

# Pre-Demolition Environmental Checklist

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## Asbestos

Asbestos is a known human carcinogen which can cause other serious health problems when disturbed and inhaled. Historically, asbestos was commonly used in industrial, commercial and residential structures. Asbestos is still used today, to a lesser extent.

Prior to beginning a demolition or renovation project (unless limited to a residential building with 4 or fewer dwelling units), the owner/operator of a structure is required by ch. NR 447, Wis. Adm. Code, to have the structure inspected for the presence of asbestos by an asbestos inspector licensed by the WI Department

of Health and Family Services (DHFS). The DHFS maintains a list of licensed inspectors. This inspection will determine the categories of asbestos present in the structure. Certain asbestos may be able to remain in place, while other asbestos must be removed before the project is started. In most cases, removed asbestos must be labeled as "asbestos" and disposed at a municipal solid waste landfill, although certain asbestos may be disposed as construction and demolition waste (s. NR 506.10, Wis. Adm. Code).

Two different state agencies and three different state programs have authority over asbestos removal, storage, transport and disposal. Look for contact

### ***Planning to demolish a building?***

***Here is a handy checklist to help building owners and inspectors, demolition contractors, consultants, sub-contractors and others identify and address environmental issues in a demolition project and find out how to properly handle any hazardous or problem materials.***

Thoroughly inspect your project site before beginning any demolition. Carefully planning your project can save time, money and resources!

Most projects generate a large quantity of materials that can be recycled or reused. Keeping them separated and free of hazardous materials will make recycling easier and can significantly reduce disposal costs. Bear in mind, it's illegal to burn an unwanted building. The only exception is for a fire department practice burn of a standing structure, after materials that are illegal to burn have been removed. See further details under "Open Burning" on page 5.

This document provides the following:

- lists common building materials and equipment that may pose environmental problems, and
- references to specific regulations which must be addressed for many materials, and sound guidance on handling other materials. It is not intended to substitute for reading the rules and statutes and making your own determination of how they apply to your demolition project.

"Construction and demolition waste" is limited to waste from the construction, demolition or razing of buildings, roads and other structures, and does not include waste paints, solvents or other hazardous materials (s. NR 500.03(50), Wis. Adm. Code). Examples presented here are not an exhaustive list of items that may be required to be removed from a building prior to deconstruction.

information on pages 6 and 7.

- ◆ The **DHFS** regulates asbestos training accreditation and certification for inspectors, management planners, project designers, abatement workers and supervisors. The DHFS also requires prior notification for all asbestos removals.
- ◆ The **DNR Air Management Program** regulates disturbance of "regulated asbestos containing material" (RACM), as determined by the type of structure and inspection results. In the case of asbestos removal greater than 260 linear feet of RACM pipe insulation or 160 square feet of any other RACM, a notification of intent (DNR Form 4500-113) must be filed with the DNR. For demolition, a notification of intent must be filed with the DNR in all cases (even if no asbestos is present). The notification must be postmarked at least 10 working days before the demolition or RACM removal will occur. For more information about these requirements, contact the DNR Asbestos Coordinator.
- ◆ The **DNR Waste and Materials Management Program** regulates storage, transport and management of solid and hazardous wastes, including construction and demolition materials and asbestos containing materials.

The following checklist notes building components that may contain asbestos, but the list is by no means all-inclusive. All layers of materials, behind walls, ceiling spaces, etc., should be inspected.

**HVAC Systems:** Duct, pipe and joint insulation (elbows/joints are often coated with asbestos fiberglass insulation on the straight runs), forced air dampers, wall, floor and chimney penetrations, lining and mortar, fire brick, fire-proofing materials (such as transite sheets or heavy paper), boiler insulation, flexible fabric connectors, packing/gaskets and adhesives, paper backing, mastic/adhesives (floor tile, carpet, etc.), grout and felt paper under hardwood floors.

**Electrical:** Insulators, spark arrestors and transite panels in electrical boxes, wiring insulation, ducts/conduits (transite pipe) and light fixtures.

**Interior and Exterior Walls:** Wall plaster, joint compound, patches, transite wallboard and siding,

fire doors, window putty/glazing, mortar, asphalt shingles/siding, felt under siding, stucco, textured paint and other spray-applied materials. (Paint containing asbestos is rare except in commercial applications, where it was usually applied as a very thick, often silver-colored coating.)

