



The CFL Mercury Conundrum

Northwest Utilities Respond

ENERGY STAR Lighting Partners Meeting

Las Vegas, NV

April 5, 2005



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The Conundrum

- Product that offers significant environmental and societal good, but contains the same toxin it helps to prevent – Mercury (Hg)
 - Net reduction of mercury emissions from coal-fired power generation
 - Depends on % of coal generation
- Irreplaceable element in fluorescent lighting
- Very small amount of Hg in CFLs
 - Thermometer 500 mg – 2 grams = 100 – 400 CFLs
 - Tilt thermostat 3 grams = 600 CFLs
 - Dental amalgams 500 mg = 100 CFLs
 - Electrical switches/relays 3.5 grams = 700 CFLs

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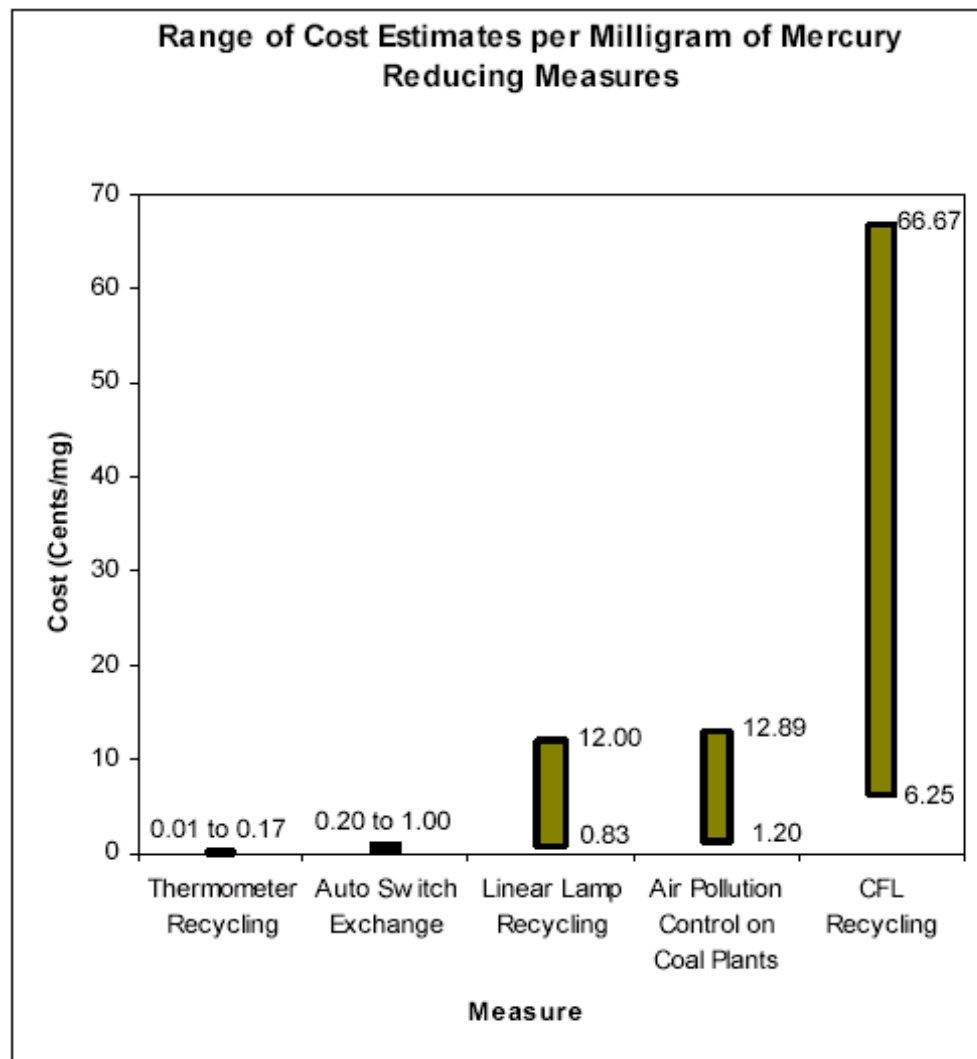
- Expensive to recycle
- Glut of Hg in the marketplace (~\$2/lb.)



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The Conundrum Cont.

- Hg content vs. Hg emissions
 - $< 1\%$ Hg emissions in U.S. are from CFLs
 - Estimates range, according to the EPA and other recent reports, $2\% - 40\%$ of Hg is released from bulb at end of life (if broken) – depends primarily on age and ultimate fate



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Independent Impacts of Lamp Age at Failure, Handling Conditions, and Ultimate Fate of Fluorescent Lamps on Their Overall Mercury Impact



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Lamp Age at Failure	Handling Conditions	Ultimate Fate	Environmental Impact
Accidentally broken when new (no power plant emissions prevented, nearly all bulb mercury released)	Broken indoors (<i>maximum health risk</i>)	Incinerator (<i>some mercury released to air</i>)	Highest
Fails before design life	Broken in open, leaky dumpster (<i>high risk of air and water pollution</i>)	Unlined landfill (<i>potential for air and water pollution</i>)	Moderately high
Achieves design	Broken in transport or on landfill surface (<i>some pollution likely</i>)	Lined, monitored landfill	Moderate
Exceeds design life	Broken after burial in lined landfill (<i>most mercury contained</i>)	Hazardous waste landfill	Moderately Low
Greatly exceeds design life	Broken inside recycling chamber (<i>nearly all mercury recovered</i>)	Recycling facility (<i>nearly all mercury recovered</i>)	Lowest

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The Conundrum Cont.

