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CONSTRUCTION, DEMOLITION, AND RENOVATION

- Reducing Waste and Preventing Pollution
- Regulatory Review
- Relevant Resources

EPA

United States Environmental Protection Agency
Solid Waste and Emergency Response (5305W)
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FOR MORE INFORMATION VISIT THE CONSTRUCTION INDUSTRY COMPLIANCE ASSISTANCE CENTER (CICA) AT <WWW.CICACENTER.ORG> OR CONTACT YOUR STATE ENVIRONMENTAL PROTECTION AGENCY

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If you are involved with building construction, demolition, or renovation, your company creates construction and demolition (C&D) debris. These materials can consist of three types of waste: (1) Inert or nonhazardous waste; (2) hazardous waste as regulated by the U.S. Environmental Protection Agency (EPA) under the Resource Conservation and Recovery Act (RCRA); and (3) items that contain hazardous components that might be regulated by some states.

Most C&D debris is nonhazardous and is not regulated by EPA. Under RCRA, however, if you generate hazardous waste you are required to follow certain procedures when generating, storing, transporting, or disposing of it. In addition, many states have specific definitions of C&D debris that effectively determine what materials are allowed to be disposed of in nonhazardous waste landfills, C&D landfills, or incinerators. Even if federal or state regulations do not apply to your business, you should make efforts to keep the hazardous components of the wastes you generate out of landfills to conserve natural resources and protect human health and the environment. Follow the suggestions outlined in this issue for ways to reduce, reuse, and recycle your waste.

C&D Debris

C&D debris is one type of solid waste. It is a large and varied waste stream that includes concrete, asphalt, wood, gypsum, and asphalt shingles generated from the construction, renovation, and demolition of buildings, roads, bridges, and dams. Total C&D waste was estimated to be 325 million tons in 2003.

C&D debris is not federally regulated, except to the extent that solid waste landfills must follow a few basic standards outlined in the *Federal Register* at 40 CFR Part 257. States, therefore, have the primary role in defining and regulating the management of C&D debris.

Depending on your state's specific definition, C&D debris can include the following discarded materials:

- Concrete, cinder blocks, drywall (sheetrock, gypsum, or plaster), masonry, asphalt and wood shingles, slate, and plaster.
- Forming and framing lumber, plywood, wood laminates, wood scraps, and pallets.
- Steel, stainless steel, pipes, rebar, flashing, aluminum, copper, and brass, residential and commercial steel framing, structural steel, steel utility poles.
- Brick and decorative blocks.
- Siding.
- Doors and windows.
- Plumbing fixtures.
- Electrical wiring.
- Non-asbestos insulation.
- Wood, sawdust, brush, trees, stumps, earth, fill, and rock and granular materials.

Many states exclude certain materials from the legal definition of C&D debris, using terms such as "hazardous," "unacceptable," "potentially toxic," or "illegal". These wastes might or might not meet the federal definition of hazardous waste (see page 5). Those that do meet the legal definition of hazardous waste are required to be treated and/or disposed of in a manner consistent with the federal or state requirements for hazardous waste. Examples of these wastes can include:

- Waste paints, varnish, solvents, sealers, thinners, resins, roofing cement, adhesives, machinery lubricants, and caulk.
- Drums and containers that once contained the items listed above.
- Treated wood, including lumber, posts, ties, or decks, and utility poles.
- Asbestos-containing items, such as certain older types of floor tile, insulation, or other materials containing asbestos. (Regulated by the Toxic Substances Control Act [TSCA-see page 18])
- Lead-based paint, or lead flashing or solder.
- Products containing mercury.
- Other items that have inseparable hazardous constituents.

Generators of C&D Debris

Many of those involved in generating C&D debris can save money by reusing, exchanging, recycling, donating, and otherwise reducing the amount of C&D debris they throw away. Donations to charitable organizations classified as 501(c)3 are tax-deductible.

The National Association of Home Builders (NAHB) estimates that as much as 8,000 pounds of C&D debris is produced for every 2,000 square feet of house. A 1995 NAHB survey estimated that builders pay an average of $500 per home for waste removal.

C&D LANDFILLS

A large fraction of C&D debris gene ated in the United State ends up in C&D landfil (See 40 CFR 257.) Sinc much of this waste stream is inert, states do not require these landfil to provide all of the sam environmental protections as those licensed t receive municipal solid waste. Therefore, C&D landfills generally have lower tipping fees and handle a large amount o the C&D debris generated in the United States. Most states regulate C& debris, although programs vary widely. For example, some states require liners or leachat collection systems; a few require both; and others require neither. Visit <www.cicacenter.org> for more information.

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HAZARDOUS WASTE REQUIREMENTS

While states have the primary responsibility for regulating nonhazardous C&D debris, they sometimes also have primary responsibility for regulating hazardous waste. States can receive legal permission, known as authorization, to implement EPA's RCRA hazardous waste program. State hazardous waste programs are consistent with, and are at least as stringent as, the federal hazardous waste program. Always contact your state authority to determine which state requirements apply to your business.

About RCRA

What Is RCRA?

RCRA is a federal law that encourages environmentally sound methods for managing commercial and industrial waste as well as household and municipal waste. It regulates facilities that generate, transport, treat, store, or dispose of hazardous waste.

The term "RCRA" is often used interchangeably to refer to the law, the regulations, and EPA policy and guidance. The law describes the waste management program mandated by Congress that gave EPA authority to develop the RCRA program. EPA regulations carry out the Congressional intent by providing explicit, legally enforceable requirements for waste management. EPA guidance documents and policy directives clarify issues related to the implementation of the regulations.

All of the RCRA hazardous waste regulations can be found in the *Code of Federal Regulations* (CFR), Title 40, Parts 260 to 279. The CFR can be purchased through the U.S. Government Printing Office (GPO).

Who Is Regulated?

Any business that generates hazardous waste is potentially subject to RCRA. You must conduct tests required by the regulations or use your knowledge of and familiarity with the waste you generate to determine whether it is hazardous waste. You might be subject to substantial civil and criminal penalties if you fail to properly or completely identify hazardous waste generated by your business.

How Are Generators Regulated?

If your business generates hazardous waste, you must manage it according to regulations for your specific generator type. Hazardous waste generators are divided into three categories, according to how much they generate in a calendar month:

- **Large Quantity Generators (LQGs).** LQGs generate greater than or equal to 1,000 kg (approximately 2,200 lb) of hazardous waste per month or greater than 1 kg (approximately 2.2 lb) of acutely hazardous waste per month.
- **Small Quantity Generators (SQGs).** SQGs generate greater than 100 kg (approximately 220 lb) but less than 1,000 kg (approximately 2,200 lb) of hazardous waste per month.
- **Conditionally Exempt Small Quantity Generators (CESQGs).** CESQGs generate less than or equal to 100 kg (approximately 220 lb) of hazardous waste per month and less than or equal to 1 kg (approximately 2.2 lb) of acutely hazardous waste per month.

Most construction, demolition, and renovation companies are considered CESQGs. CESQGs must comply with three basic waste management requirements to remain exempt from the full hazardous waste regulations that apply to generators of larger quantities of hazardous waste (SQGs and LQGs).

Some states do not recognize the CESQG class. Contact your state environmental agency to find out if the CESQG status is recognized. **To find your appropriate state contact, visit <www.cicacenter.org>.**

Under the federal RCRA requirements, your generator status might change from one month to the next as the quantity of waste you generate changes. State requirements vary widely. You must comply with whichever standard is applicable for a given month. In many cases, small businesses that fall into different generator categories at different times choose to always satisfy the more stringent requirements (usually state requirements) to simplify compliance. Generators must "count" the amount of waste generated, which involves adding up the total weight of all quantities of characteristic and listed waste generated at a particular facility. Certain wastes, such as those that are reclaimed or recycled continuously on site, may not be counted for the monthly total calculation under the federal regulations.

