State of Ohio Environmental Protection Agency

August 2007

Compact Fluorescent Light Bulbs – What Consumers Need to Know

Compact fluorescent lamps (CFL) are small fluorescent light bulbs that use up to 75 percent less energy than a traditional incandescent bulb and can be screwed into a regular light socket.

Switching from traditional light bulbs to CFLs is an effective, accessible change every American can make right now to reduce energy use at home and prevent greenhouse gas emissions that contribute to global climate change.

Lighting accounts for close to 20 percent of the average home's electric bill. Changing to CFLs costs little upfront and provides a quick return on investment.

If every home in America replaced just one incandescent light bulb with an ENERGY STAR qualified CFL, it would save enough energy to light more than three million homes and prevent greenhouse gas emissions equivalent to those of more than 800,000 cars annually.

As consumers look for ways to conserve energy and help the environment, use of these light bulbs is increasing. Unfortunately, some of the properties that make these bulbs energy-efficient can also cause concerns in other areas.

Ohio EPA developed this fact sheet in an effort to increase the public's awareness of these issues, and ensure that consumers have information they need to make an informed decision about the use and ultimate disposal of CFLs.

What's the issue?

Mercury is an essential, irreplaceable element in CFLs and is what allows the bulb to be an efficient light source. Mercury is an element that, if breathed and absorbed by the body, can cause neurological damage.

CFLs contain about five milligrams of mercury (roughly equivalent to the tip of a ball-point pen) sealed within the glass tubing. By comparison, older home thermometers contain 500 milligrams of mercury, and many manual thermostats contain up to 3,000 milligrams. It would take between 100 and 600 CFLs to equal those amounts.

The U.S. Environmental Protection Agency and the U.S. Department of Energy assure us that CFLs are safe to use in your home. No mercury is released when the bulbs are in use, and they pose no danger to you or your family when used properly.

However, CFLs are made of glass tubing and can break if dropped or roughly handled. Be careful when removing the lamp from its packaging, installing it or replacing it.

CFL Sizes and Shapes

CFLs come in a variety of shapes and sizes. The majority of CFLs are designed to look identical to the incandescent light bulb version. The table below identifies the most popular CFL shapes that are available at retail:

Bare Products		Covered Products			Reflector Products
Mini-Spiral or Twist	Tube or Universal	Incandescent/ A-line	Globe G25, G30, G40	Candelabra, Post or Bullet Shape	Indoor and Outdoor R20, R30, R40, PAR38
					

Source: ENERGY STAR www.energystar.gov

Ironically, CFLs present an opportunity to prevent mercury from entering our air, where it most affects our health.

The highest source of mercury in our air comes from burning fossil fuels such as coal, the most common fuel used in the U.S. to produce electricity.

Energy-efficient CFLs present an opportunity to prevent mercury emissions from entering the environment because they help to reduce emissions from coal-fired power plants.

A CFL uses 75 percent less energy than an incandescent light bulb and lasts up to 10 times longer.

A power plant will emit 10 milligrams (mg) of mercury to produce the electricity needed to run an incandescent bulb compared to only 2.4 mg of mercury to run a CFL for the same time. That means that use of the CFL will actually prevent six to eight milligrams of mercury from entering the environment.

What should I do if I break a bulb?

The risks to you and your family from breaking a CFL are small. The amount of mercury in a CFL is very small, about five milligrams, or the size of the tip of a ball point pen.

In comparison, older thermometers contain about 500 milligrams of mercury. It would take 100 CFLs to equal the amount of mercury in a single thermometer.

The mercury in a CFL is needed to help turn the electric current into white light you get from the bulb. Once turned on, a very small amount of the mercury in the CFL becomes a vapor. If a CFL bulb breaks, a small amount of the mercury vapor will be released in the air.

Unlike the elemental mercury found in fever thermometers, which are the shiny beads of liquid mercury, you will probably not see any mercury with the naked eye if you break a CFL bulb. The white powder you see is from the phosphorus coating on the inside of the CFL.

So if you break a bulb, you're at little risk for significant mercury exposure. It is important, though, to carefully clean up and dispose of a broken CFL to avoid spreading around the phosphorus powder, glass and any remaining mercury.