- Confusion about types of Hg poisoning
 - Metallic mercury poisoning
 - Inorganic mercury poisoning
 - Organic mercury poisoning – most common and worrisome form
 - <http://www.nrdc.org/health/effects/mercury/index.asp>
- Most suggested policies don't penalize the dirtier product – incandescents

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Why Recycle?

- Highly emotional and hotly debated
 - Mercury reduction advocates
 - Recycle no matter the cost, no exceptions
 - Support landfill bans on all mercury-containing products
 - Solid Waste/HHW government
 - Product stewardship (i.e., it's the manufacturers' responsibility; utilities bear some responsibility as well)



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Why Recycle?

Public Perception:

“Recycling program shines light on fluorescent bulbs' dark side” March 25, 2005 *Eugene-Register Guard*

“Bulbs bring environmental issue to light” April 4, 2004 *The Oregonian Excerpt: “The smaller, energy-saving fluorescent light bulbs that flooded Oregon during the 2001 power crisis are expected to burn out during the next six years, posing a peculiar disposal problem: about 3 million bulbs containing a whopping 33 pounds of mercury.”*

“Energy-saving lights now an eco-hazard: Mercury builds up as consumers turn to fluorescent bulbs” August 27, 2002 *Seattle Post-Intelligencer*

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Why Recycle?



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- Community culture
 - Social/environmental stewardship philosophy predominant in many NW communities
 - Utility customers expect it
- Legal requirements
 - Landfill bans (Puget Sound)
 - Laws (Minnesota)

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Alliance CFL Disposal Kit

- Currently in 5th edition
 - Contains messaging, templates, other information
 - Available at www.northwestENERGYSTAR.com



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CFLs and Proper Disposal

A message from:
[insert utility name]

You purchased your ENERGY STAR® qualified compact fluorescent lamp (CFL) to conserve energy, save money and preserve the environment.

Do you know what to do when your CFL burns out?

Take to [insert name(s) and address(es) of facilities] to be recycled or disposed of properly. Avoid throwing CFLs in the garbage.

CFLs require trace amounts of mercury to create the highly efficient light source. No mercury is released when the bulb is in use, and they pose no danger to you when handled properly. However, we want to keep large concentrations out of landfills.



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Facts about compact fluorescent lights (CFLs) and their disposal

CFLs help preserve the environment by using less energy and their long life reduces landfill waste.

A CFL uses up to 75% less energy than an incandescent bulb—saving you up to \$30 in energy costs over its life.

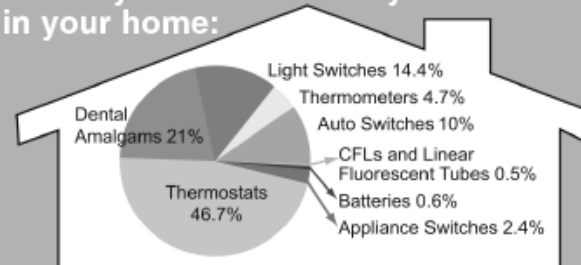


One CFL bulb can last as long as seven to ten incandescent light bulbs.

CFLs should be disposed of properly. Ask your local solid waste collector about community disposal programs for CFLs. If your bulb breaks, put the pieces in a plastic bag and wipe the area with a damp paper towel. Do not vacuum.

Visit the following websites for more information on CFL recycling and disposal options: www.NorthwestENERGYSTAR.com, www.lamprecycle.org or call 1-800-CLEAN-UP.

Where you'll find mercury in your home:



A CFL's sealed glass tubing contains a small amount of mercury, an essential element for the bulb's efficiency as a light source. No mercury is released when the bulbs are in use, and they pose no danger to you when handled properly.

If your ENERGY STAR® qualified bulb fails within the two-year warranty period, return it to the place of purchase for a replacement bulb, and fill out a CFL failure card.

The Northwest Energy Efficiency Alliance is a non-profit group of utilities, public interest groups and efficiency industry representatives working to make affordable, energy-efficient products and services available in the marketplace. For more information, visit www.nwalliance.org.