What Is Hazardous Waste?

To be considered hazardous waste, a material first must be classified as a solid waste. EPA defines solid waste as garbage, refuse, sludge, or other discarded material (including solids, semisolids, liquids, and contained gaseous materials). If your waste is considered solid waste, you must then determine if it is hazardous waste. Wastes are defined as hazardous by EPA if they are specifically named on one of four lists of hazardous wastes (listed wastes) or if they exhibit one of four characteristics (characteristic wastes). Each type of RCRA hazardous waste is given a unique hazardous waste code using the letters D, F, K, P, or U and three digits (e.g., D001, F005, P039). See page 6 for additional information on relevant C&D waste codes.

Listed Wastes. Wastes are listed as hazardous because they are known to be harmful to human health and the environment when not managed properly, regardless of their concentrations. The lists include the following three types of waste:

- **Non-Specific Source Wastes.** These are material-specific wastes, such as solvents, generated by several different industries. Waste codes range from F001 to F039. Examples include ethyl benzene, methylene chloride, and toluene.
- **Specific Source Wastes.** These are wastes from specifically identified industries. Waste codes range from K001 to K161. C&D debris does not typically include specific source wastes.
- **Discarded Commercial Chemical Products.** Off-specification products, container residuals, spill residue runoff, or active ingredients that have spilled or are unused and that have been, or are intended to be, discarded. Waste codes for acutely hazardous chemicals range from P001 to P205 and U001 to U411. An example is U159, unused methyl ethyl ketone.

Characteristic Wastes. Even if your waste does not appear on one of the hazardous waste lists, it still might be regulated as hazardous waste if it exhibits one or more of the following characteristics:

- **Ignitability**. Ignitable wastes create fires under certain conditions or are spontaneously combustible, and have a flash point less than 60°C (140°F). One example is spent solvents. The waste code for these materials is D001.
- **Corrosivity**. Corrosive wastes are acids or bases that are capable of corroding metal containers, such as storage tanks, drums, and barrels. The waste code for these materials is D002. C&D debris does not typically include corrosive wastes.
- **Reactivity**. Reactive wastes are unstable under "normal" conditions. They can cause explosions, toxic fumes, gases, or vapors when mixed with water. The waste code for these materials is D003. C&D debris does not typically include reactive wastes.
- **Toxicity**. Toxic wastes are harmful or fatal when ingested or absorbed. When toxic wastes are disposed of on land, contaminated liquid might drain (leach) from the waste and pollute ground water. Toxicity is defined through a laboratory procedure called the Toxicity Characteristic Leaching Procedure (TCLP). Examples include trichloroethylene, asphalt wastes, and lead pipe. The waste codes for these materials range from D004 to D059.

Do Exclusions Exist?

The RCRA regulations contain many exclusions for wastes and waste management practices that are not considered to be hazardous.

What Are Some Typical RCRA Wastes in C&D Debris?

The following table shows some examples of C&D wastes that may be considered hazarous according to EPA's definition.

Most construction, demolition, and renovation companies are considered CESQGs. CESQGs must comply with three basic waste management requirements to remain exempt from the full hazardous waste regulations that apply to generators of larger quantities of hazardous waste (SQGs and LQGs).

(1) Identify all hazardous waste that you generate on site. Test procedures are described in an EPA document, *Test Methods for the Evaluation of Solid Waste, Physical/ Chemical Methods*, SW-846. (See the SW-846 Web site at <www.epa.gov/sw-846/sw846.htm> for more information.) You can also use your knowledge of the waste to make this determination; for example, you might know that the spent solvent you are disposing of is an ignitable hazardous waste, and therefore, you would not have to test for the solvent's flashpoint.

(2) You may not store more than 2,200 lbs (1,000 kg) of hazardous waste on site at any time.

(3) You must ensure delivery of your hazardous waste to an offsite treatment or disposal facility that is:

- A state or federally regulated hazardous waste management treatment, storage, or disposal facility.
- A facility permitted, licensed, or registered by a state to manage municipal or industrial solid waste.
- A facility that uses, reuses, or legitimately recycles the waste (or treats the waste prior to use, reuse, or recycling).
- A "universal waste" handler or destination facility subject to the universal waste requirements of 40 CFR Part 273. (Universal wastes include certain batteries, recalled and collected pesticides, mercury-containing thermostats, and mercury-containing fluorescent bulbs.)

Note that some states require CESQGs to obtain an EPA identification number and comply with certain storage standards. For more information refer to the Code of Federal Regulations (DCFR) Title 40 Parts 260 to 279, or visit <www.epa.gov/epaoswer/hazwaste/sqg/cesqg.htm>.

Activity	Wastes Generated	Possible RCRA Waste Codes
Land-Clearing, Wrecking, and Demolition	Ignitable or toxic wreckage and debris, and lead pipe.	D001 (ignitable wreckage and debris), D008 (lead pipe, toxic wreckage and lead-based paint debris), D009 (mercury-containing fluorescent lamps), D023-D026 (toxic wreckage and debris containing cresols).
Heavy Construction	Asphalt wastes, petroleum distillates, and used oil.(Asphalt is widely recycled.)	D001 (asphalt wastes, petroleum distillates, used oil sent for disposal), D004 (arsenic), D006-D008 (used oil sent for disposal containing cadmium, chromium, or lead), D018 (asphalt wastes containing benzene).
Carpentry and Floorwork	Acetone, adhesives, coatings, methylene chloride, methyl ethyl ketone (MEK), methyl isobutyl ketone (MIK), mineral spirits, solvents, toluene, treated wood, trichloroethylene, and xylene.	D001 (acetone, adhesives, coatings, methylene chloride, MEK, MIK, mineral spirits, solvents, trichloroethylene, toluene, xylene), D004 (treated wood), D023-D026, D037 (treated wood), D035 (MEK), D040 (trichloroethylene), F001 or F002 (trichloroethylene, methylene chloride), F003 (acetone, xylene, MIK), F005 (toluene, MEK), U002 (unused acetone), U159 (unused MEK), U161 (unused MIK), U239 (unused xylene), U220 (unused toluene), U080 (unused methylene chloride).
Paint Preparation and Painting	Acetone, chlorobenzene, glazes, methanol, MEK, methylene chloride, paint, petroleum distillates, pigments, solvents, stripping compounds, toluene, and wastewater.	D001 (acetone, chlorobenzene, glazes, methanol, MEK, methylene chloride, paint, petroleum distillates, solvents, stripping compounds, toluene, wastewater), D007 (chromium pigments), D008 (lead pigments), D021 (chlorobenzene), D035 (MEK), F001 and F002 (chlorobenzene), F003 (acetone, methanol), F005 (MEK, toluene), U002 (unused acetone), U037 (unused chlorobenzene), U159 (unused MEK), U220 (unused toluene).
Specialty Contracting Activities	Acetone, adhesives, coatings, hexachloroethane, kerosene, MEK, MIK, pigments, solvents, toluene, wastewater, and xylene.	D001 (acetone, adhesives, coatings, MEK, MIK, kerosene, solvents, toluene, wastewater, xylene), D007 (chromium pigments), D008 (lead pigments), D034 (hexachloroethane), D035 (MEK), F003 (acetone, MIK, xylene), F005 (toluene, MEK), U002 (unused acetone), U131 (unused hexachloroethane), U159 (unused MEK), U161 (unused MIK), U220 (unused toluene), U239 (unused xylene).

Special Issues in C&D Debris

How Should I Manage C&D Debris Containing Mercury?

When preparing for demolition, contractors should be aware that some items inside buildings contain mercury, which is an extremely persistent and toxic human health and environmental threat. Contractors should carefully salvage these materials for proper recycling to prevent mercury contamination.

