Why Fluorescent Light Bulbs?

Compact fluorescent lamps (CFLs) and fluorescent light tubes use 75% less energy than their incandescent counterparts, and this efficiency makes them the go-to light source for businesses, municipal buildings, hospitals, and schools.

CLFs can also last up to ten times longer than incandescent bulbs, and since they use much less electricity, carbon dioxide emissions are reduced as a result.

The use of fluorescent lighting also diminishes our dependence on coal-based power plants, and since coal also contains trace amounts of mercury, the emissions of mercury by burning coal are curtailed with the use of CFLs.

Mercury Hazard

Yet these fluorescent bulbs, and also high-intensity discharge (HID) lamps and neon light bulbs, contain small amounts of highly toxic mercury, which is classified as a hazardous waste under the Resource Conservation and Recovery Act (RCRA).

Because of these admittedly small amounts of mercury—5 milligrams or less—these bulbs cannot be simply thrown out in the dumpster or treated as municipal waste, as CFLs can break down and release their toxic contents when discarded in these ways.

All mercury-containing light bulbs should be disposed of regularly and in a legal manner to avoid the effects of mercury emissions on the environment.

One of the main hazards of mercury exposure is its tendency to buildup in the atmosphere. This buildup eventually falls down as rain and snow, polluting land and surface water. This is why proper mercury light bulb disposal is so important.

It can also accumulate in animal tissue, in a process called ‘bioaccumulation’. You have probably heard about this phenomenon affecting fish in surface lakes and ponds, as mercury accumulation renders their consumption dangerous.

Managing and Recycling CFLs

Luckily, under the Environmental Protection Agency’s (EPA) Universal Waste Rule, many mercury-containing light bulbs can be treated as non-hazardous waste, if properly recycled.

The EPA-recommended method for the safe disposal of all types of fluorescent light bulbs is actually recycling. But it is a good idea to take a few assessments about your type of business and your location's local and state regulation before you begin to decide how to manage your old, broken, or unused fluorescent lights.

Depending on how many CFLs you have in your facility, the easiest method of recycling may vary.

If you only have a few fluorescent light bulbs needing recycling, you may be able to take advantage of your local county's household hazardous waste (HHW) drop off site. If you are smaller company without a large amount of fluorescent tubes needing disposal, use a resource like Earth911.org to find a CFL drop off location near you.

If you have hundreds of CFL bulbs, you will most likely need the pick-up services of a professional hazardous waste recycler, whereby you can schedule the recycler to collect bulk pick-ups of fluorescent bulbs. We provide this service nationally if you have at least 500 CFL bulbs to dispose of. You can get a free quote by calling us at **800-936-2311**.

https://www.hazardouswasteexperts.com/what-to-do-with-old-fluorescent-light-bulbs-a-recycling-and-disposal-guide/

How are fluorescent tubes recycled?

Fluorescent tubes are shipped to a bulb recycler that uses special machines to extract the mercury and breaks down the aluminum caps and glass casing. Mercury can be reused in new bulbs or products like thermostats. Aluminum is recycled as scrap metal, and the glass is downcycled into materials like concrete or ceramic tile.

Why recycling fluorescent light bulbs is important

Lawrence Lichtenfeld Tuesday, May 01, 2018

Used fluorescent bulbs like these should always be recycled.

Scientists have studied the effects of mercury exposure for decades, and the information is undeniable — mercury is a dangerous neurotoxin.

Mercury has been definitively connected with neurological and behavioral disorders, and yet, lamp manufacturers still make mercury-based fluorescent bulbs. In fact, even with this knowledge, the EPA banned the production of incandescent bulbs more than 20 years ago, putting much of America's lighting future into fluorescents.

First, let us understand why mercury is used. A fluorescent bulb works by exciting phosphorescent material with electricity. The excited phosphorescent material gives off light. There needs to be mercury vapor inside the tube to carry a charge of electricity and create the light.