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Eugene-Springfield Lamp Recycling Coalition



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- Led by Eugene Water and Electric Board
 - Area utilities, energy-efficiency stakeholders, county officials and Oregon DEQ
- Retail-based recycling campaign to get residents to recycle CFLs and linear tubes
- Most retailers absorbing cost of recycling in exchange for promotion of their store
- All independent retailers

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Launch Details

- October 2004
 - Bill stuffers, media release, POP, radio and newspaper ads, coalition web sites



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Preliminary Collection Results

Bulb Type	# Collected	Percentage
8 ft	20	0.3%
6 ft	16	0.2%
4 ft	4678	68.7%
3 ft	128	1.9%
2 ft	254	3.7%
1.5 ft	189	2.8%
Circular	253	3.7%
U-tube	87	1.3%
CFL	1187	17.4%
Total	6812	

Linear Tubes 77.6%
U-tube/Circular 5.0%
CFLs 17.4%



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Hg collected: ~62 grams (assumes 10mg/linear, circular, U-tube; 5mg/CFL)

Cost/lamp: ~\$2.85 (assumes similar collection rate will continue, cost of recycling at \$0.10/linear foot and \$.050 per CFL/circular/U-tube, budget at \$30,000 – does not include participant labor time)

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Puget Sound Lamp Recycling Coalition

- Six-month multi-county pilot led by King County Solid Waste Division
 - Counties participating: Snohomish, Thurston, Kitsap
- Customer pays \$0.50/bulb
- Puget Sound Energy, Seattle City Light and Snohomish PUD offering \$0.50 coupons for a replacement CFL
- Independent retailers
- Mostly CFLs, but some accepting tubes

<http://www.productstewardship.net/productsMercuryFluorescent.html>

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Launch Details

- January 18, 2005:
PR, newspaper ads,
utility newsletter,
coalition web sites



Here's a Bright Idea

Recycle a compact fluorescent light bulb and
receive a coupon for 50¢ off a replacement bulb*

A 50¢ fee per bulb will be charged to cover recycling costs.

Puget Sound Lamp Recycling Coalition
A Project of the Northwest Product Stewardship Council
Snohomish County Human Services • Snohomish County Solid Waste Management Division • Thurston County • Kitsap County Solid Waste Division
Northwest Energy Efficiency Alliance • Puget Sound Energy • Seattle City Light • Snohomish County PUD

BARTLETT DRUGS
Washington's Drug Superstore

*Limit four coupons per person. While supplies last. See a store employee or www.productstewardship.net for more information.

Here's a Bright Idea



What should I do if a fluorescent light bulb (including compact fluorescent bulbs and straight tubes) breaks?
Sweep up the broken glass and place it in a plastic bag and then in a small box. Bring it to a participating store or a household hazardous waste collection site.

Disposal
The City of Seattle and Kitsap and Snohomish Counties prohibit disposal of fluorescent light bulbs (including compact fluorescent bulbs and straight tubes) in the garbage. Spent bulbs need to be recycled either at a participating store or your local household hazardous waste collection site.

For more information call:
Thurston County: 360-357-2491 or TDD: 360-754-2933
Kitsap County Public Works—Solid Waste
Open Line: 360-337-5777
Snohomish County Solid Waste: 425-388-6050
Local Hazardous Waste Management Program in King County—Household Hazards Line: 206-296-4692

711 TTY Relay
This material will be provided in alternative formats upon request, at 206-296-4466.

Puget Sound Lamp Recycling Coalition
Produced by
as part of the Local Hazardous Waste Management Program in King County
A Project of the Northwest Product Stewardship Council
Local Hazardous Waste Management Program in King County • Kitsap County Solid Waste Division • Snohomish County Human Services • Snohomish County Solid Waste Management Division • Thurston County • EcoLight Northwest • Northwest Energy Efficiency Alliance • Puget Sound Energy • Seattle City Light • Snohomish County PUD


HHW Form 11/2004 printed on recycled paper

Recycle Your Compact Fluorescent Light Bulbs and Straight Tubes

Valid 1/18/05-8/17/05

Here's a Bright Idea

Good for 50¢ off a compact fluorescent light bulb.



Offer good while supplies last. See www.productstewardship.net for more information. No cash back if value of coupons exceeds purchase price. Limit four coupons per person. Limit one coupon per bulb purchase. Offer applies to residential customers only.

Seattle City Light **PSE PUGET SOUND ENERGY** **SNOHOMISH COUNTY PUD PUBLIC UTILITY DISTRICT NO. 1**

Cash value equals \$.001



Preliminary Collection Results

- Few results currently available:
 - 355 linear tubes
 - 396 CFLs
 - 2 circulars
 - 71 coupons redeemed
- Budget: \$87,500
 - \$30,000 from SCL, PSE and SnoPUD for coupon
 - \$55,000 from King County for print advertising, media work, printing and design of brochures, posters, coupons, etc.
 - \$2,500 from Thurston County for print advertising.



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Early Findings/Lessons Learned

- Eugene-Springfield
 - Positive response from retailers
- PSLRC
 - Harder to get message out in Metro areas
 - Challenge to get customers to pay
- General
 - Tubes should be part of any program
 - No interest from Big Box retailers

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Next Steps

- Eugene-Springfield will wrap September
- PSLRC will continue through July
- Alliance program will conduct analysis upon completion of both pilot programs
- Will add detailed case studies to CFL Disposal Kit



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How to Start

- Investigate local laws and infrastructure; watch state legislation
- Develop relationship with local solid waste/HHW entity
- Consider proactive public relations
 - Provide information on proper disposal; use the CFL Disposal Kit for messaging and templates
 - Offset Hg from CFLs w/ other mercury collection programs (e.g., thermometer exchange, thermostat replacement, etc.)

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Questions?



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