

Purchasing for Pollution Prevention

The Lowdown on Mercury in Fluorescent Lamps

Most government agencies, schools, hospitals, and businesses purchase fluorescent lamps for their facilities because they are more energy-efficient than incandescent lamps. Fluorescent lamps are in fact the best choice because of their energy efficiency, but they also contain mercury, a highly persistent and toxic chemical that is building up to dangerous concentrations in fish, wildlife, and human beings throughout the US. For this reason, INFORM recommends buying fluorescent lamps with the lowest mercury content possible, and ensuring that they are recycled at end of life to prevent the release of mercury to the environment.

What should purchasers look for when buying fluorescent lamps?

- Energy efficiency
- Long lamp life
- Lowest mercury content
- Vendor promotion of recycling

Why is it important to buy lamps with the lowest mercury content?

Although a single fluorescent lamp contains only a small amount of mercury, so many of these lamps are used that their overall mercury content is very large. According to one estimate, 620 million fluorescent lamps are discarded annually in the US, releasing from 2 to 4 tons of mercury per year.¹

Do lower-mercury lamps cost more?

Generally no. The cost of interchangeable models with higher or lower mercury content is usually the same or differs by a few cents. The cost of specific lamp models depends on several factors, including the volume of lamps purchased.

How do I know if a lamp is “low-mercury?”

Some lamps are advertised as “green” or environmentally preferable, but these claims do not ensure the lowest-mercury model. The only sure way to know if you are

buying the lamp with the lowest mercury content available for your application is to ask vendors for the actual mercury content of their lamps and select the lowest mercury lamp on the basis of that information.

What about lamps that pass the toxic characteristic leaching procedure (TCLP)?

Lamps that pass the toxic characteristic leaching procedure are called “TCLP-compliant.” These lamps may or may not have the same amount of mercury as an equivalent non-TCLP-compliant lamp.

The TCLP is used by the US EPA to determine if something is a hazardous waste. The procedure is designed to simulate how much of a toxic chemical would *leach* from a product if the product were put into a landfill; it does not measure how much of the toxic chemical is actually *contained* in the product or how much may be released under non-landfill conditions.² Mercury leaching can be affected by the presence of other chemicals or metals in the product, and so is not an accurate indicator of a lamp’s mercury content. For more information about the TCLP and its use in evaluating lamps, see Mercury-Containing Lamps and EPA’s Toxicity Characteristic Leaching Procedure (TCLP) at http://www.informinc.org/fact_P3tclp.php.

How much mercury is in a typical fluorescent lamp?

The amount of mercury in fluorescent lamps varies widely,

¹ Michael Aucott *et al.*, “Release of Mercury from Broken Fluorescent Bulbs,” *Journal of the Air & Waste Management Association*, Vol. 53, February 2003.

² US EPA, Test Methods Frequently Asked Questions: TCLP Questions, June 28, 2002, http://www.epa.gov/epaoswer/hazwaste/test/faqs_tclp.htm.

depending on the lamp. Some fluorescent lamps have as little as 3.5 mg mercury, but some have as much as 60 mg. Over the past 20 years, the mercury content of these lamps has declined steadily.

INFORM contacted Sylvania, GE, and Philips in 2003 to ascertain the amount of mercury found in both their “standard” linear four-foot TCLP-compliant lamps and their equivalent non-TCLP-compliant lamps. Keep in mind that the particular lamp your fixture requires may not fall into the “standard” category.

**2002 MERCURY CONTENT OF “STANDARD”
FOUR-FOOT T8 LAMPS³**

Manufacturer	TCLP Compliant	Non-TCLP Compliant
Philips	3.5 mg (Alto)	Not manufactured
Sylvania	6 to 8 mg (Ecologic)	6 to 8 mg
GE	6 mg (Ecolux)	Not manufactured

**2002 MERCURY CONTENT OF “STANDARD” FOUR-
FOOT T12 LAMPS³**

Manufacturer	TCLP Compliant	Non-TCLP Compliant
Philips	4.4 mg (Alto)	Not manufactured
Sylvania	9 mg (Ecologic)	9 mg
GE	9 mg (Ecolux)	9 - 15 mg

In 2002, the state of New Jersey requested mercury dose information for lamps purchased through the state contract, which included many different types of lamps. See the New Jersey fact sheet at http://www.informinc.org/fact_P3NJlampcontract.php for that information.

³ Private communications, Paul Walitsky, Philips, February 20, 2003; Bob Horner, Sylvania, March 3, 2003; Joe Howley, GE Lighting, February 24, 2003.

Are TCLP-compliant lamps safer to handle in the workplace than non-TCLP-compliant lamps?