Mercury-containing wastes must be managed and disposed of as RCRA hazardous wastes if they meet the toxicity characteristic for mercury (waste code D009). Mercury-containing batteries, thermostats, and lamps may be managed under the Universal Waste Program, provided the state does not regulate the wastes more stringently. Items that contain mercury commonly found in buildings include:

- Fluorescent lamps, mercury vapor lamps, metal halide lamps, high pressure sodium lamps, and neon lamps. See <www.epa.gov/epaoswer/hazwaste/id/univwast.htm#lam>.
- Thermostat probes (found in gas-fired appliances with pilot lights such as ranges, ovens, clothes dryers, water heaters, furnaces, and space heaters).
- Thermostats, aquastats, pressurestats, firestats, monometers, and thermometers.
- Smoke detectors, emergency lighting systems, and security systems and alarms.
- Parts of sprinkler systems and coal conveyer systems.
- Elevator control panels.
- Exit signs.
- Barometers.
- Silent wall switches.
- Cathode ray tubes.
- Old paint.

Salvaging mercury-containing products not only keeps them from contaminating the soil and surface waters near building demolition sites, but it also prevents them from winding up in landfills or recycling systems. Waste combustors and hazardous waste treatment incinerators are tightly regulated and must comply with all EPA standards on air emissions.

Remember the following guidelines:

- Isolate items that contain mercury and take them to a mercury recycler or consolidation site. Contact your county or state environmental or solid waste office for services available in your area. Do not remove the mercury from items. Label and store the mercury-containing devices to ensure proper handling and disposal.
- Never crush fluorescent lamps because mercury could be released.
- Contractors should be aware that specialty buildings, such as hospitals, clinics, laboratories, and dental offices, might have additional mercury sources.

REMEMBER TO CHECK WITH THE APPROPRIATE STATE AND LOCAL AUTHORITIES ABOUT HOW TO PROPERLY HANDLE AND DISPOSE OF MATERIALS IN YOUR AREA.

WHAT IS THE UNIVERSAL WASTE PROGRAM?

The Universal Waste Program is designed reduce the amount of hazardous waste items in the municipal solid waste strea to encourage recycling and proper disposal of certain common hazardous wastes, and to reduce the regulator burden on businesses that generate these wastes. Specifically, it streamlines tl requirements related to not fication, labeling, accumula tion time limits, employee training, response to release offsite shipments, tracking, exports, and transportation "universal waste."

Wastes that are considered federal universal waste include batteries, agricultur pesticides, thermostats, lamps, cathode ray tubes, ar mercury-containing equipment. Construction companies that handle large quant ties of these federal univers wastes can take advantage o these special requirements when handling hazardous materials. The rule does no apply to CESQGs (busines es that generate less than 10 kilograms of universal wast per month), although EPA encourages these businesses to participate voluntarily in collection and recycling pro grams. Additionally, companies should check with thei state agency regarding the implementation of the Universal Waste Rule in the state.

For more information, visit EPA's Universal Waste Web page at <www.epa.gov epaoswer/hazwaste/id/

How Should I Manage Lead-Based Paint Debris?

Lead-based paint has been banned since 1978, but many older structures still have this paint on walls, woodwork, siding, windows, and doors. Construction and demolition workers can be exposed to lead contamination by cutting, scraping, sanding, heating, burning, or blasting lead-based paint from building components, metal bridges and metal storage tanks. In addition to exposure to workers, lead-based paint debris or dust can also make its way into soil, potentially contaminating surface waters. Lead poisoning is a serious health threat for adults and is especially damaging to young children. It can cause anemia, reproductive disorders, and damage to the kidney, liver, and brain. Lead is absorbed into the bloodstream, soft tissue, and bones and teeth, where it breaks down extremely slowly (from 50 days to 50 years).

C&D debris contaminated with lead-based paint must be managed in different ways depending upon where the debris came from and what it is.

C&D debris from commercial or industrial sites that is contaminated with lead-based paint must be managed as RCRA hazardous waste if a representative sample meets the toxicity characteristic (D008).

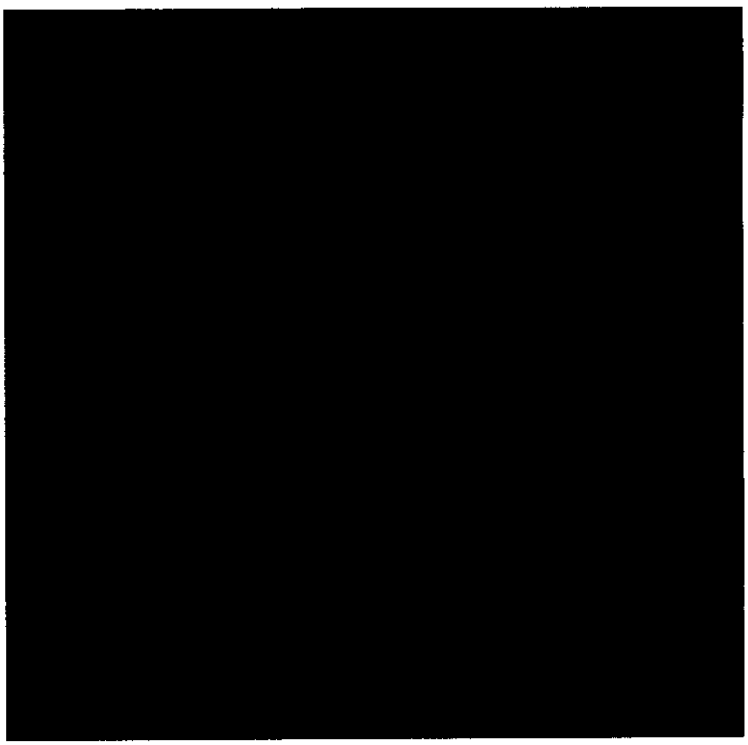
Lead-based paint waste from removal or remediation activities, such as debris, paint chips, dust, and sludges, that exhibit the toxicity characteristic must be managed and disposed of as a RCRA hazardous waste. However, lead-based paint being removed from households is excluded because it is considered household waste, not hazardous waste.

Contractors working to renovate, remodel, or abate lead-based paint in homes are allowed to dispose of lead-based paint waste as household garbage. Contractors who generate the waste in this manner do not need to determine whether the waste meets the toxicity characteristic under RCRA, but should contact their state agency for possible additional requirements. This waste normally consists of building parts, such as doors, window frames, painted woodwork, and paint chips.

Anyone handling lead-based paint or lead-based paint debris—even if it is not technically considered hazardous waste—should follow several guidelines to protect their health and safety:

- Collect paint chips, dust, dirt, and rubble in plastic trash bags for disposal.
- Store larger lead-based paint building parts in containers until ready for disposal.
- Use a covered dumpster (such as a roll-off container) to store lead-based paint debris until the job is completed.
- Contact your local solid waste agency to determine where and how to dispose of lead-based paint debris.
- Do not smoke, eat, or drink around lead-based paint work.
- Always wash your hands and face before smoking, eating, or drinking.
- Do not wear clothes home that have been covered in lead-based paint dust.

Contractors working for publicly funded rehabilitation or renovation projects in public housing must follow the Department of Housing and Urban Development (HUD) guidelines for lead-based paint. They must also follow EPA rules regarding training and certification and Occupational Safety and Health Administration (OSHA) rules regarding hazard communication, personal protective equipment, testing of blood lead levels, and other special procedures.



How Should I Manage Asbestos Debris?

Asbestos-containing materials (ACMs) have been widely used for fire resistance and insulation in building construction since World War II. ACMs are most commonly found in:

- Insulation (blown, rolled, and wrapped).
- Resilient floor covering (tiles).
- Asbestos siding shingles.
- Asbestos cement products.
- Asphalt roofing products.

Because it can cause a variety of health issues, including scarring of the lung tissue and certain types of cancer, asbestos is strictly regulated by both EPA and OSHA. The Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP), promulgated under the Clean Air Act, is the regulation most commonly applied to the construction industry (see page 17). Under NESHAP, some types of ACM are regulated, while others are not subject to special disposal requirements. The Asbestos NESHAP places ACM in three distinct categories.

