

# Lighting

## Energy Savings Benefits



It is important to understand that conserving energy has a great and substantial impact on reducing pollution from power plants, dependency on imported oil, and global warming. Saving energy can also save you money. Everyone can play a role in conserving energy at home, at work and at play. Lighting is one area where energy conservation can be as simple as switching out an incandescent bulb with a fluorescent bulb saving 3-4 times the energy used. This is a good thing and is encouraged. We must however be aware that with this new technology, there comes an environmental toxic of concern, mercury. All fluorescent lighting contains mercury as do sodium, neon, metal halide and high intensity discharge (HID) lamps. Mercury is toxic to the environment and to people. Mercury never goes away, becoming more toxic when allowed to break down in the environment as methylmercury. Mercury contamination has been found in ocean fish all over the world. Although mercury can serve an important purpose in energy savings it must be handled carefully once the light burns out or breaks. Being informed about these hazards and becoming familiar with proper management can help you make a good choice in energy efficiency and in keeping our community and planet healthy.

## Harmful Components

Mercury is a toxic metal of concern especially when certain lamp bulbs are broken or disposed. Mercury is a powerful neurotoxin that affects the brain and can cause tremors, memory loss and mental impairment.

Mercury is especially dangerous to the developing fetus/baby and pregnant women should avoid eating predatory fish.

Mercury accumulates in aquatic organisms, making larger, older predatory fish that are high in the food chain, the most contaminated. Hawaii has a statewide health advisory for mercury in marine fish. For more info visit: <http://www.oehha.ca.gov/fish/hg/index.html>

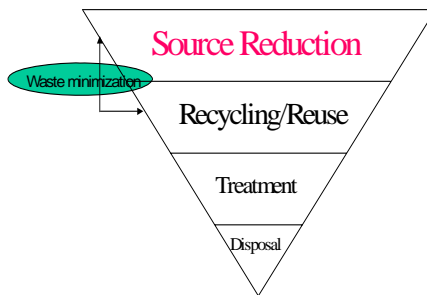
Lead is also a toxic metal of concern and can be found in the solder used to make bulbs. Always ask for "100% lead-free" products.

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**Energy and water** are precious resources for our community. Do your part to save by having an audit done; check for water leaks and fix immediately; install the latest technologies and replace incandescent lights with low mercury fluorescent or non-mercury LED lighting. Visit: HECO [www.heco.com](http://www.heco.com) BWS [www.hbws.org](http://www.hbws.org) (Oahu)

### Waste Management Hierarchy (US EPA Policy, 1976)



Pollution prevention (P2) is reducing waste at the source = Source Reduction.

P2 is using less toxic materials and using resources efficiently (including water and energy) to reduce the generation of waste.

P2 can save businesses money while protecting our environment.



LINDA LINGLE  
*Governor*

DR. CHIYOME FUKINO  
*Director of Health*

## Pollution Prevention (P2) Action

**Choose non-mercury energy efficient lighting options** when available. Light emitting diode (LED) lighting has evolved from simply brightening up Christmas trees to becoming a modern energy saving alternative for task lighting needs, and they are mercury-free.

**Choose low-mercury energy efficient lamps.** Request that suppliers provide you with the amount of mercury contained in the lamp. Low mercury fluorescent T8 lamps typically range from 3.5 mg to 6 mg of mercury and may be indicated by a "green tip" or green writing.

**Recycle all mercury containing lamps.** Always use a legitimate recycling company and keep receipts. Proper recycling ensures the bulbs are not broken until they are processed at an approved mercury recovery facility (out of state), where the mercury, phosphorus, glass and metal are recycled. Visit our web site for the Hauler and Recyclers List describing services available:  
[www.hawaii.gov/health/environmental/waste/p2wastemin/index.html](http://www.hawaii.gov/health/environmental/waste/p2wastemin/index.html)

### Energy conserving lamps that contain mercury:

- Fluorescent lighting
- Neon
- High Intensity Discharge (HID)
- Mercury Vapor
- High Pressure Sodium
- Metal Halide



Ask your vendor to provide you with the amount of mercury contained in the bulb, compare, and purchase the lowest mercury option available.

### Does the law apply to me?

Currently the law requiring recycling of spent mercury containing lamps does not apply to Households, Conditionally Exempt Small Quantity Generators (businesses generating less than 220 lbs of hazardous waste a month) and spent lamps that pass the EPA Toxicity Characteristic Leaching Procedure (TCLP Compliant).

However, *everyone* can take **Pollution Prevention Action**, to avoid being exposed to mercury and avoid sending mercury to our landfill and municipal incinerator (H-Power) where it can contaminate our land, air and sea.

**Carefully package spent/burned out mercury containing bulbs.** Broken bulbs can release mercury to the surrounding area. Use the new bulb package to place the old spent bulb in. Then label the package or box "Universal Waste-Lamps" or "Used Lamps". Keep them stored in an area inside and away from weather, heavy boxes or moving machinery to avoid breakage. Store in a protected hazardous waste storage area if available. You may collect them over time and send them for recycling at least annually.

**Carefully clean up broken mercury containing lamps.** Spent lamps should always be handled carefully to avoid breakage. Lamp crushing requires a special hazardous waste permit and is not encouraged due to the hazards associated with the process. In a fluorescent lamp that breaks, it is estimated that 5% of the mercury is released to the air and 95% of the mercury remains in the phosphorus powder.

Therefore, a typical safe cleanup usually involves trained staff with personal protective equipment (gloves, goggles), careful sweeping (NEVER vacuuming, as this will discharge the mercury to the air), and use of a wet rag wipe to avoid dust. Place the wet rag and any broken glass, as well as any loose white powder (fluorescent glass coating) in a sealed, airtight container, label it and dispose of it properly in accordance with local hazardous waste laws. Ventilate or open windows and doors to air out the cleaned area and to disperse any remaining mercury vapors.

If a large number of lamps are broken, seal off the area and contact the local hazardous material response agency (fire department).

Businesses/generators are responsible for making a hazardous waste determination and to dispose of waste properly. For assistance, contact the DOH Solid and Hazardous Waste Branch, phone: 808-586-4226 or visit our website:  
<http://www.hawaii.gov/health/environmental/waste/index.html>

*Disclaimer: The listings of products or companies on this brochure are not complete and do not constitute an endorsement by the State of Hawai'i.*

**"P2 is a choice; being "green" is making that choice."**

