
Removal of Hazardous Building Components from Demolition Waste

An Information Sheet for Government Building Officials

Hazardous Materials in Demolition Waste?

A number of items commonly encountered in buildings scheduled for demolition contain hazardous properties. Fluorescent light bulbs, mercury thermostats, lighting ballasts, and exit signs all may house components which contain chemicals dangerous to human health and the environment. See the back of this information sheet for a list of the hazardous components often encountered by demolition contractors.

Demolition Waste and the Environment

When a building is demolished without removing hazardous building components, toxic chemicals may be released to the environment. For example, mercury vapor is released to the atmosphere when a fluorescent light bulb is crushed. Chemicals released during the process of demolition contaminate the rest of demolition waste, enter the atmosphere, or enter the soil and possibly the water supply at the demolition site.

In Florida today, demolition waste is either landfilled or recycled. Most of the demolition waste disposal occurs in unlined landfills. Without a liner, chemicals such as lead, mercury, and cadmium may be leached from waste components in the landfill with infiltrating rainfall. The leachate produced may then result in contamination of groundwater.

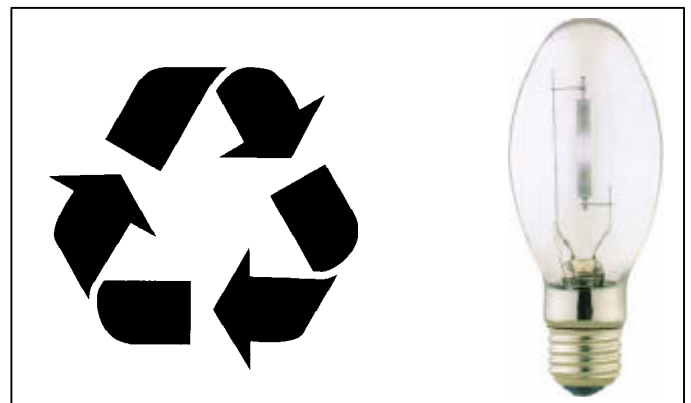
A large amount of demolition waste is also recycled. Facilities that process demolition wastes recover a number of materials, including wood, concrete, and soil. When the demolition waste also contains hazardous building components such as crushed up fluorescent bulbs and lead acid batteries, a risk is posed to the workers at these facilities and the value of the recovered products is reduced.

The Role of Government Building Officials

Most demolition permits in Florida today do not require proof of hazardous material removal (other than asbestos). The demolition contractor does have the legal responsibility to remove many of these components. Items such as batteries, PCB ballasts, and large amounts of fluorescent bulbs may not be disposed of in landfills in Florida. It is extremely difficult, however, to determine whether or not these requirements have been complied with once a structure has been demolished. After a demolition has occurred, many of the items of concern have already been crushed, and even those still intact will likely be hidden by the much larger mass of bulky demolition waste.

A solution to this problem would be to require that all hazardous building components be removed at the demolition permit level. Just as proof of asbestos abatement is required, other categories of hazardous materials could be included. It would then be the role of the building official to certify a demolition project only after such removal has been completed.

This process would require changes at the local government level, but it would be the most effective method of ensuring compliance. The result would be a safer Florida environment.



Common Building Components Containing Hazardous Material

Fluorescent Light Bulbs are very energy efficient sources of light and thus have an environmental benefit. The light in these devices is created as a result of **mercury** vapor. Their disposal must be managed appropriately.

High Intensity Discharge (HID) lamps are often encountered as security and outdoor lighting, and indoor lighting in large buildings such as warehouses. They provide an energy efficient source of strong lighting. As with fluorescent bulbs, **mercury** is used.

Many **thermostats** use **mercury** as a switching mechanism. These are commonly encountered as one, two, or four vials of liquid mercury.

Silent **wall switches** that use **mercury** as an electrically conductive switching mechanism were once used in many homes. These switches do not make the audible “clicking” noise when operated.

Lighting Ballasts for both fluorescent light bulbs and HID lamps may contain **Poly-Chlorinated Biphenyls** (PCBs) as well as other toxic chemicals such as DEHP.

Batteries are encountered in emergency lighting, exit signs, security systems, and other alarms. These batteries may contain **lead** and **cadmium**.

Roof Vent Flashings are used to protect roof vents because of their strength and ability to mold easily. They often contain pure **lead**.

Other Lead objects such as **lead pipes** and **lead painted surfaces** may be easily removed prior to disposal. Such items include door frames and window sills.

Other hazardous materials such as discarded **paint, oil, pesticides**, and other chemicals may be found in storage areas or on building property.

The process of permitting a demolition does not typically require the demolition contractor to remove hazardous building components from a structure prior to demolition. Once a building is demolished, separating these materials becomes difficult or impossible! Monitoring the removal of such items after the demolition has been conducted is nearly impossible. The existing procedure for obtaining a demolition permit (that requires utility cut-off and asbestos removal) would be a efficient method of ensuring that demolition contractors are complying with existing state and local regulations with regard to demolition waste management. The result would be much less hazardous chemicals entering Florida's environment.

This fact sheet was produced by the Department of Environmental Engineering Sciences at the University of Florida under a grant from the Florida Center for Solid and Hazardous Waste Management (FCSHWM) and the Florida Department of Environmental Protection, Bureau of Solid and Hazardous Waste. Additional information regarding techniques for identifying, removing, and recycling the items discussed in this document can be found in “A Guide for the Removal of Hazardous Materials from Buildings Prior to Demolition.” Starting during the fall of 1998, this document may be obtained from the FCSHWM by calling (352) 392-6264. Additional information may be obtained from the University of Florida web site at www.enveng.ufl.edu/fachome/townsend/default.