Friable ACM

Friable ACMs are able to be crumbled under hand pressure and include sprayed-applied fireproofing or insulation. Friable ACMs are always regulated under NESHAP when they are disturbed during demolition or renovation.

Category 1 Non-Friable ACM

These materials, including floor tiles, are not considered regulated ACM and do not need to be removed prior to demolition or renovation. However, if they are subjected to sanding, grinding, cutting, or abrading, are in poor condition and friable, or if they will be burned, Category 1 Non-Friable ACM is considered regulated ACM and must be removed accordingly.

Category 2 Non-Friable ACM

The treatment of Category 2 non-friable ACMs, which includes asbestos cement, should be evaluated on a case-by-case basis. If these materials are likely to be crushed, pulverized, or reduced to powder during demolition or renovation, they should be removed prior to project start or treated as regulated ACM if exposed to these conditions.

If regulated ACM is present at a site designated for demolition or renovation, it must be properly packaged in leak-tight containers or wrapped and disposed of at an approved or licensed disposal site. State and local agencies that regulate asbestos removal can supply a list of disposal sites, and can be found in the government pages of local telephone directories. NESHAP also requires contractors to follow specific work practices when working with ACMs to ensure adherance to its zero visible air emissions standard for asbestos removal. Non-regulated ACM may be disposed of in landfills that accept ordinary demolition waste.

Regardless of whether asbestos is present at a demolition or renovation site, NESHAP regulations require contractors to submit a written notice to the state or local pollution control agency or to the EPA Regional Office 10 working days prior to the start of construction activities. Some EPA Regions require that both EPA and the state or local office be notified. Additionally, the building site must be inspected by a certified asbestos inspector, and owners and operators must have samples of materials suspected of containing ACM collected and tested prior to the start of construction activities.

In addition to NESHAP regulations, some states also have additional asbestos requirements which should also be considered during demolition and renovation projects.

Managers of construction projects can use the following checklist to determine hazardous waste requirements under RCRA. You should also check state and loc hazardous waste requirements for construction projects.

What type of hazardous waste generator are you?

CESQG	If you generate less than 100 kilograms (220 pounds) of hazardous waste per month, you are a Conditionally Exempt Small Quantity Generator (CESQG). Most construction contractors do not fall under the federal definition. CESQG contractors may be subject to state and local requirement:
SQG	If you generate between 100 and 1,000 kilograms (220-2,200 pounds) of hazardous waste per month, you area Small Quantity Generator (SQG).
LQG	If you generate more than 1,000 kilograms (2,200 pounds) of hazardous waste per month, you are a Large Quantity Generator (LQG).

Hazardous Waste Identification	✓	✓	• Identify whether you generate hazardous waste to determine if you are subject to RCRA hazardous waste regulations. Test procedures are described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, SW-846," or tests can be performed by a local laboratory.
EPA Identification Number	✓	✓	• Obtain an EPA Identification number (i.e., a RCRA hazardous waste generator number) for each facility within your company. EPA and states use this 12-character identification number to track hazardous waste activities. To get an EPA identification number, submit Form 8700-12 (Notification of Regulated Waste Activity), which is provided by your state hazardous waste agency. This is a one-time notification. Contact your state regarding the need for renotification if circumstances at your facility change.
Hazardous Waste Accumulation	✓		• Waste must be properly accumulated in containers or tanks.
		✓	• Waste must be properly accumulated in containers, tanks, drip pads, or containment buildings.
	✓	✓	• Hazardous waste containers must be closed, marked as "Hazardous Waste," and marked with the date accumulation began.
Hazardous Waste Storage	✓	✓	• Store hazardous waste containers in a secure location.
	✓	✓	• Perform weekly inspections of your hazardous waste containers.
			• You must have secondary containment measures in your hazardous waste storage area.
	✓	✓	• Hazardous waste storage areas must have fire suppression equipment.

	✓	✓	• Before being transported, waste must be packaged, labeled, and marked in accordance with applicable Department of Transportation (DOT) requirements. Call the DOT hazardous materials information hotline at (202) 366-4488 for information.
	✓	✓	• Properly label and mark your hazardous waste prior to transport.
	✓	✓	• Make sure that the transporter has the proper placards to identify the characteristics and dangers associated with your waste.
	✓	✓	• Complete and sign the Uniform Hazardous Waste Manifest (see below).
fest irements	✓	✓	• Include the name, address, and EPA ID number of the hazardous waste generator (your site), the transporter, and designated TSDF on the manifest.
	✓	✓	• Include a description of the waste's hazards on the manifest as required by DOT rules.
	✓	✓	• Provide the quantities of the waste being transported and the types of containers on the manifest.
	✓	✓	• Complete the certification.
	✓	✓	• Obtain a copy of the signed and dated manifest from the TSDF within 45 days of shipment for LQGs or within 60 days for SQGs. If you did not receive a copy, you must submit an "exception report" to EPA.
aredness Prevention	✓		• Your site must have a specified emergency response procedure. (Note: a written contingency plan is not required.)
	✓		• Your site's basic safety information must be readily accessible to employees.
	✓		• Site personnel familiar must be familiar with proper handling of hazardous waste and site emergency procedures.
		✓	• Your site must have an established personnel training program to educate workers on the proper handling of hazardous waste.
	✓	✓	• You must have an emergency coordinator on site or on call at all times.
Oil dards	✓	✓	• If you generate used oil, you are subject to a separate set of management standards from the hazardous waste management standards if the used oil will be recycled. If the used oil is to be treated and disposed of, perform the hazardous waste identification step listed above.

