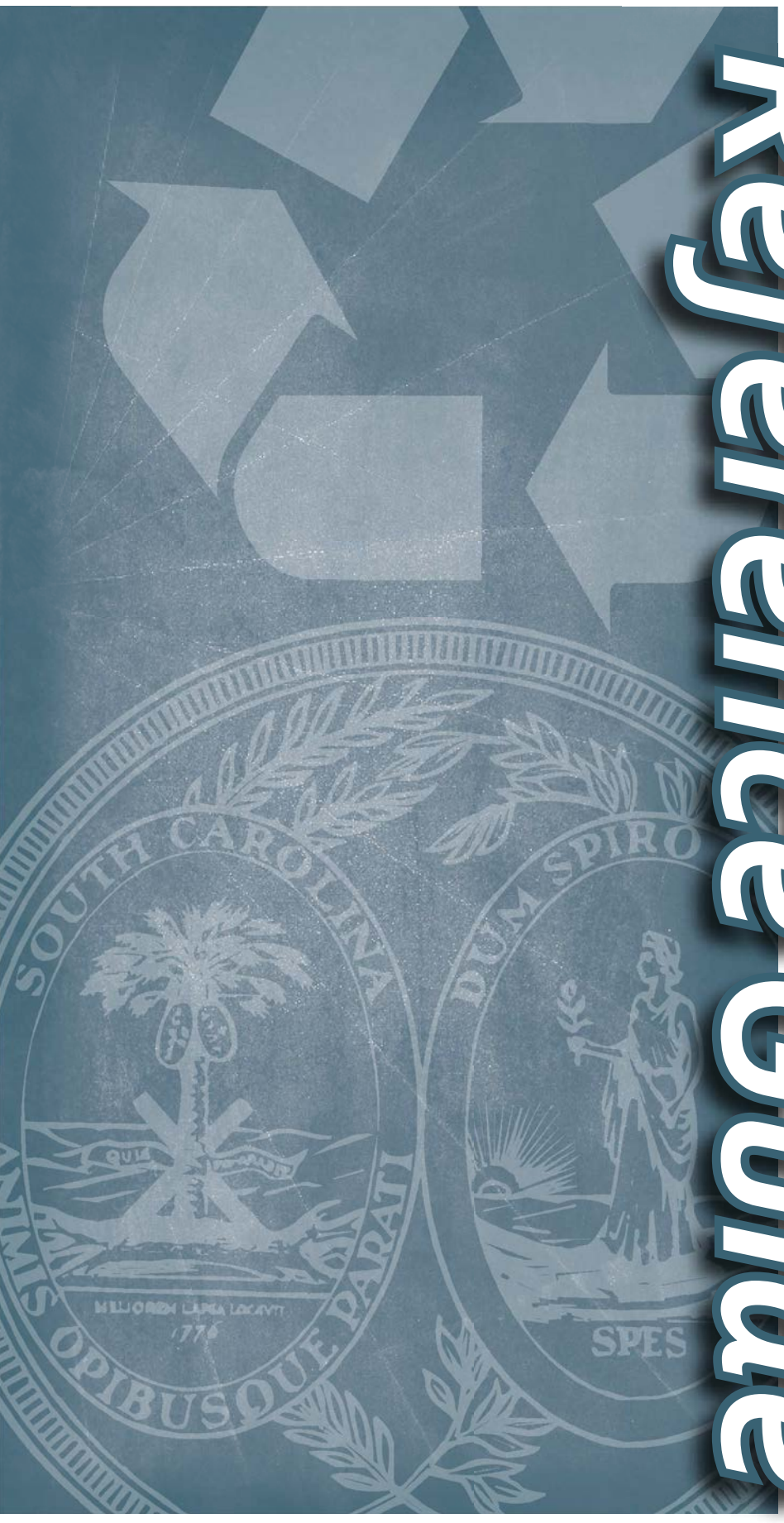


S.C. State Agency Recycling Professionals Certification

Hard-to-Manage Items Reference Guide



S.C. State Agency Recycling Professionals Certification Hard-to-Manage Items Reference Guide

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About the Manual

“The S.C. State Agency Recycling Professionals Certification Hard-to-Manage Items Reference Guide” is published by the S.C. Department of Health and Environmental Control’s Office of Solid Waste Reduction and Recycling.

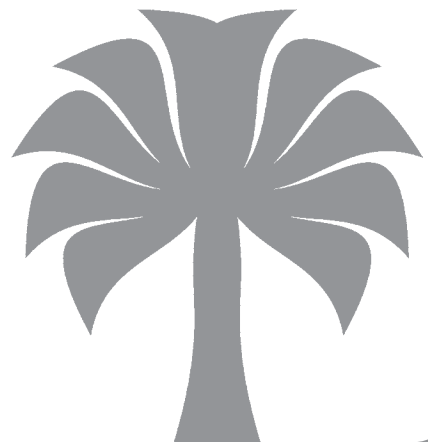
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Managing Banned Items

CHAPTER 1

What is banned?

The S.C. Solid Waste Policy and Management Act of 1991 (Act) – S.C. Code of Laws §§ 44-96-10 et seq. – bans six items from landfill disposal:

1. **Used motor oil** (Section 44-96-160) (A) (1);
2. **Used oil filters** – unless crushed to the smallest practical volume or “hot drained,” according to South Carolina’s used oil regulation (Section 44-96-160 (B) and S.C. Regulation, R.61-107.29);
3. **Waste tires** – whole tires (Section 44-96-170) (G);
4. **Lead-acid batteries** (e.g., car, truck, boat) (Section 44-96-180) (L) (2);
5. **Yard trimmings** – which can be disposed of in Class 1 or Class 2 landfills (Section 44-96-190) (B); and
6. **Large appliances** – referred to as “white goods” in the Act (Section 44-96-200) (B).

The S.C. Manufacturer Responsibility and Consumer Convenience Information Technology Equipment Collection and Recovery Act – S.C. Code of Laws §§ 48-60-05 et seq. – bans specific consumer electronics from landfill disposal. The electronics are **computers, computer monitors, printers and televisions**.

Requirements for State Agencies

The legislation (Section 48-60-140) requires that electronics collected through state agency programs must be recovered in a manner that complies with all applicable federal, state and local requirements.

If, for some reason, a state agency cannot use the state contract for electronics recycling, they must use a recycling vendor (recoverer) that – at a minimum – complies with the responsible recycling practices (R2) or other comparable industry or governmental standards. The S.C. Department of Health and Environmental Control (DHEC) recognizes recoverers that have either: 1) R2; or 2) e-Stewards certification.

For links to processors that meet each of these sets of standards, please visit www.scdhec.gov/library/OR-1175.pdf.

Recycling coordinators should focus on providing clear and consistent outreach to staff about which commodities are banned from landfill disposal and why. It also is important to note that banned items can be counted when calculating recycling rates, so it is important to track the weight of this material.



1

Used Motor Oil

Used motor oil is not only banned from disposal in South Carolina landfills, it also is illegal to dispose of in sewers, drainage systems, septic tanks, surface water, groundwater and on the ground. In addition, oil may not be used for road oiling, dust control, weed abatement or other applications that may cause harm to the environment. In short, used motor oil **MUST** be recycled.

There is a statewide contract that state agencies can use to recycle used motor oil. Used motor oil filters and bottles also can be collected by state agencies. According to the state's used oil regulation (R. 61-107.279), used motor oil filters are banned from MSW landfills unless they are "hot-drained for a minimum of 12 hours" or "compacted to their smallest practical volume." The collection of used motor oil filters is an important part of the overall recycling program because filters can contain 4 ounces to 1 quart of oil. Most of the filters recycled in South Carolina are sent to steel mills.



Oil bottles are an important target for recycling because they are made from a plastic [e.g., high-density polyethylene (HDPE)] that is recyclable and can contain as much as 1 ounce of oil per bottle that should be recovered.

COLLECTING & STORING USED MOTOR OIL

State agency collection tanks should be set up to accept:

1. **Used motor oil;**
2. **Gasoline/used motor oil mixtures; or**
3. **Used motor oil generated on farms.**

State agency recycling facilities operate as collection points for used oil, used oil filters, antifreeze and related waste. There is a statewide contract in place for this material to be picked up and recycled.

It is important to note that a variety of petroleum products, including kerosene, transmission fluid and diesel fuel may be able to be placed in the tanks. Gasoline, however, can only be placed in the gasoline/used motor oil mixture tanks. Have a discussion with your used oil recycler about what is acceptable in each collection tank.

There are several recommendations to consider when storing used motor oil. Specifically, collection tanks must be:

- **Placed on concrete pads or paved areas;**
- **Under cover to prevent runoff from rainfall or spills that could contaminate surrounding land; and**
- **Labeled clearly and appropriately.**

Tanks should be located where staff is present and access is restricted.

COLLECTION OF OIL/GASOLINE MIXTURES

Oil/gasoline mixture collection sites are designed to accept motor oil, gasoline and oil/gasoline mixtures from lawn equipment and recreational vehicles (e.g., leaf blowers, boats, motorcycles). The sites also accept the same petroleum products as standard used oil collection tanks. Oil/gasoline mixture tanks typically hold 500 gallons, but 275-gallon tanks also are available.

The requirements for establishing an oil/gasoline mixture collection site are more stringent than for typical used motor oil collection sites. In particular, oil/gasoline mixed sites must:

- **Meet the requirements of the National Fire Protection Association (NFPA) Codes and Standards; and**
- **Be approved by a local fire marshal or the Office of the State Fire Marshal.** The fire marshal can provide a copy of the NFPA Codes and Standards.

Why recycle oil?

- **Recycling used motor oil protects human health and the environment.** Recycling used motor oil keeps it from contaminating soil, rivers, lakes, streams, groundwater and beaches, thereby helping to protect aquatic life and wildlife. One gallon of used motor oil improperly disposed of may contaminate 1 million gallons of fresh water – enough to supply 50 people with drinking water for one year.
- **Recycling used motor oil saves energy.** Two gallons of used motor oil can generate 36 kilowatt-hours of electricity. That's enough to run an average household for a day, cook 36 meals in a microwave, use the blow dryer 216 times, vacuum the house for 15 months or run a television for 180 hours.
- **Recycling used motor oil also helps to use fewer natural resources.** Used motor oil can be reprocessed and used: in furnaces for heat; in power plants to generate electricity; and as lubricating oils.

COLLECTION OF OIL FROM SMALL FARMS

According to South Carolina's used oil regulation (R. 61-107.279), farms are considered generators of used motor oil and, as a result, must follow certain management practices.

- **Farms that generate more than 25 gallons of used motor oil in a month** must store the oil in a container with no leaks or visible rusting. The container must be labeled "Used Motor Oil."
- **Used motor oil from farm machinery is not considered DIYer used motor oil** and may not be collected in DIY tanks.
- **Farmers who transport more than 55 gallons of used motor oil at any time must register** with DHEC's Division of Compliance and Enforcement. Please call **(803) 898-0495** for more details.

Farms that generate an average of 25 gallons or less of used motor oil per month from vehicles or machinery in a calendar year are not subject to the requirements of this regulation, but they should follow best management standards and practices in handling used motor oil.

To assist with the proper management of used motor oil generated on farms, DHEC's Office of Solid Waste Reduction and Recycling (Office) continues to encourage state agencies to establish used motor oil recycling sites if their farms generate 25 gallons of used motor oil per month or less.

