Columbia	270-384-4735	John Rogers
Florence	859-525-4923	Michael Fant
Frankfort	502-564-3358	Richard Thomas
Hazard	606-435-6022	Greg Eldridge
London	606-330-2080	Bill Belcher
Louisville	502-429-7120	Keith Sims
Madisonville	270-824-7532	Larry Tichenor
Morehead	606-784-6634	Karen Hall
Paducah	270-898-8468	Marjorie Williams

Solid Waste Operator Certification Regulations

401 KAR 45:090. Special waste operator certification.

RELATES TO: KRS 224.01, 224.10, 224.40, 224.50

STATUTORY AUTHORITY: KRS 224.10-100, 224.40-100, 224.40-305, 224.40-605, 224.50-760

NECESSITY, FUNCTION, AND CONFORMITY: KRS Chapter 224 requires the cabinet to adopt administrative regulations for the management, processing, and disposal of special wastes. KRS 224.40-305 requires persons who establish, conduct, operate, maintain or permit the use of a waste site or facility to obtain a permit. This chapter establishes the permitting standards for special waste sites or facilities, and the standards applicable to all special waste sites or facilities. This administrative regulation establishes the program for education, testing, and certification of operators of special landfarming sites or facilities in accordance with KRS 224.40-605.

Section 1. Applicability. (1) The requirements of this administrative regulation apply to all special waste landfills, landfarms, and composting facilities operating under formal permits, as identified in 401 KAR 45:020, Section 2(1)(a) and (b).

(2) The owner or operator shall ensure that all technical operations at the special waste site or facility are conducted by or under the direction of an individual with a valid certification under this administrative regulation. The landfill, landfarming, or composting operator shall be reasonably available at the site or facility during operation.

(3) The certified operator shall ensure that all operations are conducted in compliance with this chapter.

(4) A special waste site or facility permit may be revoked or subject to other enforcement actions upon violation of the requirements of this administrative regulation.

Section 2. Transition of Certification. (1) Persons holding a valid certification for landfill manager, landfill operator, and landfarming operator under 401 KAR 47:070 shall be deemed to hold a valid certification under this chapter until the certification expires. At the time a certification expires, the certificate holder shall obtain special waste certification under this administrative regulation.

(2) Persons operating a special waste landfill who were not previously certified to operate a residual landfill under 401 KAR Chapter 47 shall obtain certification under this chapter within one (1) year of the effective date of this administrative regulation.

(3) Persons operating a special waste composting or landfarming site or facility shall obtain certification within one (1) year of the effective date of this administrative regulation.

Section 3. General Provisions for Landfills. (1) Each special waste landfill shall have a landfill operator certified in accordance with this administrative regulation.

(2) No special waste landfill shall operate in the absence of a certified operator without the appointment of an interim operator in accordance with Section 11 of this administrative regulation.

Section 4. General Provisions for Landfarming and Composting Facilities. (1) Each landfarming or composting facility shall have an operator certified in accordance with this administrative regulation.

(2) No landfarming or composting facility shall operate in the absence of a certified operator without the appointment of an interim operator in accordance with Section 11 of this administrative regulation.

Section 5. Application for Certification. (1) Persons desiring to be certified shall submit an application at least thirty (30) days prior to the scheduled training class. Applicants for training and examination shall use form DEP 6031 entitled "Application for Certification" (March 1992). The requirements contained in the application for certification are incorporated in this administrative regulation by reference. The application may be obtained from the Division of Waste Management, 14 Reilly Road, Frankfort, Kentucky 40601, (502) 564-6716, between the hours of 8 a.m. to 4:30 p.m., Eastern Time, Monday through Friday.

(2) The cabinet shall review applications and supporting documents, determine the eligibility of the applicant for examination, and notify the applicant of the determination.

(3) No person shall be eligible for examination for certification unless that person completes the appropriate training course provided by the cabinet, unless an alternative training program is accepted by the cabinet in accordance with Section 6 of this administrative regulation.

Section 6. Training Course Requirements. (1) The cabinet shall provide training courses for individuals desiring to become certified. All applicants for certification shall be required to attend a training course provided by the cabinet, unless alternate training is accepted under subsection (3) of this section.

(2) The training course shall address the technical and legal aspects of the facility type for which operator certification is sought.

