



Recycling Construction and Demolition Debris

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Recycling construction and demolition (C&D) waste is a good alternative to landfilling and can save money—especially in the Northeast, where disposal costs are the highest in the United States.

It is difficult to determine the amount of C&D waste generated in the U.S. each year. Some waste is used as fill or burned right on the job site and waste dumped at landfills often is not weighed. Accurate records on quantity are not available, but according to a 1986 EPA report, C&D debris accounts for an estimated 23 percent of municipal solid waste.

What is recyclable?

Construction and demolition waste content varies considerably because it comes from so many different sources. A road crew rebuilding a highway, a construction firm erecting a new apartment complex, a demolition contractor tearing down an old office building, or a homeowner renovating a living room will produce C&D waste. The waste itself can be anything from a pile of scrap lumber to a used refrigerator.

A substantial amount of C&D debris is wood waste. Stumps and brush from clearing land for construction, untreated lumber scraps, clean demolition wood, and clean wood pallets can be chipped and used as fuel, as mulch for landscaping, as a compost bulking agent or as animal bedding. It can also be used in the manufacturing of new building products, such as particleboard.

Some wood, however, might not be recyclable according to state or federal regulations. The chemicals used in preservative-treated wood, for example, might affect subsequent uses or require special disposal. Railroad ties, wood shingles or siding treated with creosote and wood painted with

lead- or mercury-based paints should not be used for mulch, compost or animal bedding.

Items that are a combination of wood and non-wood materials, such as laminated counter tops, cannot be recycled with clean wood. Shingles, siding or flooring that contain asbestos are particularly hazardous and should be disposed of according to state regulations. Check with state recycling and disposal guidelines to see what other wood-containing items aren't recyclable.

Another large portion of C&D debris is asphalt. Most asphalt waste is combined with aggregate because it comes from resurfacing old roads. The waste generated when the old layer of asphalt is removed from the road can be mixed with new asphalt and reused as roadbase on new roadways. Asphalt shingles can be ground up and reused in the manufacturing of new paving material, and asphalt-based roofing is sometimes shredded and used for fill.

Using asphalt materials as fill can be a somewhat complicated issue. Generally, there isn't a problem with using old asphalt removed from a road or driveway as part of fill to regrade a site before construction. But there is some concern about the leeching characteristics of "fresh" asphalt and about loads of mixed waste that contain asphalt. Care should be taken before accepting an offer to dispose of waste asphalt for a contractor or neighbor. Be sure it is suitable fill material. State regulations concerning what types of asphalt waste are suitable for fill and where they may be used are changing, so it's a good idea to check with DER before disposing of it on a site.

Old concrete and rubble often makes good fill material. If large amounts of clean concrete waste are to be disposed of—for example, from bridge reconstruction, repair, and road or large building demolition—it might be economical to reprocess it for

aggregate. Three different size grades—fine, medium, and coarse – are commonly made from old concrete. In concrete processing plants, magnets remove any metal, such as rebar, that often contaminates concrete waste.

Used bricks from demolition sites can often be salvaged and reused for construction or as decorative accents. Those in unsalvageable condition can be used as fill or ground up and used as a landscaping material.

Metal wastes from C&D debris can also be recycled and reused. Metal exists in wiring, plumbing fixtures, siding, flashing, roofing, and structural steel. Aluminum, brass, and copper are especially valuable metals. They can be remelted and reused in the manufacturing of new products. Other metals, such as steel and iron, can be sold to scrap metal dealers. Structural steel, such as I beams and columns, may be reused in other construction projects or sold as scrap. Even appliances, or “white goods,” from demolition sites can be sold to scrap dealers, where they will be recycled.

Gypsum can be crushed and incorporated into new wallboard or in fertilizer products. Large quantities of gypsum in a landfill can produce the odorous and hazardous gas hydrogen sulfide during anaerobic decomposition. Some areas, particularly areas with landfills built especially for C&D waste, have had odor problems from hydrogen sulfide. Recycling gypsum instead of disposing of it in a landfill can avoid such problems.

Other C&D waste materials that can be recyclable, depending on the facilities available in your area, include plastic, which can be chipped and shredded for insulation; and glass, which can be recycled into fiberglass insulation or used to make new windows. Also, don't forget that reuse is always an option, especially for demolition contractors. Doors, windows, special moldings, radiators, plumbing fixtures, and appliances from demolition sites can often be sold for reuse. Usable appliances can often be recycled through organizations such as the Salvation Army.

Clearly, not all C&D waste can be recycled, but diverting even 20 percent from the landfill is a start.

Why recycle?

Recycling C&D debris decreases the amount of material that goes into the landfill, and the less that is put into a landfill, the longer the landfill lasts. It also decreases the demand for more landfill space.

For the C&D industry, recycling can save money. Because of the scarcity of landfill space, tipping fees are high and continually increasing. Some states have already banned C&D debris from landfills, and trends indicate that regulations will become increasingly strict as to what can and cannot enter a landfill.

Recycling C&D debris can cut disposal costs by up to sixty or seventy percent on some jobs. As prices increase and regulations become more strict, recycling presents a viable alternative to landfilling. As more contractors become interested in recycling, it is likely that more recycling facilities specializing in this type of material will become available.

How to recycle

Recycling C&D debris isn't hard to do, but it does involve some extra planning and labor. Instead of having one pile of waste at a site, simply make several. For example, have one container for clean wood waste, one for concrete and masonry, and one for metal scraps. Sort the waste as it is generated. (Although at demolition sites, the task becomes much more difficult.)

Mobile grinders and crushers are available for rental or sale to process wood, asphalt, and concrete waste right on the site. Some recycling facilities will provide dumpsters for sorting waste, and will come and pick up the dumpsters as they are filled. More sophisticated recycling plants accept mixed C&D debris. The waste is separated right at the recycling plant. As recycling becomes more popular, automated sorting systems are likely to become more available. Check the Yellow Pages to see what facilities are near you.

For additional information on C&D waste recycling and to see what's available in your area, contact builder's or contractor's associations, the Department of Environmental Resources, or your local solid waste officials.

Who to Contact for Help

C. T. Donovan Associates, Inc., P.O. Box 5665,
Burlington, VT 05402; 802-658-9385.

EPA Solid Waste Hotline, 800-424-9346; in D.C. call
382-3000.

National Association of Demolition Contractors, 4415
West Harrison Street, Hillside, IL 60162; 708-449-
5959.

National Association of Home Builders, 15th and M
Streets, N.W., Washington, D.C. 20005; 800-368-5242,
ext. 484 or 202-822-0484.

National Solid Waste Management Association, 1730
Rhode Island Avenue, NW, Suite 1000, Washington,
D.C. 20036; 202-659-4613.

Phoebe Schlanger, Environmental Policy Analyst,
Environmental Regulation Department, NAHB; 800-
368-5242, ext. 484.

Solid Waste Information Clearing House, P.O. Box
7219, Silver Spring, MD 20910; 800-677-9424.

For Information from the Pennsylvania Department of Environmental Resources

Contact: The Division of Permits, Harrisburg, PA;
717-787-1749.

Greg Harder, Waste Minimization Specialist, Division
of Waste Minimization and Planning, Pennsylvania
Department of Environmental Resources, P.O. Box
2063, Harrisburg, PA, 17105-2063; 717-787-7382.

For Further Reading About C&D Waste Recycling

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For further information or for a copy of our Fact Sheet Listing contact:

Agricultural and Biological Engineering Department
246 Agricultural Engineering Building
University Park, PA 16802
Telephone: 814-865-7685
FAX Number: 814-863-1031

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