Agricultural oil tanks are designed to accept the larger quantities of oil that farmers generate. The tanks typically hold 600 gallons of used motor oil. They are fitted with a pump and hose in an effort to make it easier for farmers to deliver up to 55 gallons of used motor oil at one time. Agricultural oil tanks are capable of accepting the same petroleum products as a standard used oil collection tank.



2

Used Motor Oil Filters

As explained earlier, used motor oil filters are banned from landfill disposal "unless the filter has been crushed to the smallest practical volume or unless the filter has been hot drained." Many state agencies collect used motor oil filters from fleet management services, store them in 55-gallon drums and work with a vendor for final management (recycling). State agencies that collect the filters are required to have the 55-gallon drum on a concrete pad and covered – usually located next to the used motor oil tank.

There is a state-term contract available to manage used motor oil filters. State agencies that use the contract do not need to drain or crush used oil filters prior to collection.

Visit <http://procurement.sc.gov> for a list of current state-term contracts.

EMPTY MOTOR OIL BOTTLES

Empty motor oil bottles are typically collected in one of two ways:

1. **Collected in 55-gallon drums placed next to the used motor oil tank.** It is recommended that drum covers be placed on the 55-gallon drums; or
2. **With other HDPE plastic bottles**, after drained for a minimum of six to eight hours, using oil bottle drain racks (pictured below).

Oil bottle drain racks:

- **Consist of a series of perforated PVC pipes mounted to a metal frame** that securely hold the neck of each bottle in place;
- **Are typically designed to drain multiple oil bottles at a time** and collect the residual oil for recycling; and
- **Should not be used to drain oil bottles overnight.**

Did You Know?

IMPROPERLY DRAINED OIL BOTTLES can:

- **Contaminate other plastic with oil;**
- **Present a safety hazard** (oil slicks on the materials recovery facility or market warehouse floor); and
- **Interfere with the detergents used to wash the plastic once it is ground.**

3

Waste Tires

The Act bans whole waste tires from landfills and requires retailers to collect a \$2 fee for each new tire sold. The revenue

from the tire fee is split among the counties, new tire retailers and DHEC and is used to ensure that waste tires are properly managed and recycled.



Improper disposal of waste tires is problematic in many ways, including the following.

- **Illegally disposed tires are a nuisance, a visual blight and a potential public health hazard** as they are breeding grounds for insects (especially mosquitoes).
- **Illegally disposed tires present a fire hazard**, especially if dumped in large quantities.
- **When buried whole in landfills, tires tend to rise to the surface and become exposed**, causing operational and safety issues.

State agencies should use an approved waste tire recycling vendor to manage used tires. Most of the tires generated at agencies come from fleet management services.

Off-road tires and heavy-duty truck tires purchased by state agencies can be retreaded in order to extend their useful lives and save on the cost of tire replacement.

LEGAL REQUIREMENTS OF WASTE TIRE HAULERS & PROCESSORS

The state’s waste tire regulation (R. 61-107.3) addresses most waste tire activities. Some basic requirements of haulers and processors include:

- **In general, any entity that hauls more than 120 waste tires per year must be registered** as a waste tire hauler and report annually to DHEC;
- **Unless otherwise exempted, tire collection sites are required to have a waste tire collection permit.** Permitted solid waste facilities that store less than 2,500 tires are not required to have a collection permit;
- **No permitted or exempted facility may store tires in excess of 30 days;**
- **All waste tires must be stored so as to prevent and control mosquitoes** and other human health nuisances; and
- **Records should be kept of the pest control activities** and be made available upon request.

DHEC encourages state agencies to collect waste tires in such a way as to keep them as dry and clean as possible. The use of some combination of concrete pads, containers, trailers, buildings and/or other cover is strongly recommended.

4

Lead-Acid Batteries

Lead-acid batteries are used in automobiles, trucks, boats and motorcycles. As with most banned items in South Carolina, there is an advanced recycling fee on the sale of

lead-acid batteries to help fund the recovery and recycling of this material. When purchasing a new lead-acid battery a customer pays a \$7 recycling fee; if the customer turns in an old battery when purchasing a new one, the customer pays a \$2 recycling fee. Retailers of lead-acid batteries, therefore, must accept the spent battery upon purchase of a new one.

COLLECTING & STORING LEAD-ACID BATTERIES

- **Collection:** State agency departments choosing to collect lead-acid batteries should provide a clearly designated storage area. Batteries should be handled with care and inspected for leakage.
- **Storage:** Lead-acid batteries should be stacked upright on pallets or placed in containers. They are heavy and should not be stacked too high or

placed in too large of a container. They should be stored:

- **On pallets or cement pads;** and
- **Protected from the weather** such as under a carport cover or other shelter.

Pallets should be shrink wrapped to protect the integrity of the load and further protect the batteries from rainfall as any acid leaking on the outside of the batteries could contaminate run-off. Collection areas should be monitored and no smoking should be allowed in these areas.

POTENTIAL MARKETS

Generally, markets for lead-acid batteries are plentiful. Scrap metal dealers often will accept lead-acid batteries for recycling. More than 97 percent of all battery lead is recycled. A typical new battery contains 60 to 80 percent recycled lead and plastic (polypropylene). Usually a scrap metal recycler will pick up the lead-acid batteries from the collector, extract the lead and then sell the empty casings to plastic recyclers. Some large lead-acid battery manufacturers and distributors have established their own recycling services.

5

Yard Trimmings

Yard trimmings and land-clearing debris are banned from disposal in Class 3 landfills. More information about this material is discussed in Chapter 4.

6

Large Appliances

Large appliances (also known as white goods) are defined in the Act to include refrigerators, stoves, water heaters, freezers, dishwashers, trash compactors, washers, dryers, air conditioners and commercial large appliances. All are banned from disposal in MSW landfills. To promote the recycling of large appliances, there is a \$2 advanced recycling fee.

Appliances are easily recycled – saving considerable landfill space – and are a valuable commodity. Nationwide a vast infrastructure has been developed around the recycling of end-of-service steel appliances as well as other steel material.

Agency employees bring in appliances to accommodate themselves and their coworkers. When the appliances stop working or are replaced, the appliances must be removed. Options for managing appliances, depending on their condition/size, include:

- **Reusing them somewhere else at the agency.** Email blasts, bulletin boards and clearinghouse websites can facilitate this process; or
- **Donating them to a non-profit organization** (e.g., Goodwill, Habitat for Humanity ReStore).

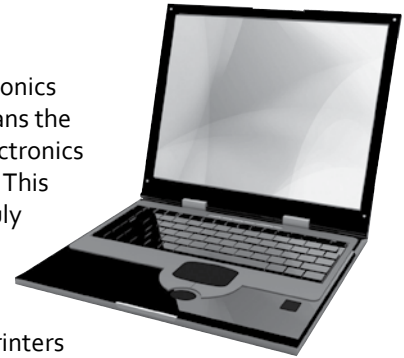
Other appliances are owned by the agency and are the property of the Department of Administration (e.g.,



refrigerators for laboratory samples). State law requires that all surplus state-owned assets be managed through the surplus property process.

Electronics

South Carolina’s electronics recycling legislation bans the disposal of specific electronics in solid waste landfills. This ban went into effect July 1, 2011. The legislation requires residents to recycle computers, computer monitors, printers and televisions. Specifically, residents “may not knowingly place or discard” a computer, computer monitor, printer or television “in a waste stream that is to be disposed of in a solid waste landfill.”



As with all other state-owned property, electronics housed within state agencies must be managed through the surplus property process. If cleared by the S.C. Department of Administration’s Surplus Property Office, state agencies should manage electronics through the state-term contract for electronics recycling.

MANAGING ELECTRONICS COLLECTION SITES

South Carolina’s electronics legislation does not address the operation of collection sites for state agencies, but does require (Section 48-60-140) that recycling vendors follow the industry’s best management practices for collection and storage of electronics.

Given that, it is recommended that state agencies follow best management practices as outlined by the Electronics Recycling Coordination Clearinghouse.

HOW TO MINIMIZE & PROPERLY MANAGE ELECTRONICS

State agencies can minimize and properly manage electronics by taking the following steps:

- **Purchase electronic equipment that can be easily upgraded and/or recycled.** Check the Electronic Product Environmental Assessment Tool (EPEAT) website. The program covers desktop and laptop computers, computer monitors, printers and imaging devices. Visit www.epeat.net for more information.
- **Consider leasing arrangements for electronics.** Many leases include proper end-of-life management for

computers and other electronics. Please see the state contract listing for IT equipment leasing.

- **Consider donating working electronics to charities** (if permitted by the Surplus Property Office). Charities typically have certain specifications under which they will accept electronics. Check before donating.
- **Obtain recycling services through an electronics recycler.** Be sure to ask for documentation regarding the final disposition of the material and ensure that agency data destruction requirements are met. These requirements are typically met when using the state contract.

Please visit www.scdhec.gov/e-cycle to learn more about where to recycle e-scrap.

Chapter 1 Notes

E-Cycle South Carolina

DHEC has developed a web-based clearinghouse of information on electronics recycling. The website provides information for residents, local governments, manufacturers, landfill owners/operators, retailers and others.



To learn more about electronics recycling in South Carolina, please visit www.scdhec.gov/e-cycle.

References & Resources for Chapter 1

- DHEC, E-Cycle South Carolina, www.scdhec.gov/e-cycle
- DHEC, Solid Waste Landfills and Structural Fill, www.scdhec.gov/Agency/docs/lwm-regis/R61-107-19.pdf
- DHEC, SWM: Waste Tires, www.scdhec.gov/Agency/docs/lwm-regis/R61-107_3.pdf
- DHEC, Used Oil Regulations – R.61-107.279, www.scdhec.gov/Agency/docs/lwm-regis/R61-107_279.pdf
- Electronics Recycling Coalition Clearinghouse, www.ecycleclearinghouse.org
- EPEAT, www.epeat.net
- Green Resource Index, www.scdhec.gov/library/OR-1403.pdf
- S.C. Code of Laws, Title 48, Chapter 60, South Carolina Manufacturer Responsibility and Consumer Convenience Information Technology Equipment Collection and Recovery Act, www.scstatehouse.gov/code/t48co60.php
- S.C. Solid Waste Policy and Management Act of 1991, www.scstatehouse.gov/code/t44co96.php
- Steel Recycling Institute, Appliance Recycling, www.steelsustainability.org

Management of Miscellaneous Items

CHAPTER 2

Miscellaneous items are items occasionally found in state agency recycling programs that often are more difficult to manage than “traditional recyclables” (e.g. aluminum cans, cardboard, glass, plastic bottles).

Examples of miscellaneous items include:

- **Antifreeze;**
- **Cooking oil;**
- **Fluorescent bulbs;**
- **Hazardous household material** (e.g., household cleaners);
- **Mattresses;**
- **Paint;** and
- **Rechargeable batteries.**



All of these items are considered municipal solid waste (MSW) and count toward South Carolina’s MSW recycling rate. Miscellaneous items, in fact, made up 5.4 percent (more than 59,000 tons) of all of the material recycled in fiscal year (FY) 2016 (July 1, 2015 to June 30, 2016) according to the S.C. Solid Waste Management Annual Report for FY16.

Antifreeze

Antifreeze – which is made of ethylene glycol, water and corrosion inhibitors – is extremely toxic. (A less toxic alternative, made with propylene glycol, should be encouraged.) Once used, waste antifreeze may contain lead, cadmium and chromium. Antifreeze should never be disposed of on the ground, into storm drains or in surface water (e.g., rivers, lakes, ponds) because it can harm people, animals and the environment.