(a) The training course for landfill operators shall include:

1. Permit application requirements for special waste landfills, including technical and administrative requirements;
2. Waste characterization;
3. Chemical and biologic reactions associated with the waste;
4. Hydrogeologic and engineering factors associated with the facility;
5. Operational requirements and achieving compliance with 401 KAR 30:031;
6. Duties and responsibilities associated with landfill management;
7. Requirements of this chapter as they apply to facility operation, including environmental monitoring, operations requirements, and maintaining compliance with 401 KAR 30:031;
8. Evaluating site suitability to receive wastes;
9. Environmental considerations in preventing violations of this chapter;
10. Maintaining equipment; and
11. Facility safety.

(b) The training course for landfarm and composting operators shall include:

1. Requirements of this chapter as they apply to facility operation and management;
2. Wastewater treatment processes;
3. Waste characterization;

4. Chemical and biological reactions associated with the waste;
5. Landfarming design and management;
6. Permit application requirements for special waste landfarms;
7. Environmental considerations in preventing violations of this chapter;
8. Achieving and maintaining compliance with 401 KAR 30:031;
9. Evaluating site suitability to receive waste;
10. Maintaining equipment;
11. Facility safety; and
12. Duties and responsibilities associated with operating a landfarm.

(3) The cabinet may accept alternate training courses, provided they result in a level of competence equivalent to that of participation in the cabinet's training course. It shall be the applicant's responsibility to submit documentation as the cabinet requires for an equivalency judgement of the alternate training course. This information shall contain at a minimum the following specifics: the course name; sponsoring agency; the date, location, and beginning and ending times of the course; a summary of the course content of sufficient detail to determine relevance and quality of the course; and a copy of the certificate received.

Section 7. Training and Examinations. (1) After training is complete, time shall be set aside for the purpose of examinations to determine the knowledge and ability of the applicant.

(2) Separate examinations shall be prepared to cover basic differences in the duties and responsibilities for the operation of each category of special waste site or facility.

(3) Applicants who fail to pass an examination may reapply for the examination at a regularly scheduled examination or by appointment with the cabinet. The cabinet shall require the applicant to attend the training session again if the applicant fails to pass the examination in three (3) attempts.

Section 8. Education and Equivalencies. (1) All applicants shall be evaluated by the cabinet as to education and experience as related to the appropriate category of special waste site or facility.

(2)(a) Applicants for landfill operator shall have completed high school, by graduation or by obtaining an equivalency certificate, and shall have a minimum of one (1) year of experience at a landfill facility.

(b) If an applicant for landfill operator does not meet the requirements of paragraph (a) of this subsection, the cabinet may consider the number of years of experience in operating a landfill or experience in a related field such as heavy equipment operator, road construction, surface mining.

(3)(a) Applicants for landfarming or composting operator shall have completed high school, by graduation or by obtaining an equivalency certificate, and shall have a minimum of one (1) year of experience at a landfarming or composting facility.

(b) If an applicant for landfarming or composting operator does not meet the requirements of paragraph (a) of this subsection, the cabinet may consider the number of years of experience in operating a landfarming facility or experience in a related field such as wastewater treatment or water treatment in determining eligibility for examination on a year-for-year basis.

Section 9. Issuance of a Certificate. (1) Certification may be issued to individuals upon meeting the minimum education requirements, work experience, and the course work requirements of this administrative regulation and passing the examination in accordance with Section 5 of this administrative regulation.

(2) Certification shall not be valid if obtained through fraud, deceit, or the submission of inaccurate data.

Section 10. Issuance of Certificate. (1) A certification shall be issued for a period of five (5) years, at the end of which the certification shall expire, unless renewed. Renewal procedures and requirements shall be the same as those for a new certification.

(2) The certification of an operator whose employment at a special waste site or facility terminates shall remain valid until expiration or revocation of certification.

(3) Certificates shall be carried on the person of the certified operator during working hours at the facility, or shall be prominently displayed at the facility office.

(4)(a) The cabinet may revoke the certification of an operator if the operator:

1. Has practiced fraud or deception;
2. Has failed to perform his duties under this chapter;
3. Has failed to use reasonable care and judgement in performance of his duties under this chapter; or
4. Has knowingly or willfully violated the requirements of this chapter.

(b) Individuals who have had their certification revoked shall be ineligible for future recertification.

Section 11. Interim Operators. (1) The permittee shall be responsible for actions of an interim operator. The permittee shall notify the cabinet in writing if the special waste site or facility will not have a certified operator for more than fourteen (14) consecutive operating days.