1

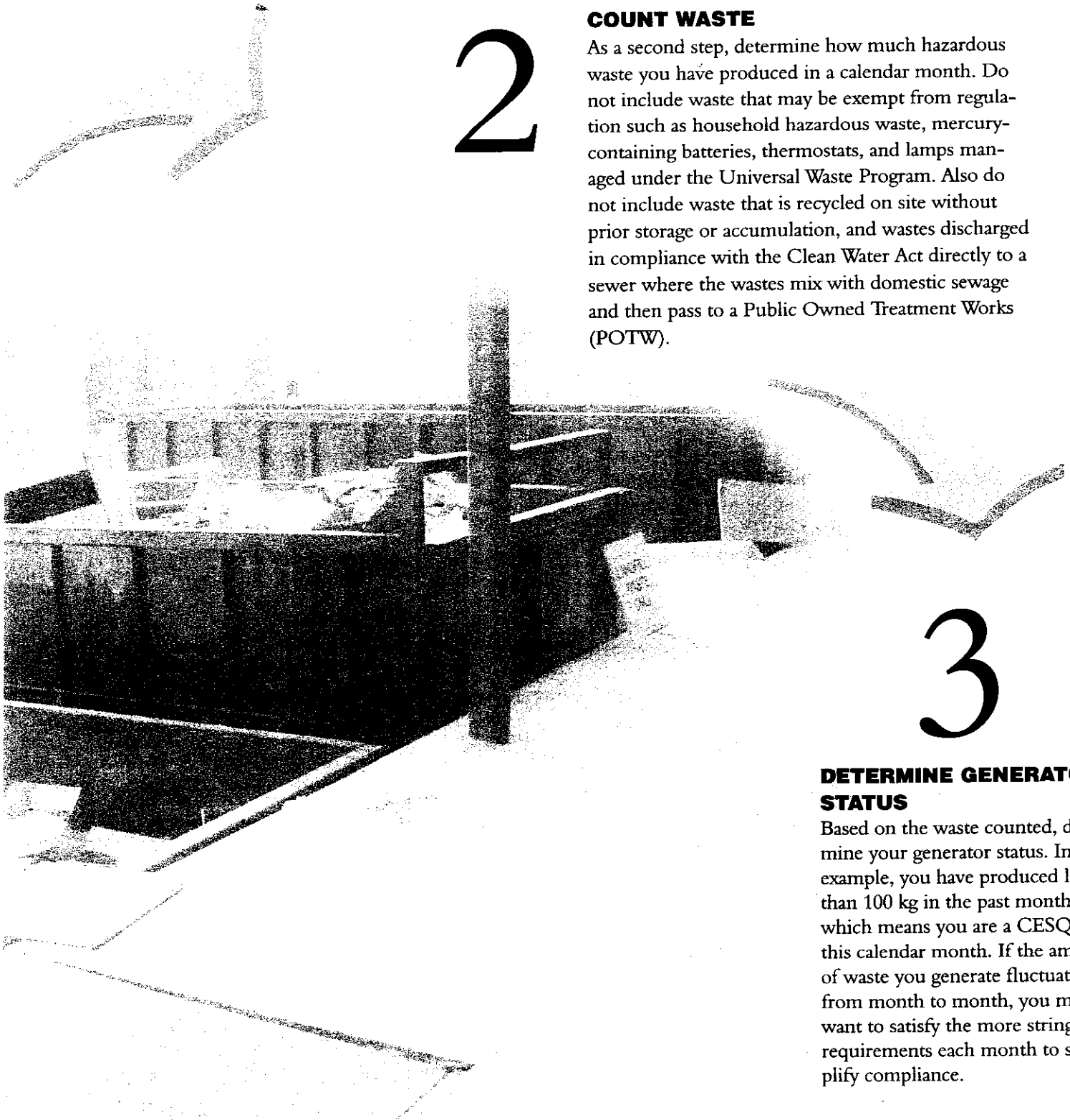
IDENTIFY WASTE

By running tests or using knowledge of the waste, id
whether the waste solvents and paints are hazardous.
on these analyses, you determine that the appropriate
RCRA hazardous waste code is D001 (ignitable waste

5

PLACE WASTE IN ACCUMULATION UNIT

If the waste is not reusable, exchangeable, or recyclable, ensure that it is delivered to one of several types of facilities to which CESQGs may send wastes (e.g., hazardous waste TSDFs, certain state licensed or permitted municipal solid waste facilities, or recyclers).



2

COUNT WASTE

As a second step, determine how much hazardous waste you have produced in a calendar month. Do not include waste that may be exempt from regulation such as household hazardous waste, mercury-containing batteries, thermostats, and lamps managed under the Universal Waste Program. Also do not include waste that is recycled on site without prior storage or accumulation, and wastes discharged in compliance with the Clean Water Act directly to a sewer where the wastes mix with domestic sewage and then pass to a Public Owned Treatment Works (POTW).

3

DETERMINE GENERATOR STATUS

Based on the waste counted, determine your generator status. In this example, you have produced less than 100 kg in the past month, which means you are a CESQG in this calendar month. If the amount of waste you generate fluctuates from month to month, you might want to satisfy the more stringent requirements each month to simplify compliance.

4

OBTAIN EPA IDENTIFICATION NUMBER

Before shipping waste off site for treatment, storage, or disposal, you must package, label, and mark waste containers in accordance with all applicable DOT requirements. For more information, call the DOT Hotline at 800 467-4922.

Amount of Waste You Generate

A significant amount of money can be saved by those companies that take advantage of the various reuse, exchange, recycling, or donation opportunities that exist. By reducing the amount of C&D debris that is thrown away, companies also reduce their regulatory burden by avoiding the disposal of items that could be considered hazardous waste.

The following are several options for reducing the amount of C&D debris requiring disposal:

DECONSTRUCTION AND REUSE: Deconstruction means the selective disassembly of buildings to facilitate the reuse or recycling of valuable materials. This practice can involve the recovery of materials such as wood, structural brick, and highly functional finished components like windows, doors, cabinets, and decorative trim. Deconstruction is labor-intensive but can produce environmental, economic, and social benefits.

Reuse/Refurbish/Donate: Functional building or architectural components, in addition to scrap materials, can often be reused or refurbished. Some items could be used by your company for your next building job, and many items can be sold to used building materials stores, high-end salvaged architectural materials exchanges, salvaged wood distributors, scrap recyclers, individual homeowners, waste exchanges, or other outlets. Consider placing an ad in the local newspaper for excess salvage materials. If you can't sell the items you have salvaged, some of them may be donated to at least save money on disposal. Also, ask homeowners if they would like to keep clean, usable materials for their own future projects.

Recycle: Some materials, like the ones in the table on page 15, can be sold to scrap recycling businesses or through material exchanges. Sort materials as they are generated to maximize their recyclability and reuse. This practice is becoming increasingly cost efficient as processing and disposal costs rise. Visit <www.epa.gov/jtr/comm/> for a complete list and more information.

Be sure to prevent hazardous contamination of materials destined for reuse or recycling. Consider accumulating various wastes separately to facilitate recycling. If you are storing waste that may be hazardous prior to recycling, you may have to comply with certain RCRA requirements.

PREVENT POLLUTION: Contractors can take several other pollution prevention and waste reduction measures as shown in the table. Some of these suggestions require contractors to make decisions prior to arriving at the job site, while others involve onsite activities.

BUYING GREEN: The recycling process is not complete until you've purchased products made with recycled content.

Note that RCRA specifies that the federal government and its contractors must purchase certain items with recovered material (recycled) content. Based on extensive research, EPA has designated several such construction products in the Comprehensive Procurement Guideline (CPG). Visit <www.epa.gov/cpg> for a complete list and more information. Many additional construction products are commercially available with recycled content or alternative, less toxic materials.

Sell or Donate for Reuse	■ Cabinets, doors, plumbing, lighting fixtures, tile carpeting, door hinges, wall paneling, mirrors, stairway bannisters, construcion-grade lumber, ornamental wood trim, clay tiles and bricks, metals such as copper and aluminum electrical hardware or wire, and some plumbing hardware. ■ Historical fabric and architectural items from historic buildings. ■ Old-growth timbers. ■ Clean, uncontaminated concrete waste is used in some municipalities as aggregate for soil stabilization or reprocessed for use in roads, foundation stone, and other projects. Check with your local licensed landfill operator, earthmovers, or road construction personnel. Rubble (concrete, bricks, cinderblock, and certain types of tile) can be crushed and sieved for use as an aggregate.
Reuse on Site	■ Joist cut-offs can be cut up and used as stakes for forming or for headers around floor openings. Wood scraps can be used as bridging, splicers, wall components, filler, scabs, and spacers. ■ Leftover rigid insulation can be used as ventilation baffles or installed into house envelopes at joist header assemblies. ■ Asphalt can be reused on site by heating pavement, injecting petroleum distillates, grinding, mixing, and rerolling. It is estimated that 86 million tons of asphalt are recycled each year.
Recycle	■ Metal recyclers often take aluminum or copper wiring scrap, other wiring fixtures, conduit, iron, copper, brass, steel, lead piping, and appliances, such as refrigerators, freezers, washers, and stoves. ■ Uncontaminated scrap lumber or pallets can be recycled into furniture or chipped and used for landscape mulch, compost, animal bedding, boiler fuel, or engineered building products. Sometimes pallets can be returned to the vendors. ■ Gypsum scraps can be recycled in some locations. ■ Glass can be recycled into fiberglass or used in place of sand in paving material. ■ Asphalt shingles can be used in asphalt highway and road paving and pothole repair. (visit <shinglerecycling.org>). ■ Thermal insulation (fiberglass, cellulose, rigid foam, foam-in-place). ■ Floor tiles (heavy duty/commercial use). ■ Carpet and carpet cushion.
Prevent Pollution and Reduce Waste	■ Ask drywall suppliers to back-haul scrap drywall for use in new drywall production. ■ Keep drywall cutoffs easily accessible to use for small spaces. ■ Replace toxic solvents, adhesives, and coatings with less hazardous products, such as water-based or low volatile organic compound (VOC) paint, adhesives, joint compounds, and sealants. ■ Reclaim solvents onsite for reuse, or contract with a recycling company. ■ To minimize spills while painting, clean spray guns by immersing only the front end in solvent. Clean spray guns by passing solvent through gun and into a container, rather than spraying cleaning solvent into the air. ■ Prepare smaller test batches of solvents and coatings. ■ Cover solvent, adhesive, and coating containers to prevent product evaporation. ■ Use solvent-based coatings with high levels of solids to reduce air emissions. ■ Arrange painting schedules to reduce wastes from cleaning equipment between tasks, shifts, or color changes.
Buy Green	■ Thermal insulation (fiberglass, cellulose, rigid foam, foam-in-place). ■ Floor tiles (heavy duty/commercial use). ■ Carpet and carpet cushion. ■ Recycled-content siding (made of recycled cellulose fiber and concrete). ■ Salvaged wood floors and trim. ■ Recycled steel studs and steel roofing. ■ Strawboard for interior walls (made of straw pressed together with a low VOC, formaldehyde-free adhesive). ■ Recycled-content roofing materials.