Recycling antifreeze helps reduce improper disposal into the environment. It also saves money because:

- **Disposal costs are avoided;** and
- **Cleanup and liability costs for improper disposal are avoided.**

The state-term contract used to manage used oil and oil filters also includes antifreeze management. For more information, see www.procurement.sc.gov.

Antifreeze can NOT be mixed with used motor oil.

While the S.C. Department of Health and Environmental Control’s (DHEC) Office of Solid Waste Reduction and Recycling (Office) encourages state agencies to establish antifreeze collection programs, antifreeze must be collected as a separate commodity. Antifreeze cannot be mixed with used motor oil or oil/gasoline mixtures. If mixed, oil and oil/gasoline vendors will not accept the material.



COLLECTION OF ANTIFREEZE

Antifreeze must be collected in a secure container – 55-gallon drums with lids can be used. Collection containers should be placed on concrete pads or paved areas and protected by a cover (e.g., carport cover, other protective structure).

Due to the toxicity of waste antifreeze, if collected at a state agency, the employee responsible should be instructed to monitor the collection containers as well as contain and clean up any spills.



Unless refining the antifreeze on-site for reuse, state agencies that collect antifreeze are required to use the state-term contract for collection of the material.

Cooking Oil

Select state agencies include dining halls and other food establishments that produce used cooking oil/grease year round. Properly managing this waste provides the opportunity to avoid disposal (and costs) that often has severe impacts on sewer systems. In addition, cooking oil/grease can be used as a raw material in other products and also can be made into an alternative fuel for vehicles.



COLLECTION OF COOKING OIL

State agencies are encouraged to set up a recycling program and work with a private vendor to manage this material. Recommendations on setting up a cooking oil collection program include:

- **Cooking oil must be collected in a secure container.** Fifty-five-gallon drums with lids can be used.
- **Collection containers should be placed on concrete pads or paved areas and protected by a cover** (e.g., carport covers, other protective structures).
- **Ensure that cooking oil is free of residue and not mixed with any other liquids.**
- **Regularly monitor the site to be sure the container is secure and any spills are cleaned up.**

The service provider that collects the used cooking oil may provide their preferred containers to be placed at designated recycling sites. State agencies may provide their own collection containers as well. Depending on

the proximity of the agency to the service provider's headquarters, costs may range from zero to minimal.

Fluorescent Bulbs

Fluorescent bulbs have been used in homes, offices and public buildings for many years. They last much longer than incandescent bulbs – saving money in the long run – and use about one-fourth the energy. They contain small amounts of mercury, however, and must be properly managed.



COLLECTION OF FLUORESCENT BULBS

Some state agencies collect fluorescent bulbs and compact fluorescent lamps (CFLs) as part of their collection programs.

In general, recyclers of fluorescent bulbs provide collection boxes (usually at a cost) for the bulbs. Recyclers may provide boxes with pre-paid postage or run collection routes to pick up filled boxes. There are several South Carolina-based recyclers of fluorescent bulbs. For more information about recycling fluorescent bulbs, please visit www.scdhec.gov/recycle and select "Hard to Manage Items."

The Green Resource Index also provides a list of companies that manage fluorescent bulbs. The Index is available at www.scdhec.gov/library/OR-1403.pdf.



Definition

Some of the material in this chapter is considered **UNIVERSAL WASTE**. Universal waste is:

- **Batteries;**
- **Pesticides;**
- **Mercury-containing equipment;** and
- **Lamps** (e.g., fluorescent, high intensity discharge, neon, mercury vapor).

Programs that collect this material from entities other than residents must comply with Universal Waste Regulations at www.scdhec.gov/Agency/docs/lwm-regs/273%2012.pdf.

Mattresses

Managing mattresses at the ends of their useful lives can be challenging for anyone, but for certain state agencies that house hundreds or thousands of students, residents or inmates (and therefore hundreds or thousands of mattresses), the challenge is even greater. Mattresses are bulky and difficult to compact, preventing landfills from achieving optimal air/space density. Alternatively, recycling mattresses and box springs involves separation and baling/selling of components. For example:

- **Polyester Fabric** – baled and recycled into rags;
- **Foam/Cotton** – recycled into new products such as carpet padding and other textiles;
- **Wood Framing** – chipped and used as fuel or mulch; and
- **Metal** – sold to recyclers.

Some recyclers report that they recycle 90 to 94 percent of the material they recover from mattresses. Some mattress recyclers collect material from a wide geographic range – even nationally.

When issuing a request for proposal on new mattresses, state agencies can request that bidders include recycling services in their prices. If this isn't possible, agencies can collect the used mattresses and enlist a mattress recycler to handle them. Some mattress recyclers operating in South Carolina include the following businesses.

- Nine Lives Mattress Recycling, Pamplico, SC – www.ninelivesmattressrecycling.com
- Bedex, Greensboro, NC – www.bedex.net
- Mattress Recycling Council – www.mattressrecyclingcouncil.org/recycling/recycling-locations/



Paint

Unwanted latex and oil-based paint often can be used by another state agency department or by individuals and organizations in the community. State agency programs always should follow basic best management practices when handling paint.

Programs should:

- **Identify leftover paint as latex or oil-based;**
- **Place collected paint cans on pallets, concrete pads or paved areas that are protected by a cover** (e.g., carport cover). Do not store latex paint outside or in unheated areas. Frozen latex paint cannot be reused;
- **Open cans in well-ventilated areas;** and
- **Wear appropriate respirator or cartridge mask when pouring or mixing large volumes of oil-based paints.**



If the paint is no longer useable or no other reuse options exist, unwanted latex paint can be disposed of as part of the “regular” trash if dry. For individual cans, remove the lid and allow the paint to air dry (harden) completely. Cat litter, shredded newspaper, sawdust and sand may be added to the paint to speed the drying process. For larger amounts, pour a one-inch layer of paint into a cardboard box lined with a plastic bag. Add cat litter or other drying material and stir occasionally to speed drying. Once completely dry, dispose of in trash. Remember to recycle empty paint cans.

Like latex paint, oil-based paint is best handled through donation to a community swap shop or a local organization. Otherwise, oil-based paint should be included in a state agency hazardous household waste collection program.

For a listing of paint recyclers, see the S.C. Department of Health and Environmental Control’s (DHEC) Green Resource Index at www.scdhec.gov/library/OR-1403.pdf.

Rechargeable Batteries

Rechargeable batteries are used for many electronics – from computers and cell phones to power tools.

Call2Recycle, Inc. collects used rechargeable batteries and cell phones for recycling at no charge to the consumer.

The program provides recycling coordinators with three options:

1. **Set up free collection programs in their collection areas or in state agency buildings;**
2. **Encourage others** (e.g., businesses, schools, others) to set up collection sites; and
3. **Refer agency employees to the network of established collection sites available at national retail outlets** (e.g., home improvement stores).

Many retailers of office supplies, cell phones and home improvement wares collect rechargeable batteries and cell phones for recycling through the Call2Recycle program. This program provides state agency recycling coordinators with the opportunity to educate staff and agency visitors about how to find a drop-off location or to develop their own drop-off site by signing up with Call2Recycle as a collection partner.

Whether the program collects this material or not, state agency recycling coordinators should provide promotional

Managing Hazardous Household Products

Hazardous household products are those that contain at least one hazardous substance and pose a threat to human health and the environment. These products are considered to be hazardous because they have one or more of the following characteristics.

- **Flammable** – can easily be set on fire.
- **Corrosive or Caustic** – can cause burns.
- **Explosive or Reactive** – can explode if exposed to heat, sudden shock or pressure.
- **Toxic or Poisonous** – can cause injury or death through ingestion, inhalation or absorption through the skin.

Typical hazardous household products (which often later comprise HHW) include:

- **Lawn/Garden Care Products** – Fertilizer, pesticide, insecticide, fungicide, herbicide and weed killer;
- **Paint and Paint-Related Products** – Latex paint, oil-based paint, turpentine, paint stripper, rust remover, paint thinner and varnish;
- **Automotive Fluids and Batteries** – Used motor oil and filters (recycled in South Carolina), gasoline, diesel fuel, kerosene, auto body repair products, windshield washer solution, antifreeze, brake and transmission fluid, lead-acid batteries (also recycled in South Carolina, through retailers and other outlets) and metal polish;
- **Beauty Products and Medicine** – Alcohol-based lotions, rubbing alcohol, medicine, nail polish and nail polish remover, hair relaxers, dyes and permanents, hair sprays and aerosol deodorants;

- **Household Cleaners** – Ammonia-based cleaners, oven and drain cleaners, floor care products, aerosol cleaners, window cleaners, furniture polish, metal polish as well as tub/toilet cleaners; and
- **Miscellaneous** – Mercury thermometers, photographic chemicals, lighter fluid, shoe polish, fiberglass epoxy, swimming pool chemicals, mothballs and glue.



What can state agency recycling coordinators do?

- **Provide and/or advertise collection opportunities of HHW;**
- **Offer some items** (especially low-risk items like latex paint) **for reuse in a “swap shop;”**
- **Identify organizations that will accept “leftover” or unused HHW** (some may only accept unopened products) **and inform staff of what items can be donated where and in what condition;**
- **Provide additional information** (e.g., online tools such as Earth 911) **about other recycling opportunities;** and
- **Encourage staff to use non-hazardous alternatives and provide them with information about such options.** Examples include:
 - www.epa.gov/saferchoice; and
 - www.ecologyactioncenter.org/waste-and-recycling/hhw-alternatives/.

material to make agency employees aware that rechargeable battery recycling is easy and environmentally beneficial.

Single-Use Batteries

Single-use batteries (e.g., alkaline, zinc carbon) can be recycled, but options are limited and sometimes come with a cost. If collecting batteries, programs are encouraged to follow all manufacturer safety guidelines to limit risks to human health and the environment.



Today's alkaline and zinc carbon batteries are required by law to have zero-added mercury and are primarily comprised of common metals such as steel, zinc and manganese. While single-use batteries can be thrown away as part of the "regular" waste stream, state agencies are encouraged to develop and offer programs if cost-effective.

Always look for any state and regional recycling options, but also consider national mail-in programs such as Battery Solutions (www.batterysolutions.com) or The Big Green Box (www.biggreenbox.com). Also visit www.earth911.com/recycling-guide/how-to-recycle-single-use-batteries/.