I broke a bulb a while ago and have questions about whether my family and home are safe.

If you took the proper steps to clean up a broken CFL in the past, you are probably at little risk for any significant exposure.

If you are still unsure, however, your local health department is the best place to get information about indoor air quality and health-related risks from mercury.

You may also contact the Ohio Department of Health (ODH), Bureau of Environmental Health. E-mail Greg Stein, ODH, at *greg.stein@odh.ohio.gov* or call him at (614) 466-1390.

U.S. EPA's Guidelines for Cleaning Up a Broken CFL

1. **Open a window and leave the room (restrict access) for at least 15 minutes. If you have fans, place the fans in the windows and blow the air out of the room. Note: If the room has no windows, open all doors to the room and windows outside the room and use fans to move the air out of the room and to the open windows.**

2. **Remove all materials you can without using a vacuum cleaner.**
   - Wear disposable rubber gloves, if available (do not use your bare hands).
   - Carefully scoop up the fragments and powder with stiff paper or cardboard.
   - Wipe the area clean with a damp paper towel or disposable wet wipe.
   - Sticky tape (such as duct tape) can be used to pick up small pieces and powder.

3. **Place all cleanup materials in a plastic bag and seal it, and then place in a second sealed bag.**
   - If no other disposal or recycling options are available, private residents may dispose of the CFL in residential garbage. Be sure to seal the CFL in two plastic bags and put into the outside trash.
   - Wash your hands after disposing of the bags.

4. **The first time you vacuum the area where the bulb was broken, remove the vacuum bag once done cleaning the area (or empty and wipe the canister) and put the bag and/or vacuum debris, as well as the cleaning materials, in two sealed plastic bags in the outdoor trash or protected outdoor location for normal disposal.**

Compact Fluorescent Light Bulbs – What Consumers Need to Know

How should I dispose of unbroken or burned out bulbs?

Like paint, batteries, thermostats and other hazardous household items, CFLs should be disposed of properly. Do not throw CFLs away in your household garbage if better disposal options exist.

Where can I get more information?

For more information about compact fluorescent light bulbs, including links to helpful Web pages and online information, please visit Ohio EPA's Web site at *www.epa.state.oh.us/pic/cfl_info.html#links*.

For information about ENERGY STAR qualified CFLs, go to *www.energystar.gov/index.cfm?c=cfls.pr_cfls*.

A list of household hazardous waste collection events is available online at *www.epa.state.oh.us/dsiwm/pages/recycpro.html*.

Disposing of Unbroken or Burned Out Bulbs

1. **If under warranty, return it to your retailer.**
   ENERGY STAR qualified CFLs have a warranty. If the bulb fails within the warranty period, return it to your retailer.

2. **Recycle it.**
   U.S. EPA recommends that consumers take advantage of local recycling options for CFLs where available. U.S. EPA is working with CFL manufacturers and major U.S. retailers to expand disposal options.

3. **Manage it with other household hazardous waste.**
   Many communities and solid waste management districts (SWMD) hold household hazardous waste collection events. You may take CFLs to these events to be disposed of along with other household hazardous waste such as leftover paint and chemicals. If your county isn't listed, there are some companies who will take CFLs from residents for a fee. The charge is typically between $0.25 and $0.70 per bulb - with 50 cents being the most common. Ohio EPA does not endorse these companies but is merely providing their contact information to assist our customers.

   Environmental Recycling
   Bowling Green, Ohio
   (800) 284-9107

   SunPro
   North Canton, Ohio
   (330) 966-0910

   Special Waste Systems, Inc.
   Huber Heights, Ohio
   (937) 866-8898

   Gross Electric
   Toledo, Ohio
   (800) 824-7268

   Fluorescent Recycling Inc.
   Cleveland, Ohio
   (216) 583-0274

   U.S.A. Lamp and Ballast Recycling
   Cincinnati, Ohio
   (800) 778-6645

4. **Place it in sealed bags in outside trash.**
   If you can find no other disposal option, private residents may place used CFLs in their household garbage. Be sure to seal the CFL in two plastic bags and put it into the outside trash. Do not dispose of CFLs in an incinerator.