(2) Consecutive operating days, as used in subsection (1) of this section, shall be determined as any days:

(a) When the special waste site or facility accepts waste, operates equipment, or otherwise performs the business of special waste management; and

(b) That occur in sequence, regardless of whether nonoperating days such as weekends or holidays fall in between.

(3) The notification required by subsection (1) of this section shall be provided at least ten (10) days prior to an anticipated absence, and immediately upon discovery of an unanticipated absence. The notification shall contain:

(a) The name, address, and qualifications of the interim operator;

(b) The length of time for which the permittee seeks to have an interim operator rather than a certified operator; and

(c) Reasons for replacement of the certified operator with an interim operator.

(4) The cabinet shall evaluate the qualifications of the designated interim operator and shall notify the permittee of the cabinet's determination in writing within thirty (30) days of receipt of the permittee's notice. The determination shall:

(a) Approve, conditionally approve, or deny the permittee's request for designation of the interim operator;

(b) Identify the length of time an interim operator may operate the special waste site or facility; and

(c) Specify conditions as appropriate to the site and the interim operator's qualifications.

(5) An interim operator shall obtain certification under this administrative regulation within fifteen (15) months of becoming an interim operator.

(6) The cabinet may revoke the appointment of an interim operator in accordance with Section 10(4)(a) of this administrative regulation. Revocation shall render the person ineligible for operator certification under Section 10(4)(b) of this administrative regulation.

Section 12. Fees. (1) Fees for application for certification shall be:

- (a) \$125 for application for certification as a landfill operator;
- (b) \$125 for certification as a landfarming or composting operator;
- (c) Fifty (50) dollars for certification by reciprocity for all categories of operator; and
- (d) \$100 dollars for attendance at the certification training without taking the examination.

(2) Fees shall accompany applications and shall not be returned to those who do not qualify for a certificate. (18 Ky.R. 3094; Am. 3440; eff. 6-24-92.)

401 KAR 47:070. Operator certification.

RELATES TO: KRS 224.01, 224.10, 224.40, 224.43, 224.46, 224.70, 224.99

STATUTORY AUTHORITY: KRS 224.10-100, 224.40-605

NECESSITY, FUNCTION, AND CONFORMITY: KRS Chapter 224 requires the cabinet to adopt rules and administrative regulations for the management, processing or disposal of wastes. KRS 224.40-605 requires the cabinet to promulgate administrative regulations that establish standards and a certification program for operators of waste sites or facilities. This chapter establishes the permitting standards for solid waste sites or facilities, the standards applicable to all solid waste sites or facilities, and the standards for certification of operators. An overview of the permit program is found in Section 1 of 401 KAR 47:080. This administrative regulation establishes the program for education, testing, and certification of facility operators of solid waste sites or facilities.

Section 1. Definitions. The following are definitions as used in this administrative regulation:

(1) "Category of solid waste site or facility" means inert, residual, construction demolition debris, residential or contained landfill and includes landfarming facilities receiving Class I, II and III sludges or wastes.

(2) "Certificate" means a written document issued by the cabinet stating that the operator has met all requirements for certification.

(3) "Certified operator" means a solid waste site or facility operator who holds a valid certificate. The following are categories of certified operators:

(a) "Landfarming operator" means a certified operator who is the individual responsible for ensuring compliance with all permit conditions at a landfarming facility in accordance with 401 KAR 48:200, and who is reasonably available to the site;

(b) "Landfill operator" means a certified operator who is the individual responsible for the daily operating requirements identified in 401 KAR 47:120, 48:060, 48:090, or 48:170;

(c) "Landfill manager" means a certified operator who is the individual with primary responsibility for management and operation of the residential or contained or construction/demolition debris sanitary landfill to assure compliance with all permit conditions including direct responsibility for providing guidance to the landfill operator, or the permittee and the authority to commit financial resources allocated for proper operation; or

(d) "Interim operator" means the individual identified by the permittee as the replacement landfarming operator, landfill operator, or landfill manager in accordance with Section 12 of this administrative regulation.

Section 2. Applicability. (1) The requirements in this administrative regulation apply to all solid waste sites or facilities except as subsection (2) of this section provides otherwise. Each solid waste site or facility shall have at least one (1) operator certified in accordance with Section 3 (sanitary landfills) or Section 4 (landfarming facilities) of this administrative regulation, as appropriate to the category of solid waste site or facility.