References & Resources for Chapter 2

- Battery Council International, batterycouncil.org/?page=Battery_Recycling
- Call2Recycle, Inc., www.call2recycle.org
- DHEC, Standards for Universal Waste Management, www.scdhec.gov/Agency/docs/lwm-regs/273%2012.pdf
- DHEC, "Where to Recycle Locally" (Interactive map that provides information about what material is recycled where by county), www.scdhec.gov/HomeAndEnvironment/Recycling/Wheretorecyclelocally/
- Earth911 Battery Single-Use Battery Recycling Locator, www.earth911.com/recycling-guide/how-to-recycle-single-use-batteries/
- Earth911 Recycling Center Search (includes batteries, CFL bulbs, electronics, scrap tires, appliances, paint (by type and other chemicals), car batteries, motor oil, antifreeze, hazardous material and more), search.earth911.com/
- EPA, CFL Information, www.epa.gov/cfl
- EPA, Safer Choice, www.epa.gov/saferchoice
- EPA, Hazardous Waste, www.epa.gov/hw
- Green Resource Index, www.scdhec.gov/library/OR-1403.pdf
- The Home Depot, CFL Light Bulb Information, www.homedepot.com/c/how_to_choose_right_compact_fluorescent_light_bulb_HT_BG_EL
- The Home Depot, Store Locator, www.homedepot.com/StoreFinder/index.jsp
- Lowe's, CFL Recycling, www.lowes.com/cd_recycling_368967519_
- Lowe's, Store Locator, www.lowes.com/StoreLocatorDisplayView?storeId=10151&langId=-1&catalogId=10051
- Mattress Recycling Council, mattressrecyclingcouncil.org/programs/
- S.C. Hazardous Waste Management Act, www.scstatehouse.gov/code/t44c056.php
- S.C. Solid Waste Policy and Management Act of 1991, www.scstatehouse.gov/code/t44c096.php
- Steel Recycling Institute, Appliance Recycling, www.steelsustainability.org

Management of Construction & Demolition Debris

CHAPTER 3

Construction and demolition (C&D) debris is the waste generated from the construction, remodeling, repair and deconstruction of homes, buildings, roads, bridges and drainage/sewage systems. C&D debris may include bricks, concrete, wood, asphalt (from shingles and roads), glass, metal, plastic, plumbing fixtures, gypsum (the main material in drywall) and roofing as well as debris associated with land clearing and natural disasters.

Other waste generated at C&D sites includes:

- **Waste from finishing processes** such as caulk tubes and paint cans;
- **Insulation** – both rigid foam (e.g., polystyrene) and batts (e.g., fiberglass);
- **Cardboard;**
- **Glass;**
- **Wiring;** and
- **Worker-generated items** such as beverage containers and food packaging.



C&D debris is not considered municipal solid waste (MSW) in South Carolina and does not count toward the state's

MSW recycling rate. Waste reduction and recycling of C&D debris, however, are important components in the management of this material. Avoiding disposal of C&D debris can result in reduced disposal costs to generators, reduced environmental impacts and positive economic impacts.



While recycling is encouraged, C&D debris may be disposed of in MSW landfills. Permitted C&D and land-clearing debris (LCD) landfills in South Carolina accept various types of C&D debris that has not come into contact with hazardous or toxic components (e.g., petroleum products, solvents, pesticides, herbicides, preservatives, polychlorinated biphenyls – also known as PCBs).

C&D debris is often disposed of in Class 2 (C&D) landfills in South Carolina, which can be less costly than disposal in MSW (Class 3) landfills. These cost savings, however, may be offset by other market factors.

Household garbage, electronics (e.g., televisions, computers), fluorescent bulbs, railroad ties and utility poles are not accepted at Class 2 landfills.

Why focus on C&D debris?

Although diverting C&D debris does not help the state's MSW diversion goals or per-capita disposal goals, it:

- **Presents a significant diversion opportunity.** Although C&D activities vary considerably with economic conditions, C&D debris is generally a large portion of waste generated and the majority of C&D debris can be recycled or reused;
- **Reduces waste management costs.** In many cases recycling and reusing material generated from C&D activities may reduce hauling and disposal costs;
- **Saves natural resources and reduces greenhouse gas emissions.** As with other recyclables, the recycling (and source reduction) of C&D debris results in a reduced need for harvesting or mining natural resources;
- **Can be practical.** Since C&D debris is non-putrescible and generally consists of dry waste, it can be practical to sort and store on site. Specific material types are often generated during a particular phase of a project and are, therefore, not difficult to segregate. This is especially the case with construction projects; and
- **Can be a visible commitment to sustainability.** When state agencies implement source reduction and recycling activities at public C&D project sites, they send a positive, often highly visible message to the community that they are committed to sustainability.

Going Local

One advantage of C&D debris is that markets for this material are typically local or regional in nature. This means that recycling C&D debris can stimulate the local economy. In addition, state agency recycling professionals can help the local community by encouraging the recycling of C&D material produced at agency sites.

Examples include:

- Promoting C&D debris reduction strategies and providing resources so they can be easily implemented;
- Providing information about C&D debris that can be recycled or reused and organizations as well as businesses that will accept this material;
- Developing or providing “tool kits” (e.g., material calculators, case studies, best management practices) and training to help project managers set up successful recycling programs and minimize waste;

- Helping project managers determine the proper size of recycling containers; and
- Encouraging the agency to adopt policies that support enhanced C&D debris recycling.

Targeting C&D Debris for Recycling

Material to target at a job site should be:

- Available in relatively large quantities;
- Easy to separate, store and protect;
- Easy to market locally; and
- Problematic to dispose of.

Recovering C&D Debris for Recycling

Depending on available markets, material may be segregated into different containers for pick-up by different vendors or may be commingled and picked

C&D Debris Source Reduction Strategies

There are many opportunities for on-site source reduction of C&D debris. State agency recycling coordinators can encourage project managers to adopt these strategies when work is done for the agency. In addition, there are often local opportunities for reuse of material.

- **Use standard lumber sizes to minimize cut-off waste.**
- **Use prefabricated or modular wall sections and trusses to reduce waste generated on site.**
- **Measure carefully to avoid waste.**
- **Consider using steel framing as an alternative to wood.** (Steel is recyclable, stronger and reduces construction time and costs.)
- **Consider exposing structural elements in order to use (and potentially waste) less material.**
- **Use a computer-assisted design program to optimize plywood and drywall uses.**
- **Purchase standard material that can potentially be used on another project if purchased in excess.**
- **Purchase from suppliers that will allow the purchase of only the quantity needed.**
- **As part of the bid process, ensure that bids for projects require on-site separation of material and stipulate what material or portion must be recycled.** Request documentation.
- **Consider listing excess material on websites and waste exchanges so it can be reused.** Be sure to contact the Surplus Property Office to verify whether or not they would prefer to manage the excess material before listing it on any websites/waste exchanges.
- **Consider donating material to Habitat for Humanity’s ReStores for reuse in other projects.** ReStores accept lumber, windows, cabinets, flooring, shingles and other building supplies. See www.habitat.org/restores for locations.

up by one vendor who sorts and markets the individual commodities.

- **While separating material at the job site may be more time consuming and costly than combining material in one container, the increased market value may result in more revenue** – enough to offset some or all of these costs. Commingling material is more likely to lead to accidental or “drive-by” contamination by other material and result in the material having little or no market value.
- **As in other settings, the recycling of C&D debris can lower the cost of solid waste disposal by reducing the number and/or size of dumpsters and the frequency of pick-up needed.** It is important that all containers be labeled clearly, using multiple languages if needed. Also, training of crew may need to occur multiple times as different contractors begin work at the project site.

Outlets for C&D Debris

C&D end markets vary based on the type and quality of material as well as regional markets. Generally the following types of material are marketable.

- **Concrete, Brick, Asphalt & Other Aggregates:** This material can be used on site for: 1) base or fill material; 2) paving applications and cement production; or 3) road construction and maintenance projects.
- **Wood:** Wood may be accepted by mulching operations, composting operations, pallet recyclers, wood pellet producers and pulp mills. It also may be accepted as a fuel for energy generation. Painted and treated wood may not be accepted by recyclers and is not suitable for composting or mulching.
- **Metal** (e.g., pipes, aluminum doors, window frames): These items may be accepted by local metal recyclers and are usually of relatively high value (especially steel, copper and aluminum).
- **Dirt and Sand:** These may be used on site or at other local construction projects.
- **Clean Gypsum Board:** Uses include on-site soil amendment or soil conditioner for agricultural applications. It also can be used by drywall or Portland cement manufacturers.
- **Asphalt Shingles:** This material often can be ground and used as feedstock for asphalt road construction. Shingles are particularly efficient to recycle because they are often the only material generated from certain projects. In most cases, asbestos testing may need to be conducted prior to recycling.

Challenging Material

Some material is challenging to market or may bring about questions. This includes carpet, carpet padding and ceiling tiles.

Carpet

Carpet is a challenging material to manage in the sense that it is voluminous, taking considerable space in dumpsters and landfills. In addition, not all carpet fiber types are recyclable and fiber types cannot be readily identified visually. Therefore, it is challenging to separate recyclable carpet from non-recyclable carpet. Carpet also should be checked for asbestos.



How to Reduce Scrap Carpet

State agency recycling professionals can encourage procurement officials, administration and installers to consider the options below in order to reduce the amount of waste carpet generated.

- **Use more durable flooring material or removable, cleanable rugs instead of carpeting.**
- **Select durable types of carpet**, such as low-pile, nylon and carpet with high-fiber density.
- **Install high-quality padding to increase the useful life of carpet.**
- **Use carpet tiles, where possible, so that only soiled sections of carpet need to be removed.** Some manufacturers of carpet tiles have a mail-back recycling program.
- **Lease carpet.** Some manufacturers and installers offer this service, whereby leases include maintenance, removal and recycling of carpet over its useful life.
- **Purchase refurbished carpet that has been reclaimed from other businesses and institutions, cleaned and/or restored.** Reconditioned carpet – sometimes referred to as “repurposed” – also may be available from independent carpet vendors.
- **Maintain carpet properly by vacuuming frequently, cleaning stains as soon as possible** according to manufacturer directions and using mats in high-traffic areas.
- **Purchase carpets that are made of recyclable fiber.**

Carpet that is in good condition can be donated to Habitat for Humanity or other organizations for reuse.

When dealing with professional carpet installers, ask in advance what they do with the carpet (and padding) that is removed from the job site. This may help you make your purchasing decision.

Another option is to include a requirement that old carpet must be recycled when submitting a requisition or Request for Proposal (RFP).

CARE for Carpet

The Carpet America Recovery Effort (CARE) is a joint industry-government effort to increase the amount of recycling and reuse of post-consumer carpet and reduce the amount of waste carpet going to landfills. The mission of CARE is to facilitate market-driven solutions to divert post-consumer carpet from landfills in order to meet the stakeholders' goals for carpet stewardship.

Since CARE's inception, carpet recovery has grown by double-digit percentages each year. In recent years CARE's members have recycled more than 500 million pounds of post-consumer carpet annually. CARE provides industry information regarding end uses for carpet, diversion and recycling rates of carpet and total tons of carpet recycled annually.

CARE's website provides information about their partner recyclers by geographic location. Please visit www.carpetrecovery.org for more information.



Carpet Padding

There is a fairly extensive nationwide infrastructure to recycle scrap carpet padding, most of which is foam, although some is rubber. Jute and other fibers also are used in manufacturing carpet padding, but are generally not recyclable.

Carpet padding is collected, cleaned and combined with post-industrial foam scrap and other scrap foam and remanufactured into rebond – another type of carpet padding.

Like carpet, padding is voluminous and therefore can be challenging to manage. Although it tends to be less dense than carpet, disposal of carpet padding can still be costly and may require several trips to the landfill.



Carpet and Carpet Padding Reuse & Recycling Opportunities

REUSE

- **Habitat for Humanity's ReStores** may accept the material – ReStore locator is available at www.habitat.org/restores.
- **Goodwill Industries** may accept carpet donations. An index of donation centers is available at www.goodwill.org. Call ahead to make arrangements.

RECYCLING

- **CARE – The Carpet America Recovery Effort** provides a database – searchable by state – of recyclers that accept waste carpet and padding. Visit <https://carpetrecovery.org/recovery-effort/collector-finder-map/>.

Also, check with carpet or other flooring retailers when replacing flooring to inquire about recycling opportunities through them. Remember to ask whether the padding would be recycled or sent to a waste-to-energy facility and request proof of end-of-life management of the material.

