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Crushing Lamps

for Disposal & Recycling



CRUNCH!

Lamp Crushing and Recycling Reduces Risk, Space and Labor

by Chris Sanford

As facility managers seek increased energy efficiency, they often retrofit whole lighting systems at once, replacing spent or near-spent bulbs with new, longer-lasting fluorescents. While this increases efficiency, it also adds to the waste stream and storage needs of recyclable material.

Traditionally, the handling of spent lamps during disposal has lent itself to potential injury from smashing, either accidentally or by design. A fluorescent lamp which is dropped, knocked, smashed with a hammer or thrown into a dumpster can shower glass fragments up to several feet away.

And the release of mercury vapor to the environment, which results from smashing, is a substantial risk to human health. Temporary packaging of the glass shards and metal fragments in lightweight garbage bags may also subject people to injury should the bag break. Proper packaging and recycling of the lamps will greatly reduce the mercury problem and create a much safer environment.

Always toxic

Because they contain mercury, which is toxic in every form, fluorescent lamps are considered hazardous waste, and most non-residential facilities are now required to properly dispose of their lamps. Landfills are increasingly intolerant of lamps from non-residential sources due to the amount of mercury found in them.

With 650 million fluorescent lamps disposed of each year, recycling of the lamp components has become the recommended method of disposal, helping to eliminate facility liability. All those lamps generate 30,000 pounds of mercury waste a year, said Scott Beierwaltes, VP of sales and marketing for Air Cycle Corp., a Broadview, IL-based recycling services provider.

Companies are being held responsible for their lamps that are later found in landfills, and are being subject to retroactive clean-up costs under EPA regulations.

Smaller generators of waste need to be-

come familiar with the regs that large generators have been meeting for years. "The bigger companies realize they're liable for their hazardous wastes," said Beierwaltes. "They've been recycling for 10 years."

Since managing spent lamps intact and packaging them in boxes can be labor intensive and space consuming, many facility managers seek alternatives as they try to comply with state and federal regulations that classify fluorescent lamps as hazardous waste and call for them to be recycled.

To reduce the demands on labor and space, facility managers are turning to technology that crushes lamps on-site while filtering the dust and mercury vapors released. Once the containers are full of the crushed lamps, the containers are picked up and transported to recycling centers to have the mercury powder separated from the glass shards and metal end caps. The mercury powder is then heated through a retort process, driving the mercury from the powder to be sold off in a liquid state. The clean glass and metal end caps are then sold for reuse.

Beierwaltes says Air Cycle's Bulb Eater can crush an average of 1,000 bulbs into a 55-gallon drum to be hauled away for recycling, saving as many as 23 hours of labor per 1400 lamps.

"By crushing our lamps safely in the machine, we were able to severely cut down on required storage space that had been used when we managed the lamps intact in boxes," said Ernie Ladich, Facilities Director of the North Broward Hospital District in Fort Lauderdale, FL. "The machine is very easy to operate and has greatly reduced our recycling costs, too."

Universal waste

The U.S. Environmental Protection Agency's decision to manage used fluores-

cent and high intensity discharge lamps as universal waste - which Beierwaltes described as "specific, widely generated hazardous waste" - allows for less stringent standards for storing, transporting, and collecting used lamps while maintaining compliance with requirements for final recycling, treatment, and disposal.

Those who generate wastes are responsible for determining whether they're hazardous.

One common method for determining whether a waste is hazardous is the Toxicity Characteristic Leaching Procedure (TCLP) test, a laboratory test that simulates the potential leaching of hazardous

wastes under conditions typically found in municipal solid waste landfills.

In most cases, standard fluorescent lamps and lamp fragments fail the TCLP test and are considered hazardous wastes, and facilities should manage the spent lamps as hazardous waste according to applicable federal, state, and local requirements.

New low-mercury lamps have been introduced into the market. While these lamps may pass the TCLP test and be considered non-hazardous, some states, like Minnesota and Vermont, still prohibit disposing of even these non-hazardous lamps in a solid waste landfill.

Regardless of the state you're operating in, do not dispose of lamps in your dumpster with other non-hazardous trash; mercury vapors will be released into the environment. Typically, the lamps break in the dumpsters during transportation or in the landfill and release mercury into the air or groundwater.

It's estimated that as little as 25 percent of all fluorescent bulbs are recycled in this country, giving companies like Air Cycle Corp. a large target market, which includes industrial facilities, institutions, hospitals and office buildings.

While dealing with other compliance issues, industrial facilities have been at the front of the trend toward recycling lamps, said Beierwaltes, adding that the office building segment is a growing part of the market. "They often generate large amounts of waste; storage is at a premium; and they're not used to complying with hazardous waste regulations."

Fluorescent lamp recycling may be a good place for them to start familiarizing themselves with hazardous waste guidelines. ■