(2) Residual landfills and facilities operating under a registered permit-by-rule or a permit-by-rule are excluded from the requirements of this administrative regulation, unless the cabinet requires operator certification as a condition of the permit. In deciding whether to require operator certification at a residual landfill, a site or facility with a registered permit-by-rule or a permit-by-rule, the cabinet shall consider:

- (a) The characteristics of the waste stream;
- (b) The characteristics of the site, including geology and hydrology; and
- (c) The experience and qualifications of the operator.

(3) It shall be the responsibility of the permittee to ensure that the solid waste site or facility complies with the requirements of this administrative regulation.

Section 3. General Provisions for Landfills. (1) Each construction/demolition debris, residential and contained landfill shall have a certified operator who is a landfill operator and a landfill manager. The requirements of this subsection may be fulfilled by:

(a) One (1) individual who has been certified in accordance with Section 6 of this administrative regulation for both categories of certified operator (provided this individual meets the qualifications in Sections 1(3) and 11 of this administrative regulation); or

(b) Two (2) individuals who have been certified in accordance with Section 6 of this administrative regulation in each category of operator such that one (1) individual is certified as a landfill operator and one (1) individual is certified as a landfill manager.

(2) As provided in Section 2 of this administrative regulation, the cabinet may require as a permit condition that a residual landfill or a site or facility with a permit-by-rule or registered permit-by-rule shall have a certified operator who is a landfill operator or a landfill manager or both. The permit condition imposed shall reference all applicable operating administrative regulations and requirements for the specific category of sanitary landfill.

(3) In the event the certified operator who is the landfill operator is not physically at the facility during operating hours, either the landfill manager or an interim operator shall be designated responsible for daily site operation and shall be physically located on site. If an interim operator assumes responsibility for daily operation of the landfill, the requirements in Section 12 of this administrative regulation shall be met.

(4) In carrying out its responsibilities, the cabinet shall examine the qualifications of applicants for certification and maintain records of certification and a register of certified operators.

(5)(a) Except as provided in Section 2 of this administrative regulation, no landfill shall continue operation in the absence of a landfill operator on site for more than ten (10) consecutive operating days without appointment of a qualified interim operator in accordance with Section 12 of this administrative regulation or written approval from the cabinet.

(b) Except as provided in Section 2 of this administrative regulation, no landfill shall continue operation in the absence of a landfill manager for a period longer than thirty (30) consecutive operating days without appointment of a qualified interim operator in accordance with Section 12 of this administrative regulation or written approval from the cabinet.

Section 4. General Provisions for Landfarming Facilities. (1) Each landfarming facility shall have a landfarming operator certified in accordance with Section 6 of this administrative regulation.

(2) No landfarming facility shall continue operation in the absence of a landfarming operator for a period longer than five (5) consecutive working days without appointment of a qualified interim operator in accordance with Section 12 of this administrative regulation or written approval from the cabinet.

Section 5. Application for Certification. (1) An individual desiring to be certified shall file an application on a form provided by the cabinet at least thirty (30) days before beginning training for a scheduled examination.

(2) The applicant shall submit all information needed to determine eligibility of the applicant for examination and certification.

(3) The cabinet shall review applications and supporting documents, determine the eligibility of the applicant for examination and notify the applicant of the determination.

(4) No person shall be eligible for examination for certification unless that person completes the appropriate training class or classes provided by the cabinet, unless an alternative training program or certification program is accepted by the cabinet in accordance with Section 7(6) of this administrative regulation.

Section 6. Training Classes and Examinations. (1) The cabinet will provide training classes for the certified operator.

(2) Training sessions will be held at least annually at places and times set by the cabinet. The last day of each training session will be set aside for the purpose of examinations to determine the knowledge and ability of the applicant.

(3) Certification shall be conditioned on successful passage of a written examination, unless an alternative examination process is accepted by the cabinet.

(4) Separate examinations will be prepared to cover basic differences in the duties and responsibilities for the operation of each category of solid waste site or facility and each category of certified operator.

(5) Applicants who fail to pass an examination may reapply for the examination at a regularly scheduled examination or by appointment with the cabinet. The cabinet shall require the applicant to attend the training session again if the applicant fails to pass the examination in three (3) attempts.

