Compact fluorescent light bulbs contaminate the environment with 30,000 pounds of mercury each year

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A compact fluorescent light is a type of energy-saving bulb that fits into a standard light bulb socket or plugs into a small lighting fixture, and right now, compact fluorescents seem to be gaining in popularity. But did you know they can also be toxic to your home and the environment?

Fluorescent lights are filled with a gas containing low-pressure mercury vapor and argon, or sometimes even krypton. The inner surface of the bulb is coated with a fluorescent coating made of varying blends of metallic and rare earth phosphor salts. Fluorescent light bulbs are more energy efficient than incandescent light bulbs of an equivalent brightness, and the efficiency of fluorescent lighting owes much to low-pressure mercury photon discharges. But fluorescents don't produce a steady light, and they burn out more quickly when cycled frequently; they also contain items such as fluorine, neon, and lead powder as well as mercury.

Measuring the environmental impact of mercury use in a particular product is more complicated than you might think. Mercury is an essential element in millions of fluorescent lamps throughout the world, and as those lamps are thrown into landfill, the mercury can escape and contribute to air and water pollution. (It can easily leach into groundwater supplies.)

According to www.lightbulbrecycling.com, each year an estimated 600 million fluorescent lamps are disposed of in U.S. landfills, amounting to 30,000 pounds of mercury waste. Astonishingly, that's almost half the amount of mercury emitted into the atmosphere by coal-fired power plants each year. It only takes 4mg of mercury to contaminate up to 7,000 gallons of freshwater, meaning that the 30,000 pounds of mercury thrown away in compact fluorescent light bulbs each year is enough to pollute nearly every lake, pond, river and stream in North America (not to mention the oceans).

Controlling the waste

Many state governing agencies have adopted their own regulations regarding the disposal of fluorescent lights. In California, Minnesota, Ohio, Illinois, Indiana, Michigan, and Wisconsin, it is unlawful for anyone to dispose of fluorescent bulbs as universal waste. These laws are based on the well-documented toxicity of the heavy metal mercury.

Mercury (also called 'quicksilver') is a heavy, silvery transition metal most commonly found in thermometers, barometers, and other scientific apparatus. It is used in the electrical industry and in laboratory and medical instruments. Mercury is a known neurotoxin, and elevated blood mercury levels may lead to retardation and deformities in children. Chest pains, dyspnea, coughing, hemoptysis, and sometimes interstitial pneumonitis leading to death may follow acute inhalation exposure to mercury vapor. In America, 1 in 6 children born every year have been exposed to mercury levels so high that they are potentially at risk for learning disabilities, motor skill impairment and short-term memory loss.

If Americans adopt the use of even more compact fluorescent light bulbs, this ratio is like to substantially grow. **Breaking one mercury light bulb in your home can contaminate your home to such a degree that hazardous materials experts are needed to remove the mercury.** (At great cost, too. A typical mercury removal effort involving the breaking of a single fluorescent light can cost several thousand dollars.) The idea of allowing mercury to be placed in an easily breakable consumer product is fraught with public safety risks. In fact, it required a special exemption from the EPA to allow mercury-fluorescent lamps to be sold to consumers in the first place.

When a fluorescent light breaks, its vapors quickly escape and can be inhaled and absorbed through the skin. Most compounds of mercury are toxic, especially its organic compounds (such as methyl mercury).

A researcher at the University of Illinois at Springfield sums up the basic point behind these fluorescent bulbs: "People need to understand that these bulbs are considered "hazardous" and can cause long term damage to not only the environment, but if broken can cause health problems with people as well. Mercury has the ability to cause humans, as well as animals, serious health problems such as permanent nerve and kidney damage if exposed."

Alternatives to mercury-containing compact fluorescent lights

Fortunately, consumers no longer have to bring mercury into their homes through the use of fluorescent lights. There are now sensible alternatives. One of the most eco-friendly options is LED light bulbs which are not only mercury free, they're also 300% more energy efficient than fluorescent lights (and about 1000% more efficient than incandescent lights).

Unlike incandescent light bulbs, which light up regardless of the electrical polarity, LEDs will only light with positive electrical polarity. LEDs produce more light per watt than do incandescent bulbs, and have an extremely long life span (usually about 50,000 hours). One manufacturer has calculated the ETTF (Estimated Time To Failure) for their LEDs to be between 100,000 and 1,000,000 hours, mostly depending on the operating temperature (the cooler the environment, the longer LEDs last). Fluorescent tubes, in contrast, are typically rated at about 10,000 hours, but in practical application, they only last about 2,000 - 3,000 hours. Incandescent light bulbs typically burn out every 1,000 hours. LEDs mostly fail by dimming over time, rather than with the abrupt burnout of incandescent bulbs.

One great advantage about LEDs is that they are difficult to damage with external shock. Fluorescent and incandescent bulbs, on the other hand, are easily broken if dropped on the ground.

LED lights contain absolutely no mercury or toxic chemicals, and conventional LEDs are made from a variety of inorganic semiconductor materials. They don't generate RF wavelengths that cause radio interference, or emit ultraviolet (UV) light -- so LEDs will not readily attract bugs and other insects.

For these reasons (very high energy efficient and the absence of toxic materials), I launched www.EcoLEDs.com in 2007, a company that now offers over a dozen LED light bulbs for consumer use, ranging in power from 3 watts to 10 watts (equivalent to a 100-watt incandescent light). These bulbs substantially reduce CO2 emissions due to their high energy efficiency. To learn more, visit www.BetterLifeGoods.com