

Low-Mercury Fluorescent Bulb Facts

Low-mercury fluorescent bulbs contain less mercury than conventional fluorescent tubes.

Manufacturers created these lines to make lighting more environmentally sustainable. These bulbs are commonly known as 'green-tips' since they have green metallic ends to help distinguish them from conventional fluorescent bulbs. Packaging usually claims they are safer, less toxic, non-TCLP and can be landfilled.

The fact that low-mercury bulbs may contain mercury below the EPA limit does not mean that they should be landfilled⁽³⁾, even though

'green-tips' may contain less than the EPA limit for mercury the toxins also needs to be prevented from exposure to the environment. Low-mercury bulbs can have as little as 3.5 mg of mercury as compared to 12 mg for conventional bulbs^{(1) (2)} making them a good choice for reducing mercury in the manufacturing process too.

These types of bulbs may or may not be accepted by your local landfill. But even if they are accepted, paying the nominal fee (about 50¢ per bulb) for recycling is by far the smarter choice. Recycling ensures bulbs are kept safe until they can be properly processed by recycling the glass and capturing and reusing the mercury and phosphor. On the contrary, landfill disposal virtually ensures bulbs will be broken and that the surrounding soil and air will be contaminated. **Ingesting mercury and the byproduct it generates once in the environment, methylmercury, are know serious health risks to both animals and humans⁽⁴⁾.**

Use the [Low-Mercury Fluorescent Bulb Cost-Benefit Worksheet](#) (PDF or Excel)* to help determine how much money your business might save, as well as the amount of air pollution that may be diverted by switching to low-mercury bulbs.



References

- (1) *Inform, Strategies for a Better Environment, Factsheet, 'Purchasing for Pollution Prevention: The Lowdown on Mercury in Fluorescent Lamps,'* http://www.informinc.org/fact_P3/fluorescentlamps.php#notes
- (2) *New Jersey Department of Environmental Protection, Division of Science Research and Technology, Environmental Assessment and Risk Analysis Element, Research Project Summary, Release of mercury From Broken Fluorescent Bulbs, February 2004,* <http://www.state.nj.us/dep/dsr/research/mercury-bulbs.pdf>
- (3) *Code of Federal Regulations (CFR) Chapter 40 Part 261.24.* <http://www.gpoaccess.gov/cfr/retrieve.html>
- (4) *United States Environmental Protection Agency, 'EPA's Roadmap for Mercury' July 2006,* <http://www.epa.gov/mercury/pdfs/FINAL-Mercury-Roadmap-6-29.pdf>

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Bulbs Cost Worksheet – Compact Fluorescent Bulbs

This worksheet is meant to give only an approximation of costs and payback periods.

CURRENT BULB HANDLING		YOUR FACILITY	EXAMPLE
A	What type of bulbs do you currently use?		Fluorescent
B	How many bulbs do you use per year?		5
C	Cost per bulb		\$5.00
D	Bulb wattage		60
E	Cost for electricity (per Kilowatt-hour)		\$0.12
F	How do you currently dispose used bulbs?		Trash
G	Annual disposal/recycling costs (if any)		0
H	Have used bulbs from your facility undergone TCLP testing?		No
I	Annual Bulb Costs (B x C)		\$25.00
J	Hours of Lighting Used (B x 1,000 or 12,000)*		60,000
K	Annual Kilowatt-Hours Used for Lighting [(D x J) / 1,000W/kW]		3,600 kWh
L	Annual Energy Costs for Lighting (E x K)		\$432
M	Total Current Annual Cost (I + L + G)		\$457
CURRENT EMISSIONS (FROM ELECTRICITY USAGE) ✓		YOUR FACILITY	EXAMPLE
N	Lbs. of Sulfur Oxides (SO _x) Produced (K x 0.006 lb SO _x / kWh◆)		21.6 Lbs.
O	Lbs. Nitrogen Oxides (NO _x) Produced (K x 0.004 lb NO _x / kWh◆)		14.4 Lbs.
P	Lbs. Carbon Dioxide (CO ₂) Produced (K x 0.82 = lb CO ₂ / kWh◆)		2,952.0 Lbs.
Q	Lbs. of Methane (CH ₄) Produced (K x 1.05 lb CH ₄ / kWh◆)		3,780.0 Lbs.
R	Lbs. of Mercury (Hg) Produced (K x 1.09 ^{x e-8} lb Hg / kWh◆)		3.92 ^{x e-5} Lbs.
LOW-MERCURY FLUORESCENT BULBS		YOUR FACILITY	EXAMPLE
S	Cost per Bulb		\$2.50
T	Bulb Wattage		40
U	Low-Mercury Fluorescent Bulbs Needed (Based on Current Usage) (J / 20,000◆)		3
V	Total Low-Mercury Fluorescent Bulb Costs (S x U)		\$7.50
W	Kilowatt-Hours Needed (Based on Current Usage) (T x J) / 1,000 W/kW		2,400
X	Energy Costs for Low-Mercury Fluorescent Bulbs (E x W)		\$288.00
Y	Recycling Costs for Low-Mercury Fluorescent Bulbs [(U x \$0.50) + \$50 Service Fee]		\$51.50
Z	Total Annual Cost for Low-Mercury Fluorescent Bulbs (V + X + Y)		\$347.00
a	Annual Cost Difference Between Current Usage and Low-Mercury Fluor. Bulbs (Z – M)		-\$110.00
b	Payback Period in Years for Low-Mercury Fluorescent Bulbs (V / a)		0.07
EMISSIONS (FROM ELECTRICITY USAGE) REDUCED BY SWITCHING TO LOW-MERCURY FLUORESCENT BULBS?		YOUR FACILITY	EXAMPLE
c	Lbs. of Sulfur Oxides (SO _x) Reduced [N - (W x 0.006 lb SO _x / kWh◆)]		7.2 Lbs.
d	Lbs. of Nitrogen Oxides (NO _x) Reduced [O - (W x 0.004 lb NO _x / kWh◆)]		4.8 Lbs.
e	Lbs. of Carbon Dioxide (CO ₂) Reduced [P - (W x 0.82 = lb CO ₂ / kWh◆)]		984.0 Lbs.
f	Lbs. of Methane (CH ₄) Reduced [Q - (W x 1.05 lb CH ₄ / kWh◆)]		1,260.0 Lbs.
g	Lbs. of Mercury (Hg) Reduced [R - (W x 1.09 ^{x e-8} lb Hg / kWh◆)]		1.31 ^{e-5} Lbs.

* Average life for a 100w incandescent is 1,000 hours. Average life for a 100w fluorescent is 12,000 hours

✓ These are not the only pollutants associated with electricity production, however they represent some of the most worrisome.

◆ Emission factors derived from United States Environmental Protection Agency, Compilation of Emission Factors AP-42, Volume 1, Fifth Edition, 1995.

Contact the IWRC for more detailed information on emission factors used here.

❖ Average life for a 40w low-mercury fluorescent is 20,000 hours.