(6) In the event an applicant fails to meet the requirements for certification, he may petition the cabinet for a one (1) time only "temporary hardship certification." The cabinet will then conduct an informal hearing at which evidence shall be presented by the applicant to support his hardship request. Each temporary hardship certification request shall be considered on a case-by-case basis under the following guidelines:

(a) Failure of the applicant to receive certification would leave a significant area of the state without adequate waste disposal service.

(b) The applicant has shown a good faith effort by attending all required training sessions and met all requirements except the applicant has failed in three (3) attempts to pass the examination.

(c) The applicant has shown, through cabinet inspections, a capability for satisfactory operation of the solid waste site or facility.

Section 7. Training Course Requirements. (1) All applicants for certification shall be required to attend a training course provided by the cabinet in accordance with KRS 224.844.

(2) The training course provided by the cabinet shall be designed to provide information as appropriate to the category of certified operator. At a minimum, the training course shall provide information which enables the certified operator to perform his duties in a knowledgeable and competent manner.

(3) Landfill managers shall be trained on:

(a) The requirements for permit application for the applicable category of sanitary landfill including ownership, zoning, chapter 109 district boards, geologic and hydrologic information and specific design details;

(b) Characteristics of the waste stream; the physical, chemical and biological reactions including the hydrogeologic interactions of a landfill; and measures that shall be employed to meet the environmental performance standards in 401 KAR 47:030 and all other regulatory requirements; and

(c) Specific duties expected to be performed by individuals who are wholly responsible for the requirements associated with the operation of the applicable category of sanitary landfill permitted by the cabinet. These actions include at a minimum, the commitment of resources, oversight of operating personnel, and verification that site operation is in accordance with all provisions of the permit including technical documents.

(4) Landfill operators shall be trained on the requirements contained in the solid waste administrative regulations as they apply to daily site operation duties. These duties include judging indicators regarding a site's ability to receive wastes; judging waste characteristics for disposal acceptability; employing site equipment to maintain waste compaction, cover, and surface water management on a daily basis; maintaining equipment; maintaining site safety; and generally assuring compliance with the administrative regulations.

(5) Landfarming operators shall be trained on the Kentucky waste management program as it applies to landfarming; wastewater treatment processes; the nature and characteristics of sludges; the physical and chemical properties of sludges; landfarming design and management; environmental considerations; and the Kentucky waste management permit process. The permit process includes requirements for application, conditions for maintaining a permit in compliance with the application and administrative regulations, and amendments to the landfarming activity and associated permit.

(6) The cabinet shall provide the training course to applicants for certification. However, the cabinet may consider alternate training courses or certification programs provided they are equivalent to the content prescribed by the cabinet's training course. It shall be the applicant's responsibility to submit such documentation as the cabinet requires for an equivalency judgment of the alternate training course. This information shall contain at a minimum the following specifics: the course name; sponsoring agency; the date, location and the beginning and ending times of the course; a summary of the course content of sufficient detail to determine relevance and quality of the course; and a copy of the certificate received.

Section 8. Issuance of Certificates. (1) Upon passage of the examination the cabinet will issue a certificate to the applicant which will indicate the category of solid waste site or facility and the category of certified operator for which the operator is certified.

(2) Certified operators shall be recertified every five (5) years.

(3) Certificates will be issued to holders of certificates of another state if the training requirements of the issuing state are deemed comparable as specified in Section 7(6) of this administrative regulation and if the operator passes the cabinet's examination.

(4) The certificates of operators who terminate their employment at a solid waste site or facility will remain valid until expiration or revocation of the certificate.

(5) Certificates shall be carried on the person of each certified operator during working hours at the facility or prominently displayed on site.

Section 9. Compliance Dates. (1) An operator who is not an appropriately certified operator and who assumes the responsibility of a certified operator shall immediately comply with the requirements in Section 12 of this administrative regulation; and

(2) Comply with the requirements in Section 6 of this administrative regulation within fifteen (15) months of assuming the responsibility.

Section 10. Revocation of Certificate. (1) The cabinet may revoke the certificate of an operator, following a cabinet hearing, when it determines that the operator has practiced fraud or deception, or that the operator has failed to perform an operator's duties including, but not limited to, failure to comply with permit conditions.

(2) The cabinet may revoke a certificate whenever the holder fails to use reasonable care and judgment in the performance of an operator's duties. No certificate shall be valid if obtained through fraud, deceit, or the submission of inaccurate data on qualifications.

(3) Individuals who have had their certificate revoked by the cabinet shall be ineligible for future recertification.