There are other materials that can conduct the electricity and give off light — neon, argon and halogen are examples. But mercury and phosphorous are highly efficient and give off a broad spectrum of colors that make for a pleasant, white light.

A good, old-fashioned incandescent bulb, like the one Thomas Edison's lab invented, works by passing electrical current through a tungsten-coated filament. The filament is excited by the current and vibrates, creating light. While incandescent bulbs are generally free from materials as toxic as mercury, they are also markedly less efficient.

Because incandescent bulbs are pretty much nontoxic, anyone can toss them in the trash. They don't take up much space and they certainly don't cause toxic pollution. But fluorescent bulbs are a different story. Their design often involves thin tubes that are more susceptible to breaking. That releases the mercury inside, mostly in the form of vapor, that enters the air.

That's why fluorescent bulbs are considered regulated waste by the EPA. Special care is needed to handle them as waste.

Many cities and counties now offer special hazardous waste collection programs to handle household waste like fluorescent bulbs or used paint. They utilize technology like drum-top bulb crushers that compact the glass tubes, while capturing the mercury for recycling.

It is important to note that fluorescent bulbs actually help the environment. Americans still rely heavily on fossil fuels to make electricity. Coal, the number one fuel used to produce electricity in the United States, is a very dirty energy source. According to the Union of Concerned Scientists, burning coal releases sulfur dioxide (SO_2), nitrogen oxides (NO_X), particulate matter, and mercury into the air.
Coal plants in the United States are responsible for 42 percent of all mercury emissions. That's a huge difference from natural emissions, like volcanic and geothermal emissions, which make up only 2 percent of the atmospheric mercury worldwide.

The good news is that global mercury emissions dropped 30 percent from 1990-2010, according to the U.S. Geological Survey. That's mostly because of a major decline in coal burning in Europe and North America.
Fluorescent bulbs, CFLs and LEDs have been a major part of the reduction in coal burning. Their higher efficiency means that less power is needed to produce the same amount of light.

For example, a 75-watt incandescent bulb gives off about 1100 lumens of light, whereas an 18-watt compact fluorescent bulb will give off 1,200 lumens. You're actually getting more light, while using one quarter the energy.

A 75-watt bulb, with an average life of about 8,000 hours of use will result in 5.5 mg of mercury being released into the air. The 18-watt CFL with a similar 8,000-hour lifespan will cause only 1.2 mg of mercury to be released.

If you've used 12 light bulbs, you've released enough mercury to contaminate the entire fish population of a lake. It would take almost 60 compact fluorescent bulbs to cause the same amount of mercury to be released.

If you had the ability to prevent as much as 25 percent of the relative mercury from a fluorescent bulb from entering the environment, wouldn't you take the proper action?

Just by making the switch from incandescent to high-efficiency lighting, you've knocked down your personal mercury impact by 75 percent, but now you have the opportunity to close the circle — to make your impact even smaller.

By properly disposing of your fluorescent lamps, you have the power to stop accidental release of mercury from fluorescent lamps. By finding the local recycling program for hard to recycle materials, and not putting your scent fluorescent bulbs in the trash, you are helping

to keep mercury from escaping broken bulbs and seeping into the ground or vaporizing into the air.

Your local bulb recycling program will either collect and properly store unbroken bulbs to be transported to a recycling facility that specializes in hazardous waste or they will use a bulb crushing machine, like a drum-top bulb crusher.

When your recycler uses a drum-top crusher, they are compacting the spent bulbs in an environmentally sound way. The machine breaks up the bulb, releasing the mercury in a controlled manner. Special HEPA and carbon filter systems capture the mercury, preventing it from entering the environment, and making reclamation and reuse possible.
The other materials from the bulb are also captured for recycling. Metals, phosphorous and any other elements can be recycled.
You have the ability to lower your energy consumption and protect the environment by choosing to switch to and dispose of high-efficiency bulbs properly.

http://exclusive.multibriefs.com/content/why-recycling-fluorescent-light-bulbs-is-important/waste-management-environmental