Ceiling Tiles

Ceiling tiles can be made of many different types of material – including asbestos. Asbestos ceiling tiles are not recyclable and need to be handled with special care. The S.C. Department of Health and Environmental Control's (DHEC) Bureau of Air Quality regulates the management of material containing asbestos.

Most types of ceiling tiles found in buildings today can be recycled, but need to be prepared properly and meet minimum requirements for pickup.



TABLE 3.1 : Types of Recyclable/Non-Recyclable Ceiling Tiles

GENERALLY RECYCLABLE	MAY BE RECYCLABLE	NOT RECYCLABLE
Dry, pulpable mineral fiber ceiling tiles or panels	Post-manufactured painted ceiling tiles	Contaminated with asbestos
Dry, fiberglass panels	Glue-up or adhesive ceiling tiles	Installed below friable asbestos
Vinyl or scrim-faced mineral fiber panels	Vinyl or scrim-faced vinyl ceiling tiles;	Red- or pink-backed
	Gypsum or ceiling board	Wet, moldy or weathered
	Fabric-faced ceiling tiles	With visible wood grain
	Cast ceiling panels	

See **National Resources for Recycling Ceiling Tiles** for ceiling tile recovery contacts.

TABLE 3.2: Ceiling Tile Consolidators/Recyclers in South Carolina

COMPANY NAME	TELEPHONE	ADDRESS	WEBSITE
Bonitz Contracting Company	843-375-3550	1993 Technology Dr., Charleston, SC 29492	www.bonitz.us
	843-375-3550	1993 Technology Dr., Charleston, SC 29492	
	803-799-0181	645 Rosewood Dr., Columbia, SC 29201	
	864-288-3771	1200 Woodruff Rd., Bldg. D, Greenville, SC 29607	
Collins & Wright Inc.	803-735-0402	103 Sunbelt Blvd., Columbia, SC 29203	www.collinsandwright.com
CK Supply	864-967-2743	P.O. Box 400, Mauldin, SC 29662	www.lwsupply.com
	843-626-3663	3014 Drywall Dr., Myrtle Beach, SC 29577	
Green Resource Index	1-800-768-7348	2600 Bull St., Columbia, SC 29201	www.scdhec.gov/gri

National Resources for Recycling Ceiling Tiles

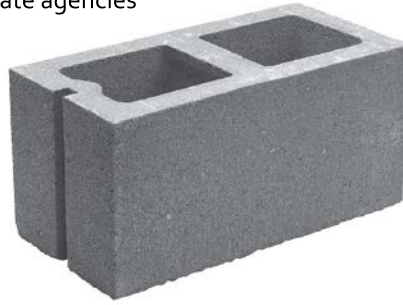
The following manufacturers of ceiling tiles offer recyclable tiles as well as programs to recover them.

- **Armstrong World Industries** provides a listing of recyclers/consolidators at www.armstrong.com/commceilingsna/article48711.html or call **1-877-276-7876** (Option 8) for help.
- **USG Corporation** provides a listing of recyclers/consolidators by state at www.usgdesignstudio.com/consolidatorNetwork.asp or call **1-800-USG-4YOU** (Option 2) for assistance.
- **CertainTeed Corporation** offers a recycling program for old ceiling tiles. Visit www.certainteed.com/resources/CTC_Recycling-Program-Eligibility-Guidelines-Procedures.pdf to learn more.

In general, in order for ceiling tiles to be accepted they must be pre-approved through a sampling process. The tile manufacturer/recycler may require an asbestos survey for buildings built prior to 1990.

State Agency Policies to Encourage C&D Recycling

- **C&D Material Management Plan:** State agencies may require developers to create a material management plan or a recycling plan for their projects – sometimes depending on the size or value of the project(s). This process, at the very least, makes the developer aware of what material can be recycled in the region.



The agency might require the following in the plan:

- **Where all material will be delivered and the tonnage recycled or disposed of;**
 - **Who is hauling the material from the site;** and
 - **Why material disposed of was not recycled.**
- **Other Potential Requirements:** Other policies state agencies have taken to encourage C&D recycling include:
 - **Requiring public projects** (or those of a certain size) **to achieve established C&D recycling goals and/or green building standards** (which include C&D recycling strategies);
 - **Requiring that certain material generated on job sites be recycled** (e.g., wooden pallets, cardboard);
 - **Requiring pre-processing of material generated** (or of projects of a certain size or dollar value); and
 - **Requiring deconstruction of demolition projects that meet certain criteria.**

Caution about C&D Debris Management

C&D debris that has come in contact with or includes petroleum products, PCBs, solvents, pesticides, herbicides or preservatives is NOT acceptable for disposal in C&D landfills.

Open dumping of C&D debris at a construction site or any other site is not permitted by DHEC. Open burning of waste from C&D activity is prohibited from all commercial sites.



Call to Action: Recycling Cardboard from Construction Sites

In cases where state agency resources are not available to implement full-scale C&D debris recycling programs, recycling coordinators can promote cardboard recycling at construction sites. Many products come in cardboard boxes, including light fixtures, cabinets, appliances and flooring.

Agency recycling coordinators can help builders place appropriate size containers for cardboard collection, train their staff to source separate material and arrange to have the material collected or collect it themselves. Even agencies without a recovery facility usually have markets for cardboard. Any revenue generated could be used to offset the cost of collection.



Green Building Requirements

The U.S. Green Building Council has developed the Leadership in Energy and Environmental Design (LEED) program, which has become a popular standard for incorporating sustainable practices in construction and deconstruction projects.



LEED now has five rating systems:

- **Building Design and Construction (BD+C);**
- **Interior Design and Construction (ID+C);**
- **Homes Design and Construction (HD+C);**
- **Building Operations and Maintenance (O+M);** and
- **Neighborhood Development (ND).**

LEED is a point-based certification program that quantifies how well buildings perform at saving energy, reducing carbon dioxide emissions, reducing water use, fostering a clean environment, encouraging the use of alternative transportation and more. The highest ranking is platinum, followed by gold, silver, then LEED-certified.

S.C. Green Building Requirements for Large Construction Projects

Due to the 2010 Energy Standard Act, all state-owned and state-funded construction projects greater than 10,000 square feet and any major renovation projects of greater than 50 percent of total building space or value must achieve at least LEED Silver certification, Green Globes two-globes standard or comparable standard.

Several private and municipal buildings in South Carolina have attained LEED certification.

Another program called Green Globes encourages green design and maintenance. Green Globes has certification programs for new buildings or significant renovations of existing buildings (Green Globes for New Construction – or NC), as well as for operations and maintenance of existing buildings (Continuous Improvement of Existing Buildings – or CIEB) and for interior design (Sustainable Interiors – or SI).

References & Resources for Chapter 3

- Building Materials Reuse Association, bmra.org
- CalRecycle Model C&D Ordinance and Information, www.calrecycle.ca.gov/LGCentral/Library/canddmodel/
- Carpet America Recovery Effort (CARE), carpetrecovery.org
- Construction & Demolition Recycling Association (CDRA), www.cdrecycling.org
- DHEC, Bureau of Air Quality, Asbestos Information, www.scdhec.gov/HomeAndEnvironment/YourHomeEnvironmentalSafetyConcerns/AsbestosInfoforHomeowners/
- Green Resource Index, www.scdhec.gov/library/OR-1403.pdf
- GreenBuilding.com, www.greenbuilding.com
- Habitat for Humanity ReStores, www.habitat.org/restores
- Orange County, North Carolina C&D Information (Example of a county C&D Recycling Ordinance), www.orangecountync.gov/departments/solid_waste_management/construction_and_demolition.php
- S.C. Carpet Recovery Coalition, www.scdhec.gov/HomeAndEnvironment/Recycling/CarpetRecovery/
- S.C. Energy Standard Act, www.usgbc.org/usgbc-south-carolina
- S.C. Green Building Directory, www.scgreenbuildingdirectory.org
- S.C. Solid Waste Policy and Management Act of 1991, www.scstatehouse.gov/code/t44c096.php
- The Sustainability Institute (South Carolina), sustainabilityinstitutesc.org
- U.S. Green Building Council, LEED, new.usgbc.org/leed
- U.S. Green Building Council, South Carolina Chapter, www.usgbc.org/usgbc-south-carolina

Chapter 3 Notes

Lined area for taking notes.

Managing Organics

CHAPTER 4

What are organics and composting?

Organics are material from plants and animals such as leaves, yard trimmings and grass clippings as well as food scraps. Composting is the controlled natural decomposition of organic material. Microorganisms break down this material into compost, a dark, crumbly, soil-like amendment that can be used in gardens and for landscaping.



Recycling – not composting – is the preferred method for managing unsoiled paper, although paper is considered organic. When organics are mentioned in this chapter, they reference yard trimmings, food waste, clean wood (not

painted, stained or treated with other chemicals) and compostable paper [i.e., paper that is not recyclable (e.g., tissues, napkins, paper towels or soiled, uncoated paper)].

What portion of the waste stream is organics?

Compostable material (excluding paper and paperboard) comprised about 28 percent of the nation's municipal solid waste (MSW) in 2014 according to the U.S. Environmental Protection Agency (EPA). More than half of that is food waste while the remainder is yard trimmings.

Types of Organics

There are several types of organic waste that may be generated at a state agency including:

- **Yard trimmings and land-clearing debris** (e.g., brush, tree limbs, stumps);
- **Wood waste;**
- **Agricultural waste;**
- **Food waste** (pre- and post-consumer);
- **Soiled papers;** and
- **Compostable food service ware** (e.g., cups, bowls, plates, take-out containers, utensils).



S.C. Policy Regarding Organics Waste Management

- **The S.C. Solid Waste Policy and Management Act of 1991 (Act) bans yard trimmings and land-clearing debris from disposal in a Class 3 (MSW) landfill.**
- **The intent of the ban is to encourage the diversion of yard trimmings and land-clearing debris from landfill disposal through beneficial uses such as composting and mulching.**
- **South Carolina revised and expanded its composting regulation (R.61-107.4) in June 2014.** One of the goals of the revision is to encourage the development of more large-scale composting facilities by the public and private sectors.
- **South Carolina's Open Burning Regulation (R.61-62.2) provides guidance on when it is acceptable to burn material** (e.g., land-clearing debris, yard trimmings, brush, leaves). Links to these regulations and additional guidance documents can be found in References & Resources at the end of this chapter.

Current Generation & Management Practices

- **Yard Trimmings and Land-Clearing Debris:** According to South Carolina's composting regulation (R.61-107.4), yard trimmings are residuals consisting solely of vegetative matter resulting from maintenance or alteration of public, commercial, institutional or residential landscapes. They include grass clippings, leaves and discarded plants and weeds that have been source separated and diverted for recycling. The regulation also defines land-clearing debris as "material generated solely from land-clearing activities including brush, limbs and stumps, but does not include solid waste from agricultural or silvicultural

operations.” This material is usually suitable for grinding or chipping.