Amount of Waste You Generate

How Should I Manage My Oil?

In the construction and demolition industry, many types of vehicles and equipment require the use of motor oil. Recycling is the preferred way of handling used oil to protect the environment and to conserve natural resources. Used oil can be re-refined into lubricants, re-processed into fuel oil, and used as raw materials for the refining and petrochemical industries. Used oil filters contain reusable scrap steel that producers can use as scrap feed. If you maintain your own vehicles, take the following steps to ensure the environment is protected by recycling this valuable resource:

- Follow good housekeeping practices and your state's used oil management standards.
- Do not mix used motor oil with anything.
- Keep clean-up materials such as rags, sand, booms, or clay kitty litter close at hand.
- Contain spilled oil by spreading sand or other clean-up material over and around the used motor oil.
- Buy and maintain reusable clean-up materials when possible.
- Recycle used oil clean-up materials or send them to an energy recovery facility when possible.
- Reduce waste and save money by using extraction devices (e.g., centrifuges, wringers and compactors) to recover used motor oil from reusable clean-up materials.
- Remove used motor oil from rags or other clean-up materials and recycle the motor oil as you normally would.
- Put used cleaning materials in the trash when they do not contain any free-flowing oil and when they can no longer be reused or recycled.
- Send used motor oil to a re-refiner whenever possible.
- Send used oil filters to a recycler whenever possible.

The recycling loop isn't complete until the materials that are sent for recycling are remanufactured into new products and purchased by consumers. Whenever possible, purchase re-refined motor oil for vehicles and equipment. Search EPA's Comprehensive Procurement Guidelines database for a listing of re-refined motor oil dealers in your area <www.epa.gov/cpg>.

How Should I Manage My Used Tires?

Typically, the many vehicles used in the construction and demolition industry will outlive their tires, requiring users to find replacements when the original tires are no longer functional. Discarded tires have always been and continue to be a serious disposal problem, taking up large amounts of landfill space and posing threats to human health and the environment. Salvaging used tires not only keeps them out of landfills, but provides the opportunity to save money on the replacements.

When tires becomes worn, take them to a retreader or other tire recycler. Technically, all types of tires can be retreaded. Retreading involves adding a new layer of tread to a used tire. Retreading tires not only saves landfill space, but also conserves the oil and energy used to make new tires. Retread tires cost between 30 percent and 50 percent less than a new tire. Search EPA's Comprehensive Procurement Guidelines database for a listing of retread tire manufacturers in your area <www.epa.gov/cpg>.

If tire retreading is not an option, look into the various state and private organizations that offer tire recycling programs. Recycled tires can be used in creating running tracks, playground surfaces, and shoe soles. Scrap tires can also be used in flooring/matting and as a soil amendment. Ground tires provide cushioning and maintain traction and shape; for this reason, they are increasingly used by highway departments as an asphalt additive to help extend the life of roads, and as low density aggregate in embankment and fill applications. See EPA's consolidated tire web site at <www.epa.gov/epaoswer/non-hw/muncpl/tires>.

Other Environmental Laws Affecting the Construction Industry

THE CLEAN WATER ACT

The Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), is the federal program designed to restore and maintain the integrity of the nation's surface waters. CWA controls direct discharges to surface waters (e.g., through a pipe) from industrial processes or stormwater systems associated with an industrial activity. It also regulates indirect discharges, or discharges to publicly owned treatment works (POTWs) through a public sewer system, by requiring industrial facilities to pretreat their waste before discharging to a public sewer. Industrial pollutants from the construction industry that might be regulated by CWA include solvents and adhesives.

CWA Resources:

- 40 CFR Parts 100 to 129 and 400 to 503.
- Internet access: <www.epa.gov/OW/>
- EPA Office of Water: (202) 564-2240
- Your state water authority, Regional EPA office, and local POTW.

OIL POLLUTION PREVENTION UNDER THE CWA

The Oil Pollution Prevention regulations were promulgated under the authority of the CWA. These regulations establish requirements for facilities to prevent oil spills from reaching the navigable waters of the United States or adjoining shorelines. The regulations apply to non-transportation-related facilities with a specific aboveground or underground oil storage capacity that, because of their location, can reasonably be expected to discharge oil into the navigable waters of the United States.

Oil Pollution Prevention Regulation Resources:

- 40 CFR Part 112
- Internet Access: <www.epa.gov/oilspill/>

THE CLEAN AIR ACT

The Clean Air Act (CAA) regulates air pollution. It includes national emission standards for new stationary sources within particular industrial categories. It also includes national emission standards, which are designed to control the emissions of particular hazardous air pollutants (HAPs). Construction sites generate some HAPs, such as volatile organic compounds in organic solvents and paints. The CAA also seeks to prevent the accidental release of certain hazardous chemicals and to minimize the consequences of such releases.

CAA Resources:

- 40 CFR Parts 50 to 99
- Control Technology Center, Office of Air Quality, Planning and Standards, EPA, General Information: (919) 541-0800; Publications (919) 541-2777
- Internet Access: <www.epa.gov/ttn/catc>

ASBESTOS NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

The Clean Air Act also regulates asbestos renovations and demolitions. The Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP) relating to demolitions and renovations is a work practice standard, meaning it does not place specific numerical emission limitations for asbestos fibers on asbestos demolitions and removals. Instead, it requires specific actions to be taken to control emissions. For more information about the asbestos NESHAP, asbestos-related renovation or demolition in buildings other than schools, or transport and disposal of asbestos waste, contact the Small Business Asbestos Ombudsman at (800) 368-5888 or <www.epa.gov/sbo>. For questions regarding asbestos in private homes, contact your state or regional EPA asbestos representative at <www.epa.gov/opptintr/asbestos/contactus.htm>.

CFR GUIDE TO HAZARDOUS WASTE REGULATIONS

To review the RCRA regulations referred to in this document, consult the following citations in 40 CFR:

- Part 260—Hazardous waste management system: general.
- Part 261— Identification and listing of hazardous waste.
- Part 262— Standards applicable to generators of hazardous waste.
- Part 263— Standards applicable to transporters of hazardous waste.
- Part 264— Standards for owners and operators of hazardous waste and specific types of hazardous waste management facilities.
- Part 265— Interim status standards for owners and operators of TSDFs.
- Part 266— Standards for the management of specific hazardous wastes and specific types of hazardous waste management facilities.
- Part 268— Land disposal restrictions.
- Part 270— EPA administered permit programs: the Hazardous Waste Permit Program.

- Part 271— Requirements for authorization of state hazardous waste programs.
- Part 272— Approved state hazardous waste management programs.
- Part 273— Standards for universal waste management.
- Part 279— Standards for the management of used oil.

