



Wood Waste Reduction

Wood waste reduction

Is your industry burdened by excess wood waste? Do you generate more scrap wood or pallets than you can reuse, and then have difficulty disposing of them? This is a common problem throughout the country, and unfortunately, this valuable natural resource often ends up taking up valuable landfill space or is burned illegally, negatively impacting the environment. This fact sheet attempts to strike a balance between minimizing wood waste generation and the realities related to proper disposal of wood waste that can't be recycled or reused.

Sources of wood waste

Wood waste is generated from a variety of industrial operations, including furniture production, cabinet fabrication, and other manufacturing which uses wood to make products as part of its production process. Use of wood pallets generates waste for many businesses. If recycling is not an option, untreated wood pallets may be disposed as municipal solid waste (MSW) or as construction and demolition (C&D) waste. C&D wastes are defined in Kansas Department of Health and Environment (KDHE) technical guidance available at www.kdheks.gov/waste/techguide/SW-1994-G2.pdf.

During demolition/land-clearing operations, a considerable amount of wood waste can be generated. This waste may be disposed as C&D, or commercial demolition and land-clearing (CDL) waste. Of the 250 million tons MSW generated in 2010, the U.S. Environmental Protection Agency (EPA) estimates 16 million tons was wood waste. Typically, treated wood contains preservatives (pesticides) to extend the life of the wood, and may require special disposal.

Burning

Some businesses and property owners have used small incinerators or have openly burned pallets, cardboard, documents, or scrap wood. These small incinerators are almost never in compliance with EPA or KDHE regulations, and in fact, should be dismantled. Open

burning is banned in other than a few specific instances, or more commonly requires a permit. The SBEAP fact sheet, "*Open burning— when is it allowed?*," found at www.sbeap.org/resources/air, details open burning options and alternatives. KDHE technical guidance explaining current requirements can be found at www.kdheks.gov/air-permit/CEtech_guidance.html.

Wood can be an effective fuel for biomass combustion systems. One Topeka, Kansas industry is permitted to accept wood waste for boiler fuel. This particular industry is able to generate up to 60,000 pounds of steam per hour from wood scraps and agricultural waste. Any industry wanting to burn wood for fuel would need to make sure appropriate KDHE permits or approvals are in place prior to purchasing or installing equipment. Contact SBEAP at 800-578-8898 if you need help.

What is an air-curtain destructor?

Open burning wood waste is usually illegal, composting may not be practical, and landfilling wood wastes is not always economically or environmentally preferred. Using a KDHE permitted air-curtain destructor may provide an economical for some Kansas businesses. An air-curtain destructor operates much like an incinerator in the ground and provides an air flow or "curtain" across the upper portion of the chamber in which the wood is loaded. The powerful curtain of air created in the process traps unburned particles under the air curtain for re-burn of these particles at temperatures as high as 2,000 degrees. This process provides for "re-burn" of the smoke and unburned particles, for more complete combustion of the wood waste, with very little smoke emitted from the process.

Other disposal

While some wood waste is reused for composting, mulch, and recycling of various forms, some still goes to landfills. Instead, landfill space should be reserved for wastes that are otherwise unable to be reduced, reused, or recycled. Proper management of wood waste can save money, conserve resources, and preserve the environment.

Benefits of recycling wood can vary greatly from company to company. Businesses that desire to compost or dispose of their waste on site need to contact: KDHE at 785-296-1600 for technical assistance and to determine if a permit is required.

Cabinet and furniture making

A large volume of wood waste is typically generated in cabinet and furniture manufacturing processes. Management of wood and wood waste, from receiving through dust collection, is key to saving money, increasing efficiencies, and reducing wood waste. Proper management includes:

- Minimizing storage problems—avoiding damage from weather and humidity.
- Collecting dust and segregating wood wastes—improving sanding efficiencies by preventing dust from becoming embedded in the sanding belt and keeping sawdust from becoming contaminated so it can be easily recycled.
- Training employees to minimize generation of wood scrap.

An excellent reference detailing good management practices is “*Waste Reduction Guide: Wood Furniture Industries*,” found on the Internet at www.infohouse.p2ric.org/ref/01/00418.pdf.

The following are some ways wood waste from these operations can be recycled or reused:

- Animal bedding
- Boiler fuel
- Chunkrete aggregate
- Composting
- Hardboard/fiberboard/particleboard
- Landscape mulch
- Reclaimed flooring
- Trade schools
- Wood plastic composites

Some public and privately operated wood waste recycling programs will chip, grind, or compost commercial wood waste. Tipping fees for these services are generally lower than landfill fees, but often the costs related to transportation create a barrier to using these programs.

Wood pallets

More than 223 million wood pallets (6 million tons) were discarded at landfill facilities in 1995. Overall, about one out of four pallets purchased in 1995 was recovered/repared (see www.srs.fs.usda.gov/pubs/437). Since then, many businesses have become more aware of the need for minimization, reuse, or replacement with durables.

The first step in reducing pallet waste is to determine if there is an alternative to single-use pallets that would be appropriate, such as durable, returnable/reusable pallets or lightweight slip sheets. (Slip sheets are five-foot-square plastic or corrugated sheets. They are lighter, cheaper, and more compact than pallets. They can be moved with fork lifts, but special attachments are required.) If wood pallets are needed, examine internal procedures to determine how pallets are damaged; look for management solutions that will prevent



damage; and establish ways to extend pallet use. Consider redesign of pallets if necessary.