- **Other Wood Waste:** Other types of wood waste (aside from land-clearing debris and yard trimmings) include wood waste from furniture, construction and demolition activities, trimmings from manufacturing, and uncontaminated wooden pallets. Clean wood (e.g., clean trimmings from manufacturing, sawdust and pallets that cannot be repaired) is suitable for mulch and composting. Treated/ manufactured wood (e.g., painted and stained wood, particle board, medium-density fiberboard) is not suitable for mulching or composting due to chemical treatment. Furniture or fixtures made from treated/manufactured wood can be donated to charitable organizations if still in good condition or disposed of in Class 1 (land-clearing debris) or Class 2 (construction and demolition debris) landfills.
- **Agricultural Waste:** In South Carolina, agricultural crop residue is considered a waste unless it is reused on the farm as a soil amendment or for erosion control. Agricultural residue may include manure, vegetative waste and animal remains. Bedding and manure from animals is generally suitable for

**SUITABLE
FOR COMPOSTING**



**NOT SUITABLE
FOR COMPOSTING**



composting. Regulatory oversight depends on a number of factors including how the farm waste is used.

- **Soiled Papers:** Used paper towels, napkins, soiled non-wax-coated paper and cardboard (e.g., paper plates, pizza boxes) generally can be included in a composting program. If material can be recycled in your local program, the higher-value use should be promoted.
- **Compostable Food Service Ware:** Some food service ware (cups, bowls, plates, takeout containers and cutlery) are made from compostable material such as plant starches. Some products have been problematic to processors, however, because they do not biodegrade completely. The American Society for Testing and Materials (ASTM) has standards for compostable plastics (ASTM D6400 and ASTM D6868). Due diligence should be taken before composting these types of products. To learn about the standards, visit www.astm.org/Standards/D6400.htm and www.astm.org/Standards/D6868.htm.
- **Biosolids:** It is feasible to compost or land apply biosolids from wastewater treatment plants. Establishments must, however, secure a permit from the S.C. Department of Health and Environmental Control (DHEC). Biosolids composting is a complex and highly regulated process due to the presence of pathogens in the raw material.

Food Waste: This is organic material that communities generate in large quantities. It is classified as pre-consumer (waste from kitchen preparation and unserved leftovers) or post-consumer (plate scrapings and served leftovers that could include a combination of dairy, animal and vegetative waste). For more about food waste, see Chapter 5.

Free Outreach Assistance

DHEC’s Office of Solid Waste Reduction and Recycling (Office) offers free resources and assistance to help state agencies educate staff and visitors about composting, including:

- Customizable composting guide and quick-reference card;
- Fact sheets on composting and grasscycling;
- Composting lessons for schools;
- Technical assistance and site visits; and
- Composting equipment and services directories.



Visit www.scdhec.gov/compost for a complete listing of resources.

Why should state agencies establish and promote organics recycling programs?

Yard trimmings are banned from Class 3 landfills, but disposal in Class 1 and Class 2 landfills remains an option for generators. Still, diverting this material from disposal in any type of landfill is desirable. Compost is a valuable and diverse product that can be used in many ways across state agency grounds.

Recycling coordinators should encourage landscaping services to use compost and mulch to help:

- **Avoid landfill disposal of organics and reduce methane generation at landfills;**
- **Reduce the cost of landscaping products purchased for agency upkeep;**
- **Reduce the amount of water plants require;** and
- **Improve South Carolina's recycling rate.**

There are many beneficial uses for compost.

- **Compost can be used as a soil amendment in lieu of chemical fertilizer.** A few inches of compost tilled into the top layer of soil will provide nutrients for plants and improve soil structure. For potted plants, add one part fine compost to two parts potting soil.
- **It can be used as mulch around plants, trees and shrubs.** This is a particularly good use for coarser compost.

- **Compost helps with erosion control along steep slopes.** Several inches of mature compost, screened one-half to three-fourths of an inch and placed directly on top of the soil, can control erosion by encouraging vegetation growth. Compost, because it retains moisture, also helps protect soil from wind erosion.
- **It can help protect water bodies.** On steep slopes, mounds of compost at the top or bottom can be used to slow the velocity of water and provide additional protection for receiving waters.
- **Compost can remediate polluted soils.** It can absorb odors and degrade petroleum products, pesticides and wood preservatives in soils. Compost also binds heavy metals preventing them from contaminating water sources and plants.
- **Compost can be used to repair damaged turf grass.** When applied as a topdressing, nutrients and micro-organisms in compost stimulate turf growth and increase its resistance to common diseases.
- **It can help alleviate soil compaction.** Incorporating compost and compost amended with bulking agents such as wood chips is a cost-effective way to aerate soil and thereby improve root penetration and increase drainage.



Creative Composting

Paper towels can be composted. Paper towels are thrown away in restrooms. Composting in restrooms? South Carolina's state agencies include office and public buildings as well as visitor's centers, historical sites and correctional facilities – all of these establishments contain high-traffic restrooms, and all of these establishments have the ability to set up paper towel composting. Sending this paper waste to compost will divert it from the landfill and help South Carolina reach its recycling goals.

The steps to enact a paper towel compost pilot are simple:

1. **Replace your standard trash can liner with a compostable liner;**
2. **Place a smaller waste receptacle next to it;**
3. **Label the large receptacle "Paper Towels Only." Label the small receptacle "Landfill;"** and
4. **Post signs on the outside of the restroom door and on the insides of stall doors, explaining a few more details** (e.g., feminine products must go in the landfill receptacle, please keep food scraps in food areas to avoid smell and pests).

Logistics must be established as well (e.g., contracting a compost vendor/setting up composting at the agency, training facilities staff on handling compost, tracking the diversion rate), but paper towel diversion is one of the easiest avenues for introducing state agencies to composting.

Options for Managing Organics

State agencies have options for managing organic waste depending on their desired level of involvement. Table 4.1 provides a summary of different options for agency involvement in organics management.

CONTRACT WITH A COMMERCIAL COMPOSTER

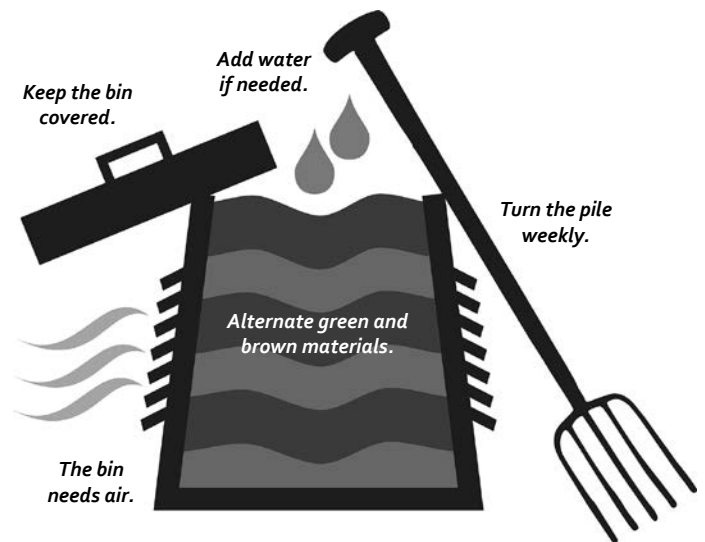
Regulations in South Carolina now allow businesses to send their food waste, landscaping debris and other organic material off site for composting. This service provides more opportunities for agency recycling programs to compost.

State agencies typically negotiate contracts with both a compost hauler and a composter as most composters in South Carolina do not operate hauling services.

See DHEC's Green Resource Index at www.scdhec.gov/library/OR-1403.pdf for detailed commercial composter and hauler listings.

SMALL-SCALE COMPOSTING

For state agencies that have space, traditional in-ground composting is an inexpensive way to compost food waste and landscaping debris. An open pile works great for landscaping debris, but an enclosed pile will keep pests away for facilities composting food waste. Multi-bin systems are often used to compost new material while older compost matures.



In-vessel composting can be either small- or large-scale composting, depending on the size and quantity of vessels selected. In-vessel composting offers a quick, space-saving option for agencies with little viable space for composting. In-vessel composting involves enclosing compostable material in a container and controlling the temperature, moisture and aeration to produce finished compost rapidly. In-vessel composters come in various sizes and styles and require less staff time to manage because the equipment turns or agitates the material. In-vessel composters can be expensive, but the cost savings associated with lower

TABLE 4.1: Organics Management Options for State Agencies

LEVEL OF INVOLVEMENT	ACTIVITY	RESPONSIBLE PARTY		
		Material Collection	Compost Production	Marketing Finished Product
Minimal	Provide material (e.g., yard trimmings, food waste) or other resources to commercial businesses that produce mulch and compost.	Commercial Composter	Commercial Composter	Commercial Composter
Significant	SMALL SCALE: Establish composting program based on one or limited locations at state agency.	State Agency	State Agency	State Agency (Finished product is more likely to be kept for agency use due to low yield.)
	LARGE SCALE: Establish composting program based on the entire agency (e.g., yard trimmings, food waste, soiled papers).	State Agency	State Agency	State Agency

disposal fees and a valuable end product can offset the costs.

See Table 4.2 on how to balance brown and green material in a compost pile.

LARGE-SCALE COMPOSTING

Another option for state agencies is to set up a large-scale composting program. The large-scale process requires more up-front investment in space and equipment as well as continuous labor throughout the composting process. An end market for the resulting compost will likely also be necessary, as large-scale composting operations typically produce more compost than a state agency can use on-site.

Many resources are available that provide more detailed information on how to establish a composting operation – see References & Resources at the end of this chapter for a partial list. Before embarking on such a venture, agency recycling coordinators should research composting operations, identify the needs of their agency and review South Carolina’s regulatory guidelines. If your agency determines that large-scale composting is the best option, contact the Office for composting best practices and other resources.



Other Methods for Managing Organics

- **Donation:** Consumable food and reusable wooden products should be donated if a match can be made. This is the highest and best use for this material. Non-perishable and unspoiled perishable food can be donated to local food banks, soup kitchens, pantries and shelters. More information about donation is available in Chapter 5.
- **Rendering and Biofuel Production:** Many restaurants and large-scale institutions contract with rendering companies to recycle their fat, oil and grease. The grease is processed and turned into beneficial products (e.g., animal feed, cosmetic products). Some grease renderers also sell “yellow grease,” which has been processed, to biofuel manufacturers. In some locations, biofuel companies will collect spent cooking grease and process it into biofuel for vehicles. More information about food donation and biofuel production can be found in Chapter 5.
- **Wood Grinding:** Most recycled wood waste is chipped or ground for use as mulch, boiler fuel or as a feedstock/bulking agent for compost.
- **Anaerobic Digestion:** This is a biological technology typically used to manage homogenous organic waste streams such as municipal biosolids and agricultural waste. The process involves the breakdown of organic waste in the absence of oxygen. This generates biogas, which can be used as fuel to generate steam and electricity. A digestate byproduct is produced, which can be used as a composting feedstock.

TABLE 4.2: Balancing Green and Brown Material in a Compost Pile

	Greens	Browns
Characteristics	<ul style="list-style-type: none"> • High in nitrogen • Wet • Colorful 	<ul style="list-style-type: none"> • High in carbon • Dry • Not colorful
Examples	<ul style="list-style-type: none"> • Food waste • Grass clippings • Fresh manure • Yard/garden trimmings 	<ul style="list-style-type: none"> • Brown leaves • Soiled paper • Wood chips • Sawdust • Straw
Benefits	<ul style="list-style-type: none"> • Nutrients • Moisture 	<ul style="list-style-type: none"> • Bulk/porosity • Excess moisture absorption

SOURCE: Cornell Waste Management Institute, hdl.handle.net/1813/29111

Chapter 4 Notes

References & Resources for Chapter 4

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Food Waste Reduction & Recovery

CHAPTER 5

The State of Food Waste

Food waste was the No. 1 item thrown away in the United States accounting for 21.6 percent (36.5 million tons) of the nation's waste stream in 2014, according to the U.S. Environmental Protection Agency (EPA). Of that amount, only about 5 percent (1.9 million tons) was recovered.