There is no evidence that the chemicals or mechanisms used to prevent mercury from leaching in the TCLP would prevent mercury from volatilizing if the lamp were accidentally broken, exposing nearby workers. The best way to reduce risk is to buy lamps with the least amount of mercury and to implement handling and storage methods that minimize the risk of breakage.

Do TCLP-compliant lamps last as long and perform as well as non-TCLP-compliant lamps?

INFORM received some anecdotal claims that TCLP-compliant lamps, and particularly the Philips Alto, burn out faster than non-TCLP-compliant lamps. However, INFORM is aware of no records that substantiate these claims. All lamps are rated for average lamp life and should be replaced by the manufacturer if they do not meet the performance claims. Also, to function at their rated capacity, lamps must be used with compatible ballasts. Ask your vendors to help identify the lowest-mercury lamps compatible with your existing ballasts.

Is it OK to throw TCLP-compliant lamps in the trash?

No. INFORM recommends that facilities recycle *all* their fluorescent lamps, including TCLP-compliant brands. Although it is legal in some states to dispose of TCLP-compliant lamps as non-hazardous waste, this practice will send mercury to landfills or municipal waste incinerators and may subsequently contribute to mercury pollution.

What should we do with spent lamps?

INFORM recommends that facilities set up recycling contracts for mercury-containing lamps and require lamp vendors to promote recycling when lamps are purchased or delivered. INFORM also recommends that any contract specifying TCLP-compliant lamps include language prohibiting vendors from encouraging facility employees to dispose of these lamps as non-hazardous waste.

Recommended Specification For Lamp Purchasing Contracts

To require mercury disclosure and prefer lowest-mercury lamps:

Contractors (vendors) must submit amount of mercury per lamp in milligrams, and hours of rated life, for each lamp type supplied. [This facility] will prefer fluorescent lamps with the lowest amount of mercury per rated hour, provided the lamps meet all other performance specifications.

If a lamp recycling contract is in place:

[This facility] currently has a mercury lamp recycling contract in place. Contractors (vendors) must provide information to purchasers on using this recycling contract with each delivery of fluorescent lamps.

To prevent promotion of lamp disposal as non-hazardous waste:

Contractors (vendors) may not promote to facility employees the disposal of mercury-containing lamps as non-hazardous waste, even if the lamps are legally designated as non-hazardous waste in this state. Contractors must instead promote the recycling of all mercury-containing lamps.

Actual specifications used by others:

New Jersey requested mercury amount disclosure on its lamp contract. See the New Jersey fact sheet at http://www.informinc.org/fact_P3NJlampcontract.php for specifications, mercury amounts for lamps purchased, and mercury information for contract announcement. Contract announcement is at <http://www.state.nj.us/treasury/purchase/noa/contracts/t0192.shtml>.

Massachusetts did not specify TCLP-compliant lamps in contracts for its agencies, but preferred vendors that promoted the state's lamp-recycling contract. Download the lamp contract specifications at <ftp://ftp.comm-pass.com/Data/00391101.PDF>.

Massachusetts recycling contract: Download specifications for the Massachusetts lamp and ballast recycling contract at <ftp://ftp.comm-pass.com/Data/01351701.PDF>.

Recommended language for contract announcement:

Mercury is toxic: *When mercury-containing lamps break or are landfilled or incinerated, mercury is released to our air and water, increasing the risk of exposure to humans and wildlife that eat contaminated fish. This has resulted in fish consumption advisories for water bodies in all 50 states. [Insert information about fish advisories in state where contract is issued.]*

Select lowest-mercury lamp: *Review the mercury content information provided by the vendors and select the lowest-mercury lamp compatible with your ballast and fixture.*

Recycle all lamps: *[This facility] has a contract in place to recycle mercury lamps. It is illegal to dispose of most mercury-containing lamps in the trash. All broken mercury-containing lamps are hazardous waste and should be recycled. [Insert information about using lamp recycling contract..]*

Check old ballasts for PCBs: *Fluorescent lamp ballasts manufactured before 1979 may contain PCBs, which are extremely persistent and toxic. When old fixtures are replaced, ballasts must be tested for PCBs or disposed of as hazardous waste. Ballasts manufactured without PCBs are generally labeled accordingly.*

For more information:

Buying and disposing of fluorescent lamps and ballasts: <http://www.buildinggreen.com/features/ds/disposal.html>

Fluorescent lamp recyclers: <http://www.nema.org/lamprecycle/recyclers.html>

EPA 1999 Final Rule on Management of Hazardous Waste Lamps: <http://www.epa.gov/epaoswer/hazwaste/id/merc-emi/merc-emi.htm>.