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## Mercury leaks found as new bulbs break Energy benefits of fluorescents may outweigh risk

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Compact fluorescent lamps - those spiral, energy-efficient bulbs popular as a device to combat global warming - can pose a small risk of mercury poisoning to infants, young children, and pregnant women if they break, two reports concluded yesterday.

But the reports, issued by the state of Maine and the Vermont-based Mercury Policy Project, urged homeowners to keep using compact fluorescents because their energy-saving benefits far outweigh the risk posed by mercury released from a broken lamp.

They said most danger could be avoided if people exercised common-sense caution, such as not using compact fluorescents in table lamps that could be knocked over by children or pets and properly cleaning up broken bulbs.

The US Environmental Protection Agency and the states of Massachusetts and Vermont said yesterday that, based on the Maine study, they are revising their recommendations for where to use compact fluorescents in a home and how to clean up when one breaks.

"Using compact fluorescent bulbs is still the brightest idea out there," said Michael Bender, director of the Mercury Policy Project, a nonprofit organization that works to eliminate mercury use. "The message is: People should not be afraid but informed and prepared and learn how to dispose of them properly."

The two reports constitute one of the most comprehensive examinations of the dangers posed by the lights, which use about 1 percent of the amount of mercury found in old thermometers.

Mercury is needed for the lamps to produce light, and there are no known substitutes. No mercury is emitted when compact fluorescents are burned, but a small amount is vaporized when they break, which can happen if people screw them in holding the glass instead of the base or drop them.

Mercury is a naturally occurring metal that accumulates in the body and can harm the nervous system of a fetus or young child if ingested in sufficient quantity.

For the Maine study, researchers shattered 65 compact fluorescents to test air quality and cleanup methods. They found that, in many cases, immediately after the bulb was broken - and sometimes even after a cleanup was attempted - levels of mercury vapor exceeded federal guidelines for chronic exposure by as much as 100 times.

There is no federal guideline for acute exposure. Some states, including Maine, use the chronic exposure level as their overall standard, while others, such as California, have chosen higher levels for acute exposure. Still, the mercury vapor released by the bulbs in the Maine study exceeded even those higher levels.

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"We found some very high levels [of mercury] even after we tried a number of cleanup techniques," said Mark Hyland, director of Maine's Bureau of Remediation and Waste Management. He said levels were the lowest if the room was well ventilated after breakage.

The study recommended that if a compact fluorescent breaks, get children and pets out of the room. Ventilate the room. Never use a vacuum, even on a rug, to clean up a broken compact fluorescent lamp. Instead, use stiff paper such as index cards and tape to pick up pieces, and then wipe the area with a wet wipe or damp paper towel. If there are young children or pregnant woman in the house, consider cutting out the piece of carpet where the lamp broke as a precaution. Place the shards and cleanup debris in a glass jar with a screw top and remove the jar from the house.

Disposal regulations vary from state to state, with some requiring broken compact fluorescent light bulbs, to be disposed of as household hazardous waste. Most states allow intact compact fluorescents to be thrown away, but some - such as Vermont, Minnesota, and California - ban disposal in trash, according to Bender.

Some stores, such as Ikea, have set out recycling containers for fluorescent bulbs. In Maine, Hyland says, some 200 retailers are participating in compact fluorescent recycling.

Massachusetts is also ramping up a compact fluorescent recycling program and in May will ban disposal of any intact compact fluorescent lamp in trash. However, broken ones - because their mercury would probably have been vaporized - may be thrown away.

Sales are skyrocketing for compact fluorescent lamps, which use about 75 percent less energy and last up to 10 times longer than traditional incandescent bulbs, as consumers become more aware of global warming and the long-term cost savings. More than 290 million compact fluorescents carrying the EPA's "Energy Star" label sold last year, nearly double the number in 2006. Compact fluorescents now make up 20 percent of the US light bulb market, and sales are all but guaranteed to grow: A new law requires lights to become much more energy-efficient starting in 2012.

According to the US Department of Energy, if every household replaced just one light bulb with a compact fluorescent, the United States would save more than \$600 million each year in energy costs and prevent greenhouse gas emissions equal to 800,000 cars.

But compact fluorescents can contain from 1 to 30 milligrams of mercury, according to the Mercury Policy Project. The nonprofit cited a New Jersey study that estimated that about 2 to 4 tons of the element are released into the environment in the United States each year from compact fluorescents. That number is expected to grow as sales do. In comparison, about 48 tons of mercury is released into the environment by power plants each year, according to federal statistics.

"People should continue to support CFLs until there are mercury-free alternatives available," said Cindy Luppi of Clean Water Action, a local advocacy group.

#### SIDEBAR:

##### What to do when compact fluorescents crack

Compact fluorescent lamps contain small amounts of toxic mercury that can vaporize when the bulbs break, creating a potential health risk for infants, young children, and pregnant women. If a lamp does break, follow these cleanup procedures:

- Keep people and pets away. Open windows, and leave the area for 15 minutes before beginning the cleanup.
- Do not use a vacuum cleaner, even on a carpet. This will spread the mercury vapor and dust and potentially contaminate the vacuum.
- Wear rubber gloves.
- Carefully remove the larger pieces and place them in a secure closed container, preferably a glass jar with a metal screw top lid and seal like a canning jar.
- Next, scoop up the smaller pieces and dust using two stiff pieces of paper such as index cards or playing cards.
- Pick up fine particles with duct tape, packing tape, or masking tape, and then use a wet wipe or damp paper towel.
- Put all waste into the glass container, including all material used in the cleanup. Remove the container from your home and call your local solid waste district or municipality for disposal instructions.

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- Continue ventilating the room for several hours.
- Wash your hands and face.
- As a precaution, consider discarding throw rugs or the area of carpet where the breakage occurred, particularly if the rug is in an area frequented by infants, small children or pregnant women. Otherwise, open windows during the next several times you vacuum the carpet to provide good ventilation.

SOURCES: Maine Bureau of Remediation and Waste Management; Mercury Policy Project

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