Food waste comprised almost 15 percent (an estimated 641,916 tons) of South Carolina's waste stream in fiscal year (FY) 2016 (July 1, 2015 to June 30, 2016) according to the S.C. Department of Health and Environmental Control (DHEC). Of that amount, only about 1.5 percent (about 10,000 tons) was recovered.

A study by the Natural Resources Defense Council (NRDC) reveals that at least 40 percent of all food grown and processed nationwide goes uneaten each year at a cost of up to \$218 billion annually. The U.S. Department

of Agriculture reports that an average a family of four disposes of \$1,500 worth of food – about 2 million calories each year. Yet one in seven South Carolinians is food insecure according to Feeding America – a non-profit organization with a network of food banks that is leading the fight against hunger in communities nationwide.

Wasted food also means wasted resources. The growing, processing, packaging and transporting of food uses significant amounts of water, energy, time, money and other resources – all lost if the food is not consumed.

While state agencies often don't create as much food waste as K-12 schools, businesses or colleges/universities, they do have an essential responsibility to lead by example in not only reducing and recovering food waste, but also educating the community about rescuing wholesome food for donation.

Benefits of Reducing Food Waste

The benefits of reducing food waste are many.

- **Food donation is a great way to provide surplus food to those who need it.**
- **Reduce methane emissions from landfills.** Wasted food rots in landfills and produces methane gas.
- **Organics recovery is an emerging market in South Carolina, creating jobs and businesses for food waste haulers, composting facilities and others.** For every million tons of composted material, 1,400 jobs are created, according to the S.C. Department of Commerce.
- **Preventing food waste prevents wasted water, energy and land used to make the food.** Throwing away one egg, for example, wastes 55 gallons of fresh water, according to the NRDC.
- **If you cannot prevent, reduce or donate – compost.** Sending food waste to a composting facility or composting at home can improve soil health and structure, increase water retention, support native plants and reduce the need for fertilizers and pesticides.
- **Reducing or stopping food waste can save families, businesses and state agencies money** through smart purchasing, improved food preparation and storage practices as well as lower disposal costs.



S.C. Policy Regarding Food Waste & Food Waste Recovery

Food waste prevention and recovery is a priority in South Carolina. Beyond the economic, environmental and social benefits previously outlined, food waste recovery also provides South Carolina with a significant opportunity to achieve the state's per capita waste reduction (3.25 pounds or less) and recycling (40 percent of the MSW stream) goals by 2020.

As mentioned in previous chapters, South Carolina revised and expanded its composting regulation (R.61-107.4) in June 2014 in part to encourage the development of more large-scale composting facilities by the public and private sectors.

DHEC also is addressing this issue through technical assistance, grant funding and outreach/education efforts. DHEC's Office of Solid Waste Reduction and Recycling (Office) is promoting food waste prevention and recovery through all of its programs in addition to developing an education/outreach campaign called Don't Waste Food SC.

Don't Waste Food SC is a collaborative partnership of public and private stakeholders. The campaign is designed to provide information to inspire individuals, businesses and communities to reduce food waste through prevention, donation and composting.

Stakeholders include food banks, food rescue organizations, faith-based communities, grocery stores and other retailers, food manufacturers, restaurants and hospitality facilities, composters and haulers as well as local and state governments. Please visit www.scdhec.gov/dontwastefoodsc for more information or to get involved.



What is food waste?

Food waste is the portion of the organic waste stream that includes food that is discarded or uneaten. Pre-consumer food waste includes:

- **Trimmings from fruits, vegetables, meats, etc.;**
- **Incorrectly prepared or overproduced dishes in restaurants;**
- **Produce deemed “too ugly” for retail shelves; and**
- **Forgotten or over-purchased food that spoils before it gets eaten.**

Post-consumer food waste is plate scrapings and served leftovers. Both of these kinds of food waste can be generated in all community sectors (residential, commercial and institutional) at a variety of locations including:

- **State agencies and colleges/universities;**
- **Health-care facilities** (e.g., hospitals, nursing homes);
- **Industrial facilities, offices and other businesses;**
- **Residential homes;**
- **Schools and child-care facilities; and**
- **Supermarkets.**

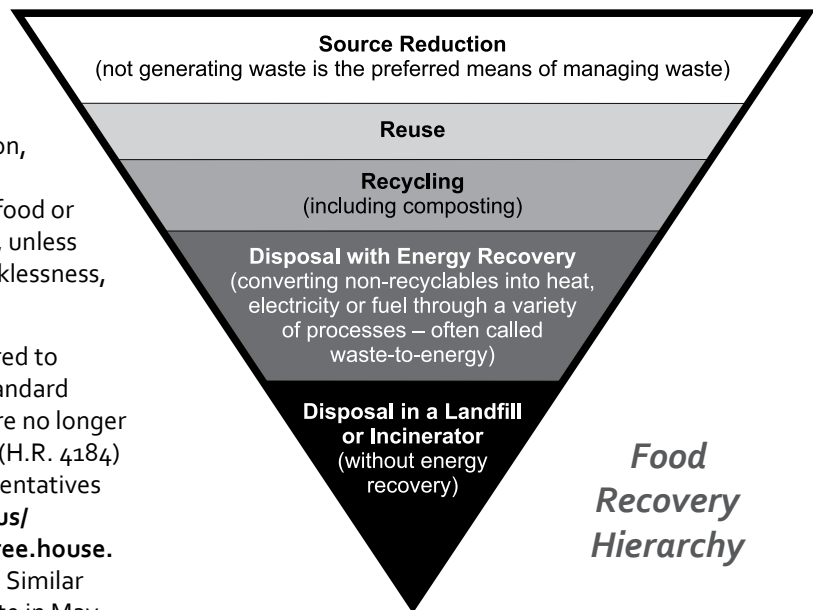
Laws Regarding Food Waste Recovery

Governmental entities, businesses, organizations, schools and colleges/universities can donate food and are given liability protection through federal and state laws.

- **The Bill Emerson Good Samaritan Food Donation Act** (Act) protects food donors from civil and criminal liability should the donated food later cause harm to its recipient. The Act was signed into law in 1996 and covers “apparently wholesome food” or “apparently fit grocery product” intended for human consumption that is donated in good faith to a non-profit organization for distribution to those in need. The purpose of the Act was to standardize various state laws and encourage more entities to donate food, thus reducing food waste.
- In addition, South Carolina law provides liability protection for food donors through **S.C. Code of Laws §§ 15-74-10 et seq.** According to the law, “the

donor, in good faith, of distressed food apparently fit for human consumption, to a bona fide charitable or nonprofit organization or food bank or prepared and perishable food program for free distribution, is not subject to criminal penalty or civil damages arising from the condition of the food or the nature or condition of the land entered, unless an injury is caused by gross negligence, recklessness, or intentional misconduct of the donor.”

- **Proposed legislation** also is being considered to reform food labels and create a national standard regarding the accuracy of when products are no longer safe to eat. The Food Recovery Act of 2015 (H.R. 4184) was introduced in the U.S. House of Representatives in December of 2015. Visit www.govtrack.us/congress/bills/114/hr4184/text/ih or pingree.house.gov/foodwaste for more details on the bill. Similar legislation was introduced to the U.S. Senate in May of 2016. Visit www.congress.gov/bill/115th-congress/senate-bill/1680 for more details on the legislation. Both bills intend to reduce the amount of food thrown away each year that is actually safe to eat.



habits and daily practices, most often accomplished through public education and outreach. The messages should be tailored for staff and visitors and should include the benefits to reducing food waste. Several source reduction recommendations are provided below.

- **Provide tips on meal planning** – including packing lunches to bring to work – (e.g., make a shopping list to avoid over-buying, inventory the pantry before shopping) and proper food storage to maximize freshness (e.g., freeze excess produce before it spoils, make soup with extra vegetables).
- **Encourage dining halls or canteens to buy less-than-perfect fruits and vegetables** to reduce the amount of produce thrown away by grocery stores. The organization EndFoodWaste.org started a campaign on social media – [@UglyFruitAndVeg](https://twitter.com/UglyFruitAndVeg) – encouraging people to buy and post pictures of produce that is misshapen or off-color.

Options for Managing Food Waste

State agencies have many options for managing food waste at their day-to-day locations as well as at events, from educating about source reduction to a more hands-on approach such as establishing a composting operation. Going through the U.S. Environmental Protection Agency’s (EPA) Food Recovery Hierarchy (above), each waste management method is described below, providing different options for state agencies to consider.

SOURCE REDUCTION

The prevention/reduction of food waste is EPA’s preferred method of managing this waste stream. Reducing food waste at the source of generation requires a change in

Practical Ways to Avoid Food Waste

- **Avoid overpurchasing.**
- **Reduce spoilage through proper storage and planning.**
- **Trim only what is needed when prepping food and use trimmings for stocks and sauces.**
- **Reduce post-consumer waste by preparing food to order and offering smaller portions and takeout containers (preferably ones that can be recycled or composted).**



- **Consider going trayless in cafeterias.** According to EPA, dining services are seeing significant reductions in food waste by simply removing trays from dining areas/cafeterias. Trayless dining has, on average, reduced post-consumer plate waste by 30 percent.
- **Encourage food-related venues** (e.g., dining halls, cafes, canteens) **to conduct a waste audit to determine the types and quantities of food being wasted.** Dining halls should adjust their menus if a particular dish tends to go uneaten on a regular basis.
- **Incorporate food waste reduction and recovery into special events.** If there is an office party, calculate a tally of how many employees are likely to attend and purchase an appropriate amount of food based on that tally. If the agency is hosting a public event, use online registration services to get an attendance estimate for food preparations.

The avenues used to reach the targeted audience will vary. Print media and electronic media are great examples for agency outreach showing the benefits of reducing food waste. For food and events services, it is likely to be more productive to conduct site visits to discuss food waste reduction strategies specifically tailored for each.

FEED HUNGRY PEOPLE

Hunger not only affects the homeless, but also people who have fallen on hard times and are struggling to make ends meet. Food donation programs help feed people, reduce the amount of food waste disposed of as MSW and offer tax benefits to those donating food. With the passage of the Act (discussed previously in this chapter), donors are protected from liability as long as the donated food is intended for human consumption and has been made in

good faith. Listed below are examples of food donation programs.

- **Food Banks, Soup Kitchens & Shelters:**

Almost every community has a food bank or soup kitchen to help residents who do not have enough to feed themselves or their families. Most often, canned and packaged foods are accepted at food banks while prepared foods from restaurants and caterers are delivered to shelters or soup kitchens for immediate consumption via food networks. South Carolina food networks include Second Helpings and Loaves & Fishes. The S.C. Food Bank Association (which includes Golden Harvest, Harvest Hope, Lowcountry and Second Harvest Food Banks) is a member of Feeding America, a nationwide network of food banks. Links to these organizations can be found in the Resources & References section of this chapter.



- **Food Drives:** Local food drives offer residents and businesses an easy way to help those in need. Many times a food drive will be paired with an event – such as a concert, a sporting event or a holiday party – in which attendees are asked to bring a non-perishable food item that will be donated to a local food bank.
- **Gleaning:** The act of collecting excess fresh foods from farms, gardens, farmers’ markets, grocers and other sources is called gleaning. In South Carolina, the non-profit group Fields to Families links farmers with excess fruits and vegetables to organizations that feed the hungry in the Lowcountry (mainly Charleston, Dorchester and Berkeley counties).