**Roofing:** Asphalt shingles, tar-type coatings (often around vents, chimneys, etc.), transite shingles, roofing felts (often under a layer of other material), flashings, mag-block type material under other material. Check all roof areas and multiple layers.

**Ceilings:** Acoustical tiles and adhesives, and materials identified for interior walls (previously listed). All ceiling layers should be checked and any spaces above the ceiling (where drop ceilings are present). Insulation debris may also be laying on top of ceiling tiles.

**Plumbing:** Pipe wrap, pipe joints, transite counter tops in bathroom, faucets packing gaskets and adhesives.

**Flooring:** All sizes of vinyl floor tile, sheet flooring, linoleum.

**Insulation**\_(ceiling/wall): Blown-in, spray-applied and block.

**Miscellaneous:** Appliances with a heating element (especially older models), fire curtains and blankets, laboratory tabletops, fume hood lining, blackboards and fire-resistant clothing (gloves, hoods, aprons, etc.).

## Regulated Refrigerants and Halons

Chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs) are man-made substances that damage the earth's protective ozone layer high in the atmosphere, allowing greater exposure to the sun's dangerous ultraviolet rays. Increased skin cancer, eye cataracts, immune system deficiencies and crop damage are some of the harmful effects of increased UV exposure. These chemicals are known as *ozone-depleting refrigerants* and are commonly found in air-conditioning and refrigeration equipment.

Hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) were developed as substitutes for the ozone-depleting refrigerants. These refrigerants do not harm the ozone layer, but contribute to the planet's global

warming problem if released to the environment.

Halons are ozone-depleting chemicals used in portable and installed fire control equipment.

### **REFRIGERATION AND AIR-CONDITIONING EQUIPMENT**

Under ch. NR 488, Wis. Adm. Code, regulated refrigerants may not be released during salvaging or dismantling activities. They must be properly recovered, using approved equipment operated by qualified technicians. The entity recovering these refrigerants must be registered with the DNR and supply documentation to whomever receives the scrapped equipment that the refrigerants were properly removed. See page 6 for a link to the regulations, registration forms, and lists of DNR-registered companies who can recover these refrigerants.

**Air Conditioners** (rooftop, room, and central)

**Refrigerators/Freezers/Chillers**

**Dehumidifiers**

**Heat Pumps**

**Water Fountains/Coolers**

**Walk-in Coolers** (refrigeration or cold storage areas)

**Vending Machines/Food Display Cases**

### **FIRE EXTINGUISHERS**

Check both portable and installed fire suppression systems. Look for those containing halons. Do not discharge halon fire extinguishers; intentionally releasing these substances is prohibited under federal regulations. Halons and halon-containing equipment must be properly disposed of in accordance with EPA standards. If you send halon-containing equipment offsite for disposal, it must be sent to a manufacturer, fire equipment dealer or recycler operating in accordance with National Fire Protection Association standards (NFPA10 and NFPA12A). Halons must be recovered by trained technicians. Contact local fire suppression equipment companies or the Halon Recovery Corporation for more information. (See page 6.)

## **Lead**

Inhaling or swallowing lead can cause serious acute

or chronic health effects to the brain and endocrine, reproductive, and immune systems. Lead plumbing and lead-based paint are commonly found in many older buildings. Although lead paint manufactured in the U.S. was discontinued in 1978 for general residential use, lead-based paint manufactured for specialty uses and commercial and industrial markets continued beyond that time. In addition, at the point of demolition, most buildings have multiple layers of paint and all layers should be considered. When recycling demolition debris, dispose of painted wood in a landfill. Do not burn or chip wood containing lead paint or use it for landscaping.

State law prohibits the sale or transfer of any fixture or other object containing lead-bearing paint and intended for placement upon a surface inside a dwelling and ordinarily accessible to children (s. 254.12(2), Wis. Stats.).