Section 11. Operator Qualifications: Education and Equivalencies. (1) All applicants shall be evaluated by the cabinet as to education, and experience as related to the appropriate category of solid waste site or facility.

(2)(a) Applicants for landfill operator shall have completed high school (by graduation or by obtaining an equivalency certificate) and shall have a minimum of one (1) year of experience at a landfill similar to the category of landfill for which certification is sought.

(b) If an applicant for landfill operator does not meet the requirements of paragraph (a) of this subsection, the cabinet may consider the number of years of experience in operating a landfill or experience in a related field (i.e., heavy equipment operator, road construction, surface mining, etc.) in determining eligibility for examination on a year-for-year basis.

(3)(a) Applicants for landfill manager shall have completed high school (by graduation or by obtaining an equivalency certificate) and shall have:

1. A minimum of two (2) years administrative experience in a related field (i.e., waste management, wastewater treatment, etc.); or

2. A minimum of two (2) years of postsecondary education; or

3. A minimum of two (2) years of a combination of experience in a related field and postsecondary education.

(b) If an applicant for landfill manager does not meet the requirements of paragraph (a) of this subsection, the cabinet may consider the qualifications of the applicant on a case-by-case basis.

(4)(a) Applicants for landfarming operator shall have completed high school (by graduation or by obtaining an equivalency certificate) and shall have a minimum of one (1) year of experience at a landfarming facility.

(b) If an applicant for landfarming operator does not meet the requirements of paragraph (a) of this subsection, the cabinet may consider the number of years of experience in operating a landfarming facility or experience in a related field (i.e., waste water treatment, water treatment, etc.) in determining eligibility for examination on a year for year basis.

Section 12. Interim Operators. (1) In accordance with the requirements in subsection (2) of this section, the permittee shall notify the cabinet in writing of the extended absence of a certified operator ten (10) days prior to an anticipated absence and immediately upon discovery of an extended absence due to an emergency or unanticipated circumstances. The notice from the permittee shall provide the cabinet with the following information:

(a) Name and qualifications of the individual intended to replace the certified operator; and

(b) The length of time for which the permittee seeks to have the interim operator fulfill the obligations of the certified operator.

(2) The permittee shall notify the cabinet of the extended absence when the operator or manager shall be absent for:

(a) More than ten (10) consecutive operating days for a landfill operator;

(b) More than thirty (30) consecutive operating days for a landfill manager; and

(c) More than five (5) consecutive operating days for a landfarming operator.

(3) Consecutive operating days as used in subsection (2) of this section shall be determined as any days:

(a) When the solid waste site or facility accepts waste, operates equipment or otherwise performs the business of solid waste management; and

(b) Which days occur in sequence regardless of whether nonoperating days such as weekends or holidays fall in between.

(4) The cabinet shall evaluate the qualifications of the designated interim operator and shall notify the permittee of the cabinet's determination in writing within thirty (30) days of receipt of the permittee's notice. The determination shall:

(a) Approve or deny the permittee's request for designation of the interim operator;

(b) Identify the length of time the interim operator may operate the solid waste site or facility; and

(c) Specify conditions as appropriate to the site and the interim operator's qualifications.

Section 13. Permit Condition. As specified in Section 2 of this administrative regulation, every solid waste site or facility requiring a permit shall be operated by the operator certified pursuant to this administrative regulation. Pursuant to Sections 2 and 3 of this administrative regulation, maintaining the certified operator(s) shall be considered a permit condition, and the permit may be revoked, or penalties for permit violations sought as appropriate, upon violation of the requirements and duties established by this administrative regulation.

Section 14. Fees. (1) Fees for application for certification shall be:

(a) \$125 for application for certification as a landfill operator;

(b) \$125 for application for certification as a landfill manager;

(c) \$150 for application for certification as both a landfill operator and a landfill manager when the application is made for certification for both categories at the same training session;

(d) \$125 for application for certification as a landfarming operator; and

(e) Fifty (50) dollars for certification by reciprocity for all categories of operator.

(2) Fees shall accompany applications and will not be returned to those who do not qualify for a certificate. (Recodified from 401 KAR 2:111, 3-1-83; Am. 10 Ky.R. 172; eff. 12-2-83; 13 Ky.R. 913; 1228; eff. 1-13-87; 16 Ky.R. 1642; 2174; eff. 5-8-90.)