Loaves & Fishes: Making a Difference

Loaves & Fishes in Greenville, SC is an example of a successful food donation organization.

Local restaurants, grocery stores, caterers and farmers contact the non-profit group whenever they have surplus food. Loaves & Fishes drivers collect the food and deliver it to people through partner agencies such as non-profits, churches, Section 8 apartment communities and other established food relief programs. In addition, Loaves & Fishes accepts donations and coordinates canned food drives. In 2015, Loaves & Fishes distributed more than 1.9 million pounds of food in Greenville County.

Visit www.loavesandfishesgreenville.com for more information about Loaves & Fishes.



FEED ANIMALS

Feeding food scraps to animals often provides companies a less expensive option for food waste disposal than landfilling, and the farmer who owns the animals saves money by not having to buy as much feed. Some zoos accept certain food donations, typically from food manufacturers that have excess product. Food scraps also can be diverted to companies that produce animal or pet food. Before any food scraps are fed to animals, local and state rules and regulations must be followed.



The Federal Swine Health Protection Act of 1980 requires that all food waste fed to swine must be properly treated to kill disease organisms. The Food and Drug Administration's (FDA) Bovine Spongiform Encephalopathy/Ruminant Feed Ban Rule prohibits the use of mammalian protein (e.g., animal tissue) in feeds for ruminant animals (e.g., animals that have a stomach with four chambers through which feed passes during digestion). This means that vegetative waste may be fed to farm animals so long as it has not come into contact with animal waste.

Feeding food waste to swine is covered by S.C. Code of Laws §§ 47-15-10 et seq. According to this statute, the feeding of garbage (e.g., animal wastes resulting from handling, preparation, cooking, or consumption of foods, animal carcasses, parts of animal carcasses, contents of offal, unpasteurized milk, unpasteurized milk products) to swine is unlawful.

INDUSTRIAL USES

Food waste is increasingly being used to generate biofuel, bio-products and energy.

- **Anaerobic Digestion:** As described in Chapter 4, anaerobic digestion is the biological breakdown of organic waste in the absence of oxygen. The anaerobic digestion process produces biogas that can be used as fuel to generate steam and electricity.
- **Fats, Oils and Grease (FOG):** FOG is typically collected from generators, such as restaurants, and delivered to either a rendering plant (producing animal food, cosmetics, soap and other products), an anaerobic digester or a facility to be converted to biodiesel fuel. FOG also can be added to anaerobic digesters to generate biogas. When FOG is converted to biodiesel fuel, it is a cleaner alternative to conventional diesel fuel. The City of Columbia (City) collects cooking oil and delivers it to Midlands Biofuels, where it is converted into biodiesel. The City uses the biofuel to power one of its garbage trucks as well as other vehicles.

COMPOSTING

As described in Chapter 4, food waste can be combined with other plant material such as dry leaves to decompose over time to form compost, a soil amendment.

In South Carolina, food waste is considered a Category II feedstock meaning it has a lower carbon-to-nitrogen ratio than Category I (leaves and grass) and it has a higher moisture content and is more likely to contain pathogens.

Resources for Reducing Food Waste

Don't Waste Food SC has several resources for easy ways to reduce the amount of food waste created daily, including:

- Tip Sheet No. 1 – What can you do at home to reduce or prevent food waste?, www.scdhec.gov/library/OR-1202.pdf;
- Tip Sheet No. 2 – Your Fridge and Food Safety, www.scdhec.gov/library/OR-1261.pdf;
- Tip Sheet No. 3 – Compost at Home, www.scdhec.gov/Library/OR-1277.pdf;
- Weekly Meal Plan & Shopping List, www.scdhec.gov/library/OR-1253.pdf; and
- The S.C. Farm to Institution's "South Carolina Produce Guide," http://scfarmtoinstitution.com/wp-content/uploads/2016/06/ProduceGuideBrochure_Digital.pdf.

Visit www.scdhec.gov/dontwastefoodsc for these and more resources.



Category II feedstock includes the following types of food wastes:

- **Non-meat food processing waste**, including marine shells and dairy processing waste;
- **Produce and non-meat food preparation generated by wholesale, retail or food service businesses**; and
- **Plate scrapings**, including cooked meats generated by food service establishments.

Food waste can be incorporated into small, backyard/residential compost piles if routinely turned to ensure the food waste won't cause odor or attract insects or animals. For large-scale composting operations, food waste is an acceptable feedstock for aerated windrow, aerated static pile and in-vessel composting systems.

State agencies can help spur the recovery of food waste. Composting and source reduction of food waste can benefit agencies by:

- **Reducing the amount of waste a state agency sends to a landfill;**
- **Helping save money by reducing the frequency of garbage collection and/or the number of dumpsters needed at an agency;**
- **Instilling the habit of recognizing and separating food waste at every point and time of disposal at the agency;**
- **Creating a beneficial product that improves soil quality while reducing fertilizer and pesticide use; and**
- **Reinvigorating conventional recycling programs and awareness of waste reduction.**

State agency employees can be encouraged to compost their food waste by:

- **Informing them of available resources;**
- **Providing composting bins wherever landfill and recycling bins are present;**
- **Regularly publicizing the agency's composting practices;**
- **Hosting waste-free lunch days where all waste is reduced, recycled or composted; and**
- **Teaching staff about composting through presentations, events and tours of the compost site, whether at the agency or a commercial site.**

As with any waste, businesses must pay to dispose of uneaten food. It is therefore preferable to reduce the amount of food waste generated at the source, as opposed to disposing of it in a landfill. State agency dining facilities and canteens can employ strategic measures to reduce food waste and therefore lower costs.

LANDFILL/INCINERATION

Landfilling and/or incineration should be the last resort for food waste disposal.

Tools for Assessing Wasted Food

EPA offers several assessment tools for food service establishments to measure and track food waste.

- **"Food Waste Assessment Guidebook"**
- **Toolkit for Reducing Wasted Food and Packaging**
- **Food Waste Management Cost Calculator**
- **Paper Tracking Waste Logs**
- **Waste Reduction Model (WARM)**

View these resources at www.epa.gov/sustainable-management-food/tools-assessing-wasted-food.

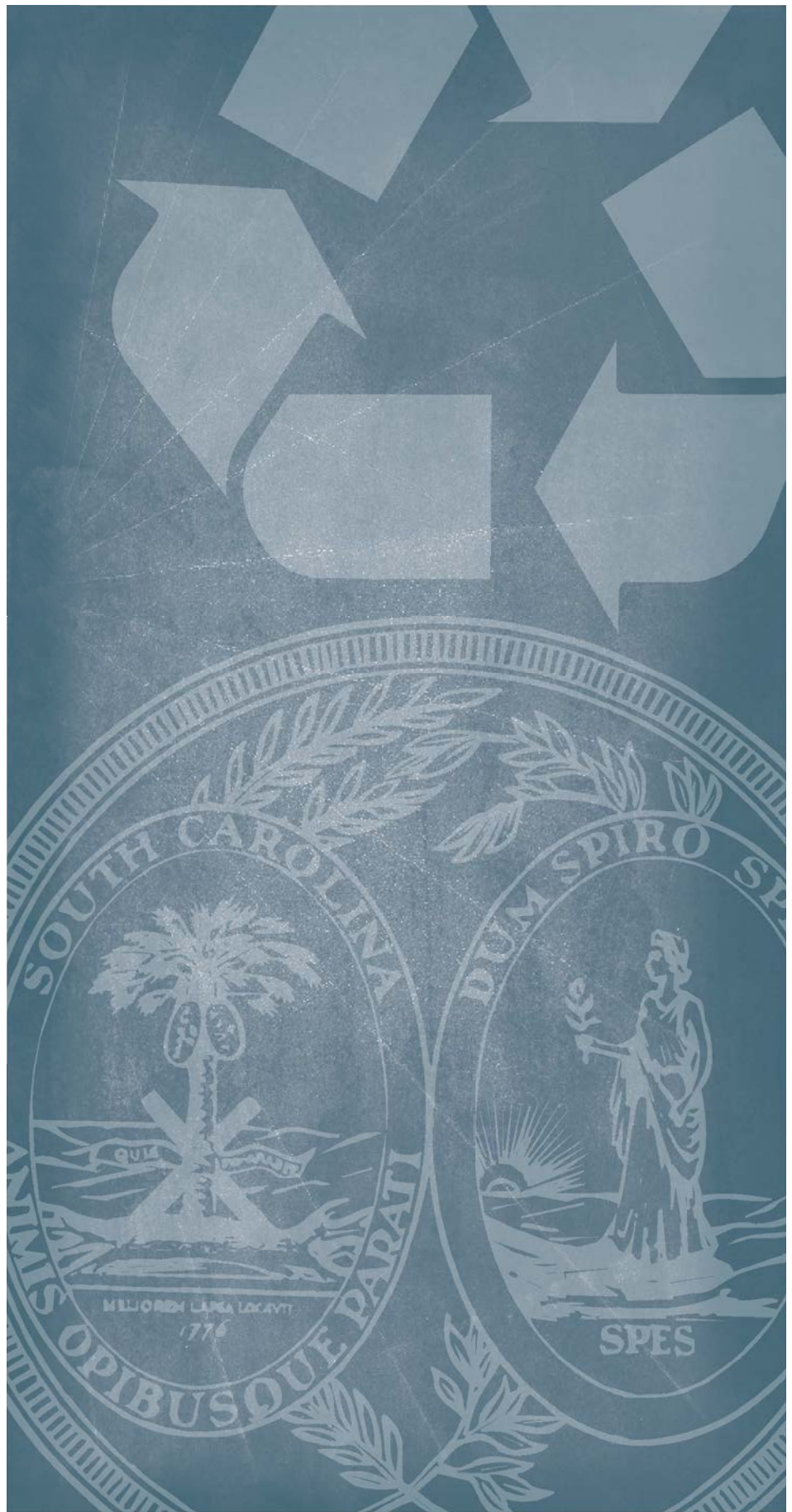
Federal Food Waste Reduction Challenges

EPA's Food Recovery Challenge offers opportunities for businesses and organizations to join as participants or endorsers. EPA provides free technical assistance to help businesses reduce the amount of food waste they generate. Participants and endorsers are listed on EPA's website, and regional and national awards are given. For more information, please visit www.epa.gov/sustainable-management-food/food-recovery-challenge-frc.

Similarly, the U.S. Department of Agriculture has developed the U.S. Food Waste Challenge, which is a chance for generators of food waste to receive free technical assistance and other information to help reduce, recover (donate) and recycle (compost) food waste. For more information, visit www.usda.gov/oce/foodwaste/index.htm.

References & Resources for Chapter 5

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- Fields to Families, www.fieldstofamilies.org/ways-to-give
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- Green Resource Index, www.scdhec.gov/library/OR-1403.pdf
- Loaves & Fishes, www.loavesandfishesgreenville.com
- Move for Hunger, Start a Food Drive, www.moveforhunger.org/get-involved/food-drive/
- Natural Resources Defense Council, www.nrdc.org
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- S.C. Farm to Institution, scfarmtoinstitution.com
- Second Helpings, www.secondhelpingslc.org/our-food-network/food-donors
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- USDA, U.S. Food Waste Challenge, www.usda.gov/oce/foodwaste/index.htm
- Waste Free Kitchen Handbook: A Guide to Eating Well and Saving Money by Wasting Less Food, www.nrdc.org/stories/freeze-more-waste-less



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