FOR MORE INFORMATION

For additional information on any of these laws, visit <www.cicacenter.org>.

AFFECTING THE CONSTRUCTION INDUSTRY

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA OR SUPERFUND)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, commonly known as Superfund, authorizes EPA to respond to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment, that might come from any source. Superfund also grants EPA the authority to force parties responsible for environmental contamination to clean it up or to reimburse response costs incurred by EPA. The most important part of this act applicable to construction sites is the hazardous substance release reporting requirement. The person in charge at your business must report to the National Response Center (800 424-8802), any release of a hazardous substance that exceeds a designated "reportable quantity" for that substance within a 24-hour period.

Superfund Resources:

- Internet Access: <www.epa.gov/superfund/>

THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT

The Superfund Amendments and Reauthorization Act (SARA) of 1986 created the Emergency Planning and Community Right-to-Know Act (EPCRA). This law was designed to improve community access to information about potential chemical hazards and to facilitate the development of chemical emergency response plans by state and local governments. The EPCRA regulations establish several types of reporting obligations for facilities that store or manage specified chemicals. Certain notification requirements apply to construction sites that use or store extremely hazardous substances. Also, many of the chemicals used by the construction industry, such as solvents, adhesives, and pigments, may be considered hazardous chemicals as defined by the Occupational Safety and Health Act (OSHA). Contact your local OSHA office if you have questions about whether the chemicals used in your construction business are considered hazardous under OSHA.

EPCRA Resources:

- 40 CFR Parts 350 to 372
- The State Emergency Response Commission <www.epa.gov/ceppo/serclist.htm>.
- Internet Access: <www.epa.gov/tri/> and <www.epa.gov/swercepp/>

SAFE DRINKING WATER ACT

The Safe Drinking Water Act (SDWA) mandates that EPA establish regulations to protect human health from contaminants present in drinking water. Under the authority of the SDWA, EPA developed national drinking water standards and created a joint federal-state system to ensure compliance with these standards. EPA also regulates underground injection of liquid wastes under the SDWA to protect underground sources of drinking water.

SDWA Resources:

- 40 CFR Parts 141-148
- SDWA Hotline: (800) 426-4791
- Internet Access: <www.epa.gov/ogwdw/>

TOXIC SUBSTANCES CONTROL ACT

The Toxic Substances Control Act (TSCA) allows EPA to collect data on chemicals to evaluate, assess, mitigate, and control risks which may be posed by their manufacture, processing, and use. Construction sites may be affected by some of the TSCA requirements.

TSCA Resources:

- 40 CFR Parts 702 to 799
- TSCA Hotline: (202) 554-1404
- Internet Access: <www.epa.gov/oppts/>

Contacts and Resources

U.S. EPA RESOURCES

EPA's Construction and Demolition Debris Web Page

Web: www.epa.gov/epaoswer/non-hw/debris

Defines construction and demolition debris, provides background information, and provides a link to EPA's report, entitled "Characterization of Building-Related Construction and Demolition Debris in the United States."

Web: www.epa.gov/reg5rcra/wptdiv/solidwaste/construction.htm

The Region 5 web site provides information on recycling waste at construction and demolition sites.

Managing Your Environmental Responsibilities—A Planning Guide for Construction and Development

Available at www.cicacenter.org

RCRA Hazardous Waste Resources

Web: www.epa.gov/osw/topics.htm

Provides an alphabetical index of waste topics. Links to other sections of the EPA site for more information.

RCRA Information Center

U.S. Environmental Protection Agency
RCRA Information Center (5305W)
1200 Pennsylvania Avenue, NW
EPA-East
1301 Constitution Ave., NW
Room B102
Washington, DC 20460
Phone: (202) 566-0270
Fax: (202) 566-0272
E-mail: rcra-docket@epamail.epa.gov

Holds and provides public access to all regulatory materials on RCRA and distributes technical and non-technical information on RCRA issues.

Envirosense

Web: es.epa.gov/index.html

An EPA site containing technical, policy, and general information on pollution prevention topics.

Headquarters Library

U.S. Environmental Protection Agency
Headquarters Library
1200 Pennsylvania Avenue, NW (3404T)
Washington, DC 20460
Phone: (202) 566-0556
Fax: (202) 566-0562
E-mail: library-hq@epa.gov
Web: www.epa.gov/natlibra/hqirc/about.htm

Maintains environmental reference materials for EPA staff and the general public, including books, journals, abstracts, newsletters, and audiovisual materials generated by government agencies and the private sector. Also provides access to online computer service bulletin boards and CD/ROM systems.

Jobs Through Recycling Construction Web Page

information on recycling markets for construction and demolition debris.

Comprehensive Procurement Guidelines

Web: www.epa.gov/cpg

EPA's Comprehensive Procurement Guideline Program specifies recycled-content products, including construction materials, for federal government use.

National Lead Information Center

Phone: (800) 424-LEAD (5323)
Fax: (585) 232-3111
Web: www.epa.gov/lead/nlic.htm

Distributes information about lead hazards and their prevention.

Pollution Prevention Information Clearinghouse (PPIC)

U.S. Environmental Protection Agency
Pollution Prevention Information Clearinghouse (PPIC)
1200 Pennsylvania Avenue, NW (7409M)
Washington, DC 20460
Phone: (202) 566-0755
Fax: (202) 564-8899
Email: ppic@epa.gov
Web: www.epa.gov/opptintr/library/ppicdist.htm

A free, nonregulatory EPA service dedicated to reducing or eliminating industrial pollutants through technology transfer, education, and public awareness. Provides links to EPA pollution prevention resources.

Small Business Ombudsman Clearinghouse/Hotline

U.S. Environmental Protection Agency
Small Business Ombudsman (2131)
1200 Pennsylvania Avenue, NW.
Washington, DC 20460
Phone: (800) 368-5888
Fax: (202) 566-2848
Web: www.smallbiz-enviroweb.org

Helps private citizens, small businesses, and smaller communities with questions on all program aspects within EPA.

OTHER FEDERAL AND STATE GOVERNMENT RESOURCES

Other Federal Resources

Army Corps Construction Engineering Research Lab

ERDC-CERL
PO Box 9005
Champaign, IL 61826-9005
Web: www.cecer.army.mil/td/tips/index.cfm

CERL, a part of the U.S. Army Engineer Research and Development Center, conducts research and development to support environmentally sustainable military installations. To carry out its mission, CERL works extensively with the academic community and public industry, facilitating technology and knowledge transfer between the private and government sectors.

Code of Federal Regulations (CFR)

Superintendent of Documents
U.S. Government Printing Office
Phone: (866) 512-1800
(202) 512-1800 (DC area)
Web: http://bookstore.gpo.gov

Most of the RCRA requirements are contained in Title 400, Parts 260 to 299 contains. Order from the U.S. Government Printing Office.

Naval Facilities Engineering Service Center

Web: http://enviro.nfesc.navy.mil

Engineering Services section of the Naval Facilities Engineering Service Center.

U.S. Department of Transportation (DOT)

Hazardous Materials Information Center
Phone: (800) 467-4922
Web: http://hazmat.dot.gov/

Provides information about DOT's hazardous materials regulations.

U.S. General Services Administration's Construction Waste Management Database

Web: www.wbdg.org/ccbref/cwm.php

Searchable online database contains nationwide information on companies that haul, collect, and process debris from construction projects.

USDA Forest Products Lab

One Gifford Pinchot Drive
Madison, WI 53726-2398
Phone: (608) 231-9200
Fax: (608) 231-9592
Web: www.fpl.fs.fed.us/documnts/recycling_wood.htm

The nation's leading wood research institute, recognized nationally and internationally as an unbiased source of information on wood science and use.

State Resources

Construction and Demolition Waste Recovery: Processing, Recycling, Burning and Transport

Web: www.dnr.state.wi.us/org/aw/air/reg/asbestos/asbes6.htm

Wisconsin Department of Natural Resources Web site outlines a number of issues related to construction and demolition waste.