Instead of landfilling pallets, consider the following alternatives that offer financial and environmental benefits:

- Use more durable pallets made from plastics, metals, etc. They will last longer and can save money over the long run.

- Introduce take-back programs where customers standardize the sizes of pallets they will accept and require vendors to take back pallets when they deliver product.
- Switch from pallets to plastic slip sheets—a process that helped save Home Depot and its vendors an estimated \$2 million dollars in the first year (see www.calrecycle.ca.gov/ReduceWaste/Packaging/casestudies/homedepot.htm).
- Use recycled pallets, which are cheaper and can reduce handling costs.
- Repair and salvage material from used pallets.
- Chip pallets and sell shavings for composting, mulch, or animal bedding.
- Pay lower tipping fees at landfills if pallets are received for recycling.

On average, pallets are used for fewer than two trips each. A relative cost comparison for different types of pallets is provided in the table below. This is simply an estimate; actual costs will vary based on local factors such as durability of materials, items being shipped, cost of materials, etc. A pallets cost calculator is available on the EPA website at www.epa.gov/wastes/conservation/tools/greenscapes/tools/index.htm.

Construction and demolition

Traditionally, when buildings are torn down, very little of the building is salvaged. Recently, however, the “deconstruction” industry is growing. Deconstruction is an alternative to demolition and landfilling, and combines the salvage and recovery of building materials for creative reuse and recycling. It is the process of removing a building by taking it apart in the reverse order of construction wastes.

	Hardwood	Softwood	Plastic	Corrugated /Plastic
Cost (new)	\$9.00	\$6.00	\$60.00	\$4.00
Cost (rebuilt)	\$6.00	N/A	N/A	N/A
Est. use life	25 trips	2 trips	100 trips	5 trips
Cost per trip	\$0.36	\$3.00	\$0.60	\$0.80

As with any recycling, labor and transportation costs are key to economic success. Finding a local market for products is critical. Often, local businesses will accept good quality used building materials such as banisters, beams, buffets, cabinets, columns, doors, flooring, lumber, mantles, and staircases. The Deconstruction Institute in Florida is a good resource for techniques, case studies, and tools, such as “A Guide to Deconstruction” available at www.deconstructioninstitute.com/files/learn_center/45762865_guidebook.pdf. When disposal is required, a C&D landfill is the best option.

Case study

When Johnson County built their new Sunset Drive “green” facility, the decorative wood used near the front entrance was recovered from what was previously designated as waste at a different construction site. In addition, the facility is estimated to have utility savings of 40% as compared to other similar buildings. Read more about this building design at <http://facilities.jocogov.org/buildings/Sunset.htm>.

Where can I get more help?

SBEAP operates a toll-free technical hotline you can call for additional assistance. In addition, SBEAP can visit your facility to review current compliance needs and identify pollution prevention opportunities. Contact SBEAP at 800-578-8898 or sbeap@ksu.edu.

Wood waste outlets in Kansas

The companies listed on the next page offer various services from building and repairing pallets to grinding them for use as animal bedding or landscape mulch. Call to verify services offered, preparation requirements, quantities, and transportation options. This is not a complete list of available companies or services and does not represent an endorsement by SBEAP. The National Wooden Pallet & Container Association at www.palletcentral.com may also be helpful.

Company	Services	Location	Phone
Ace Pallet Service	Buys certain sized used pallets; recycles pallets to usable parts and mulch	Kansas City	913-371-2777
Brooks C&D Landfill	Accepts used pallets	Wichita	316-722-0601
Capital City Pallet, Inc.	Accepts 40x48 used pallets for repair; minimum load required	Topeka	785-379-5099
Evergreen Pallet	Buys used pallets; rebuilds; mulches scrap	Wichita	316-821-9991
Hoyt Pallet Recycling Co.	Accepts or buys used pallets; rebuilds; gives away scrap	Hoyt	785-986-6785
Midwest Pallet	Buys standard-sized used pallets; rebuilds; third party handles scrap	Kansas City	913-371-3555
One Accord Enterprise	Picks up used pallets; rebuilds and sells; third party handles scrap	Junction City	785-375-4255
Pal-Co	Buys 40x48 used pallets; rebuilds; landfills scrap	Hutchinson	620-663-6191
Pallets Plus	Charges for used pallets according to condition; rebuilds; mulches scrap	Topeka	785-862-0771
Schneider Pallets	Buys 40x48 and 40x40 used pallets; rebuilds; burns scrap	Natoma	785-885-4516
Scott's Pallet and Lumber	Buys used GMA pallets; rebuilds; burns scrap for heat	Hutchinson	620-662-5613
Seward County Landfill	Accepts wood scrap and used pallets for a fee; grinds, sells mulch (colored or natural) to businesses or public	Liberal	620-626-3266
Sonny's Pallet Service	Buys used pallets; rebuilds and sells; third party recyclers handle scrap	Kansas City	913-299-9872
Southeast Kansas Recycling	Recycles pallets	Pittsburg	620-231-8930
Whiteley's Pallet and Blocking	Repairs pallets	Topeka	785-233-3801
Woodstock LLC	Picks up wood waste; makes products such as stakes	Newton	620-344-6886

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