**Lead-based paint:** Woodwork, metal equipment, interior/exterior uses.

**Lead flashing molds and roof vents**

**Lead pipes and solder**

**Lead-acid batteries:** Lighting, exit signs, security systems.

## **Mercury**

Mercury is a heavy, shiny, silvery-white poisonous metal that is a liquid at room temperature. Mercury can be found in thermometers, barometers, thermostats, dental offices, blood-pressure devices, and fluorescent and other types of light bulbs. Liquid mercury evaporates at room temperature and gives off harmful, invisible, odorless vapors. Breathing these vapors causes the most harm to people, but mercury can also be harmful when swallowed or when it contacts broken skin. Mercury is quite toxic: it causes birth defects and works its way into the food chain. Women and children are most at risk from mercury poisoning, which can cause brain and nerve damage resulting in impaired coordination, blurred vision, tremors, irritability and memory loss.

Mercury is a fast-moving liquid that spreads quickly. Prompt containment and control of both the liquid and its vapors is very important. If any mercury is spilled or released, you must report the spill immediately by calling the DNR 24-hour Spills Hotline. (See page 7.)

Do not remove mercury from a device such as a switch or thermostat. Keep the product intact as you remove it and store it in a covered container in a manner that will prevent breakage, spillage, or release. Label the container to assist proper handling and disposal. Most such devices can be shipped off to recycle the mercury.

### **HEATING, VENTILATING AND AIR-CONDITIONING SYSTEMS AND APPLIANCES**

Devices in this category control a variety of switch functions such as temperature, water pressure, air pressure, on/off, and flow control. Check thermostats and any control associated with air handling units for switches containing mercury.

**Thermostats**

**Aquastats**

**Pressurestats**

**Firestats**

**Manometers**

**Pneumatic controls (HVAC and high pressure air)**

**Flame Sensors by pilot lights**

**Thermometers, temperature gauges**

**Pressure-trol**

**Float or level controls**

**Space heater controls**

**Sump pump limit switches**

**Load meters and supply relays**

**Phase splitters**

**Microwave relays**

**Displacement relays**

**Switches in old clocks**

**Other equipment:** Any equipment used for measurement of vacuum, pressure, fluid level, temperature, or flow rate could contain mercury. These devices are most commonly associated with commercial and industrial equipment systems, including: tanks, boilers, furnaces, heaters, electrical, water cleaning systems, and systems for movement / pumping of gases (air) or liquids (water). However, mercury containing devices are also common in certain agricultural operations (dairy), and may be present in residential properties (especially larger

multi-unit) and older model consumer appliances.

### **LIGHTING**

**Switches for lighting may use mercury relays:** Look for any control associated with exterior or automated lighting systems, such as "silent" wall switches.

**Specialty buildings and locations:** Dairy barns, hospitals, clinics, laboratories, dental offices and schools. Mercury may be found in sink traps and many other pieces of equipment and devices.

Several types of light bulbs (or lamps) can contain mercury and must be properly processed for disposal. These include:

**Fluorescent Lights:** Even newer "green end" lamps contain mercury.

**High Intensity Discharge:** Metal Halide, High Pressure Sodium, Mercury Vapor.

**Neon**

## **PCBs**

### **(polychlorinated biphenyls)**

PCBs are a family of chemicals manufactured and used in the United States until the late 1970's, which were mostly used in electrical devices like capacitors, transformers and lighting ballasts to protect their oils from breaking down at high temperatures. These substances are strictly regulated because of their toxicity and persistence in the environment. PCBs continue to be a major source of fish contamination, leading to fish consumption advisories for people.

Management of PCBs is based on their concentration in an item. Materials with PCB concentrations of 50 parts per million (ppm) or greater are regulated by the U.S. EPA under the Toxic Substances Control Act.

Materials with PCB concentrations less than 50 ppm are regulated by the State of Wisconsin under ch. NR 157, Wis. Adm. Code.

Electrical devices manufactured prior to 1978 should be assumed to contain PCBs and managed accordingly. Most equipment manufactured after this time will say "PCB FREE." The following is a list of areas in buildings where PCBs may be found:

**Transformers**

**Capacitors** (appliances, electronic equipment)

**Heat transfer equipment**

**Light ballasts**

**Specialty paints**, such as for swimming pools or other industrial applications

**Sumps or oil traps in maintenance and industrial facilities**

## Other Environmental Issues

The following is a list of other environmental and regulatory issues that should be considered prior to demolition. Check with DNR websites under "Publications" and "Frequently Asked Questions" for additional information.

**Appliances:** May contain ozone-depleting or other regulated refrigerants; PCB-containing capacitors or ballasts; or mercury; and must be processed by a DNR-registered appliance demanufacturer.

