



# CONNECTICUT RESOURCES RECOVERY AUTHORITY

## BACKGROUND

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## The Facts About Compact Fluorescent Light Bulbs

Compact fluorescent light fixtures (CFLs) have become a popular lighting option. Replacement of incandescent bulbs with CFLs has been encouraged for some very good reasons.

First is economics. Although CFLs may cost eight times more than incandescent bulbs having the same light output, CFLs last longer and use less electricity. One commonly accepted conservative estimate is that the average CFL lasts 10 times longer and uses about one-third the electricity. The energy savings is based mostly on the watts needed to create light but also on the impact that the CFLs' cooler operating temperatures have on air-conditioning load.

Second is environmental. As mentioned above, CFLs use 25 to 33 percent of the electricity of incandescent bulbs that produce the same light output. This implies a similar 25 to 33-percent reduction in pollutant emissions from the source of the electricity. This reduction applies to nitrogen oxides (NOx), sulfur oxides (SOx), and particulate matter (PM) at a coal- or oil-fired power plant.

With respect to mercury, the story is a bit more complex. The reduction in electricity use by switching to CFLs from incandescent bulbs results in reduced mercury air emissions from coal- or oil-fired power plants. However, unlike incandescent bulbs, CFLs contain up to 5 milligrams (mg) of mercury per bulb. The U. S. Environmental Protection Agency (EPA) estimates that five years of providing power for an incandescent light bulb from a coal-fired power plant could emit 10 mg of mercury. EPA compares this to 2.4 mg of mercury emissions from the same power plant over the same five years to provide power for a comparable CFL. However, that CFL contains 4 to 5 mg of mercury. Even if all of this mercury were to be released to the environment at the end of the five-year period, there would still have been less mercury emissions from the CFL.

(Visit <http://www.crca.org/pages/emissions.htm> to check emissions testing results for mercury and other substances at CRRA's four trash-to-energy plants.)

This situation will change. EPA is mandating a 70-percent reduction in mercury emissions from coal-fired power plants by 2018. CFL manufacturers are trying to minimize the use of mercury in their products. While it is impossible to determine with a high degree of precision the relative emissions of mercury associated with incandescent bulbs versus those associated with CFLs, if most CFLs are properly disposed of, it seems reasonable that replacing incandescent bulbs with CFLs will result in a significant net reduction in mercury emissions. CRRA encourages the use *and proper disposal* of CFLs.

Proper disposal of CFLs involves collecting the bulbs in a manner that minimizes breakage, and directing them to a properly licensed CFL recycling facility. CFL recycling facilities crush the bulbs under negative pressure, capturing and passing the vapors through a mercury-absorbing filter or other process to prevent the mercury from escaping into the environment. The glass and metal components of the CFLs are then sent to recyclers, and the mercury-absorbing media is sent to a hazardous waste landfill or, in some cases, to a mercury reclamation facility which reclaims the mercury for resale as a commodity.

Certain retailers may accept CFLs for recycling. Consumers can also save CFLs (storing them so that they remain intact) until a household hazardous waste collection event is held in their area. Consumers are well-advised to learn where they may bring used CFLs for disposal when considering a program of replacing incandescent bulbs with CFLs.