Integrated Waste Management Board's Construction and Demolition (C&D) Recycling Program

Web: www.ciwmb.ca.gov/ConDemo

A California Web site that allows users to search a database of facilities within and outside of California that collect specific types of construction and demolition debris for reuse or recycling.

University of Florida Powell Center for Construction & Environment

Rinker Hall Room 304
P.O. Box 115703
Gainesville, FL 33711-5703
Contact: Dr. Charles Kibert
Phone: (352) 273-1189"
E-mail: ckibert@ufl.edu
Web: <www.cce.ufl.edu>

Fosters the implementation of sustainability principles into the creation of the built environment, ensuring that energy, water, materials, and land are utilized efficiently and that renewable and recyclable resources are emphasized.

MATERIALS EXCHANGE RESOURCES

EPA's Listing of International, National, and State-Specific Material Exchanges

Web: www.epa.gov/jtr/comm/exchange.htm

Defines and describes materials and waste exchanges, and provides contact information for state, national, and international material exchanges.

Materials Exchange Organizations Index

Web: www.recycle.net/recycle/exch

Alphabetical listing of materials exchanges.

RecycleXchange

Web: www.recyclexchange.com/exchange

Classified advertisements for buying and selling various materials, including construction and demolition debris.

Recycling Exchange Links on the Small Business Environmental Home Page

Web: www.smallbiz-enviroweb.org/pollution/recycling_links.html

Listing of helpful resource links for small businesses interested in increasing their recycling efforts.

TRADE, PROFESSIONAL, AND ADVOCACY ASSOCIATIONS AND ORGANIZATIONS

Construction Industry Compliance Assistance Center (CICA)

www.cicacenter.org

The CICA Web site provides plain language explanations of environmental rules for the construction industry and links to detailed information, including state regulations.

Construction Materials Recycling Association

P.O. Box 644
Lisle, IL 60532
Phone: (630) 585-7530
Fax: (630) 585-7593
Email: turley@cdrecycling.org
Web: www.cdrecycling.org
Contact: William Turley

A national association that promotes the recycling and reuse of construction and demolition materials.

American Association of State Highway and Transportation Officials (AASHTO)

444 North Capitol Street, NW., Suite 249
Washington, DC 20001
Phone: (202) 624-5800
Fax: (202) 624-5406
Email: info@aashto.org
Web: www.transportation.org

Association representing highway and transportation departments in all 50 states, the District of Columbia, and Puerto Rico.

Asphalt Recycling & Reclaiming Association

PMB 250
#3 Church Circle
Annapolis, MD 21401
Phone: (410) 267-0023
Fax: (410) 267-7546
E-Mai: MemberServices@arra.org
Web: www.arra.org

Serves as a network for asphalt recycling information exchange and technology transfer among professionals in the highway industry.

Associated General Contractors of America

333 John Carlyle Street
Suite 200
Alexandria, VA 22314
Phone: (703) 548-3118
Fax: (703) 548-3119
E-Mail: info@agc.org
Web: www.agc.org

Organization of construction contractors and industry-related companies dedicated to improving the construction industry by educating the industry about the latest skills, technology, and products. Select "Environmental Services" and "Environmental Publications.

Building Deconstruction Consortium

Web: www.denix.osd.mil/denix/Public/Library/Sustain/BDC/bdc.html

A network of building professionals working to maximize reuse of building materials. The network identifies and develops technical resources to encourage building material reuse that is fiscally, environmentally, and occupationally sound.

Center for Resourceful Building Technology

P.O. Box 100
Missoula, MT 59806
Phone: (406) 549-7678
Fax: (406) 549-4100
E-Mail: crbt@ncat.org
Web: www.crbt.org

Dedicated to promoting environmentally responsible construction practices and containing information on recycled-content building products and environmental building techniques.

Deconstruction Institute

1143 Central Avenue
Sarasota, FL 34236
Phone: (941) 358-7730
Fax: (941) 362-4290
Web: www.deconstructioninstitute.com

Web site provides educational materials, tools and techniques, networking, case studies, articles, facts, and many other downloadable and interactive modules about the environmental impacts of building deconstruction.

Institute for Local Self-Reliance

927 15th St. NW, 4th Floor
Washington, DC 20005
Phone: (202) 898-1610
Web: www.ilsr.org

Organization helping community groups, government leaders, and entrepreneurs develop environmentally friendly economic strategies that contribute to sustainable economic systems.

National Association of Demolition Contractors (NADC)

16 North Franklin Street
Suite 203
Doylestown, PA 18901-3536
Phone: (800) 541-2412
Fax: (215) 348-8422
E-mail: info@demolitionassociation.com
Web: www.demolitionassociation.com

The National Association of Demolition Contractors represents over 850 demolition contractors and 200 associated industry companies worldwide. NADC facilitates education and communication regarding safety and technology between industry members and regulators.

National Association of Home Builders (NAHB)

1201 15th Street, NW
Washington, DC 20005
Phone: (800) 368-5242 or (202) 822-0200 within the Washington, DC metropolitan area.
E-mail: info@NAHB.org
Web: www.nahb.org

Organization representing home builders. Participates in a partnership, known as Build American Beautiful, along with Keep American Beautiful, Inc., a national nonprofit organization dedicated to improving waste practices. Build American Beautiful recognizes contractors who keep construction sites clean and make efforts to recycle and reduce wastes.

National Association of Home Builders Research Center

400 Prince George's Blvd
Upper Marlboro, MD 20774
Phone: (301) 249-4000, (800) 638-8556
Fax: (301) 430-6180
E-mail: webmaster@nahbrc.org
Web: www.nahbrc.org

A wholly owned subsidiary of NAHB, which aims to keep government agencies, manufacturers, builders, and remodelers on the leading edge of home construction technology.

The Recycled Materials Resource Center

220 Environmental Technology Building
35 Calvos Road
Durham, NH 03824
Phone: (603) 862-4704
Fax: (603) 862-3957
E-Mail: rmrc@rmrc.unh.edu
Web: www.rmrc.unh.edu

National center that serves as the principal point of contact for the use of recycled materials (pavements, secondary waste, by-product materials) in the highway environment.

The Reuse People, Inc.

2100 Ferry Point #150
Alameda, CA 94501
Phone: (510) 522-2722
E-mail: info@TheReusePeople.org
Web: www.thereusepeople.org

A nonprofit corporation dedicated to reducing the solid waste stream entering our landfills by diverting and salvaging usable building materials and providing them to individuals, businesses and families, including low-income families in Mexico.

Shinglerecycling.org

Web: www.shinglerecycling.org

An online resource center developed by EPA, the University of Florida, CMRA, and the National Roofing Contractors Association, shinglerecycling.org provides comprehensive information regarding shingle recycling, including barriers to recycling, recycling markets, regulatory concerns, and links to other resources.

Steel Recycling Institute

680 Andersen Drive
Pittsburgh PA 15220-2700
Phone: (800) YES-1-CAN (937-1226)
E-mail: sri@recycle-steel.org
Web: www.recycle-steel.org

National trade association representing the steel industry and providing steel recycling information, links, and a database of steel recyclers in the United States.

U.S. Green Building Council

1015 18th Street, NW., Suite 805
Washington, DC 20036
Phone: (202) 82-USGBC (828-7422)
Fax: (202) 828-5110
Web: www.usgbc.org

The mission of this coalition is to accelerate the adoption of green building practices, technologies, policies, and standards.

Used Building Materials Association

1702 Walnut Street
Boulder, CO 80302
Phone: (303) 441-3278
Fax: (303) 441-4367
Web: www.ubma.org

A nonprofit organization that represents companies and organizations involved in the acquisition and redistribution of used building materials.

EPA
United States
Environmental Protection Agency
1200 Pennsylvania Ave., NW. (5305W)
Washington, DC 20460

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