**Batteries (non-lead-containing):** May be found in smoke detectors, emergency lighting systems, elevator control panels, exit signs, security systems and alarms. Batteries may be managed as universal wastes as allowed by ch. NR 673, Wis. Adm. Code.

**Computers:** May contain hazardous materials such as lead, cadmium, chromium, and mercury and may be regulated as hazardous wastes if not recycled.

**Demolition Waste:** Many materials, fixtures and components can be donated, sold or recycled prior to demolition. Clean brick, building stone, concrete and asphalt may be stockpiled for crushing and reusing in future building projects. A written exemption from DNR may be obtained to allow clean, crushed drywall to be applied to agricultural land where sulfur is needed. It's illegal to burn demolition wastes. Drywall manufacturers can also receive clean drywall for recycling into new material (but such manufacturers may not be located in Wisconsin). See further details under "Open Burning."

**Exit Signs:** Many self-luminous exit signs contain significant amounts of radioactive tritium. All self-luminous exit signs are required to have a permanent label affixed to the sign that identifies it as containing radioactive material. In addition, the label will include the name of the manufacturer, the product model

number, the serial number, and the quantity of tritium contained. It is illegal to abandon or dispose of these signs except by transferring them to the manufacturer or others licensed by the U.S. Nuclear Regulatory Commission to accept them.

**Hazardous Waste (HW):** All HW, including household HW, must be removed prior to demolition. Hazardous wastes can include ignitable, corrosive, reactive or toxic liquid, solid or contained gaseous wastes. These wastes should be taken to a local "clean sweep" collection site, if available.

**Oil:** Used oil in containers or tanks, hydraulic oils in door-closers, elevator shafts, etc. must be collected and properly recycled or disposed of prior to demolition.

**Open Burning:** It is illegal to burn unwanted buildings in Wisconsin. State laws prohibit the burning of painted, treated or unclean wood, asphalt, plastics of any kind, oily substances, tires and other rubber products, wet rubbish and other materials. In the case of building demolition, that would include roofing materials, all kinds of flooring materials, insulation, plywood and other composition board, electrical wiring, cabinetry and countertops, and plastic plumbing.

The only exception is for a fire department practice burn of a standing building from which the materials that are illegal to burn have already been removed.

One-time burning of clean, unpainted, untreated wood is allowed with approved methods and prior notification of the DNR. However, in the case of demolition waste, it would be necessary to separate out all the illegal materials and painted or treated wood before any burning could be allowed.

Burning permits are often required by local regulations and state law. Many communities have local ordinances about open burning that are more stringent than the statewide requirements. Check with your local government and regional DNR office to see if you must obtain a permit to burn these materials at your location.

**Solid Waste:** Recycle and reuse as much as possible. For example, paper (cardboard, files, magazines, etc.), steel and tires should be recycled. All non-building components (such as books, furniture and trash) must be removed prior to demolition, unless the building materials are being taken to a municipal solid waste landfill. Landfills approved to accept only construction and demolition

wastes cannot take non-building materials. Check with local landfills prior to demolition, to determine how to manage your wastes.

**Smoke detectors:** Smoke detectors that contain a small amount of radioactive material will be labeled and should be returned to the manufacturer for disposal. Otherwise smoke detectors may be disposed in the trash.

**Soil Contamination:** A qualified environmental consultant can conduct environmental property assessments.

**Spills:** In Wisconsin, all discharges of hazardous substances that adversely impact, or threaten to adversely impact public health, welfare or the environment must be immediately reported to the DNR via the Spills Hotline.

**Storage tanks:** Storage tanks store material such as oil, solvents and other petroleums, or other dangerous (toxic or flammable) materials. The tanks may be indoors or outdoors, buried or above ground. The DNR does not require removal except for leaking underground storage tanks. Determination of responsibility for potential liability lies with the property owner and buyer.

**Well Abandonment:** Unused and improperly abandoned wells are a significant threat to groundwater quality. If not properly filled, abandoned wells can directly channel contaminated surface or soil water into groundwater. Ch. NR 812, Wis. Adm. Code, requires that any wells or drillholes be properly filled prior to any demolition or construction work on the property.

**Wood Waste:** Clean, untreated wood can be recycled or chipped for ground cover. Treated or painted can go to a licensed construction/demolition landfill. Burning painted or treated wood waste is prohibited. See Open Burning, above.



## Additional Resources

### WEBSITES

#### Publications, contact names, and state regulations

The DNR Waste Management, Remediation and Redevelopment, and Air Management program websites provide access to publications, a list of DNR contacts, and electronic versions of administrative codes and state statutes. A special website is devoted to open burning as well.

For Waste Management, see <http://dnr.wi.gov/org/aw/wm/>

For Remediation and Redevelopment, see <http://dnr.wi.gov/org/aw/rr/>

For Air Management, see <http://dnr.wi.gov/air/index.asp>

For Open Burning, see <http://dnr.wi.gov/environmentprotect/ob/>

### INFORMATION ABOUT SPECIFIC DEMOLITION MATERIALS AND REMOVAL PROCEDURES

#### Wisconsin Laws and Regulations

For copies of Wisconsin statutes and administrative codes, contact the Revisor of Statutes at (608)266-3358 or [www.legis.state.wi.us/rsb/code.htm](http://www.legis.state.wi.us/rsb/code.htm)

#### Asbestos

Asbestos Certification: Dept. of Health and Family Services, Asbestos and Lead Section: (608)261-6876.

Asbestos Coordinator, Dept. of Natural Resources: (608)266-3658.

For asbestos information, see

<http://dnr.wi.gov/air/compenf/asbestos/index.htm>

#### Regulated Refrigerants and Halons:

DNR Refrigerant Recovery Program: <http://dnr.wi.gov/air/compenf/refrig/>

U.S. EPA Ozone Depletion Web site: <http://www.epa.gov/ozone/strathome.html>

U.S. EPA Ozone Depletion Hotline: (800)296-1996

Halon Recovery Corporation: (800)258-1283; [www.halon.org](http://www.halon.org)

**Lead: EPA Lead Hotline: (800)LEAD-FYI.**

(414)263-8500

**Mercury: DNR Spills Hotline: (800)943-0003.**

- West Central Region, Eau Claire  
(715)839-3700

**ORGANIZATIONS TO CALL FOR FURTHER INFORMATION**

**Business Material Exchange of Wisconsin**

(BMEX) is a Material Listing Service designed as a clearinghouse to match manufacturers and other businesses that need materials with companies that have reusable, surplus or by-product materials available. Call (800)364-3233 or see [www.bmex.org](http://www.bmex.org)

*The Wisconsin Department of Natural Resources provides equal opportunity in its employment, programs, services, and functions under an Affirmative Action Plan. If you have any questions, please write to Equal Opportunity Office, Department of Interior, Washington, D.C. 20240.*

*This publication is available in alternative format upon request. Please call (608)266-2111 for more information.*

**UW-Extension Solid and Hazardous Waste**

**Education Center (SHWEC)** provides education and technical assistance programs to businesses and communities on source reduction, recycling, solid waste management, and pollution prevention. For practical tools to reduce, reuse and recycle wastes generated during construction and demolition projects, with checklists, how-to steps, on-site worksheets and markets for reusable materials, order *Construction Resources: A Waste Reduction and Recycling Guide for Wisconsin Builders and Contractors*, SHWEC Pub#605.SG.9711. Call (608)262-0385 or see [www3.uwm.edu/Dept/shwec/](http://www3.uwm.edu/Dept/shwec/), publications.

*This document is intended solely as guidance and does not include any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any manner addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.*

**WasteCap Wisconsin** is a public/private partnership offering site visits, workshops, fact sheets, peer-to-peer exchanges and internet resources to provide solid waste reduction and recycling assistance for Wisconsin businesses. Wastecap is located at 2647 N. Stowell Ave, Milwaukee, WI 53211-4299. Call (414)961-1100, or see [www.wastecapwi.org](http://www.wastecapwi.org)

*Mention of products and services does not constitute an endorsement, nor guarantee that the products or services conform to state and federal law.*

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**DNR region offices**, Waste & Materials Management Staff can be contacted for additional information about waste handling options:

- Northeast Region, Green Bay  
(920)662-5100
- Northern Region, Rhinelander  
(715)365-8900
- Northern Region, Spooner  
(715)635-2101
- Southcentral Region, Fitchburg  
(608)275-3266
- Southeast Region, Milwaukee