

LINDA LINGLE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P.O. Box 3378  
HONOLULU, HAWAII 96801-3378

WRITTEN TESTIMONY ONLY

Bill No. 2922

Support Y  N

CHIYOME LEINAALA FUKINO, M.D.  
DIRECTOR OF HEALTH

Date 2/3  
Time 1547

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In reply, please refer to:  
File:  
Type 1  2 WI

COMMITTEE ON ENERGY AND ENVIRONMENTAL PROTECTION

H.B. 2922, RELATING TO SOLID WASTE

Testimony of Chiyome Leinaala Fukino, M.D.  
Director of Health

February 4, 2010  
9:00 a.m.

- 1 **Department's Position:** The Department of Health respectfully opposes this bill as written.
- 2 **Fiscal Implications:** There will be added costs to counties and/or consumers, who currently do not
- 3 have available recycling options.
- 4 **Purpose and Justification:** This bill poses a ban on the disposal of fluorescent and compact fluorescent
- 5 light (CFL) bulbs in landfills, waste-to-energy facilities and incinerators.
- 6 DOH generally supports recycling and appreciates the intent of this measure to ban fluorescent
- 7 and compact fluorescent lightbulbs from disposal facilities. However, recycling options should be
- 8 reasonably available before any ban is imposed. Currently, DOH is aware of four commercial
- 9 hazardous waste transporters, stationed on Oahu, who would accept fluorescent lightbulbs for a fee. We
- 10 are also aware of one retailer that accepts unbroken CFLs for recycling at no charge. This retailer has at
- 11 least one store on Kauai, Oahu, Maui and Hawaii, but none on Lanai and Molokai.
- 12 Since recycling options are not readily available to all residents, we believe that this proposed
- 13 ban is better suited for consideration and action at the county level.
- 14 Thank you for the opportunity to testify on this measure.



WASTE MANAGEMENT

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(808) 668-2985  
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Representative Hermina Morita, Chair  
House Committee on Energy & Environmental Protection

Thursday, February 4, 2010; 9:00 a.m.  
Hawaii State Capitol - Conference Room 325

RE: HB 2922 – Relating to Solid Waste

Chair Morita, Vice Chair Coffman, and members of the Committee:

My name is Joe Whelan and I am the General Manager of Waste Management of Hawaii.

This bill prohibits the incineration or disposal of fluorescent and compact fluorescent light bulbs in landfills and waste-to-energy facilities in the State.

While we strongly support the intent of HB 2922, we have liability concerns with the bill as written and would like to suggest amending the bill so that it is prohibited for anyone to place a mercury-containing lamp in a solid waste container or a container of mixed recyclables. Operators of disposal or incineration facilities shall not be in violation of the act if they have signage clearly indicating that mercury-containing lamps must be recycled and are not allowed to be disposed or incinerated.

Waste Management’s solution to recycling fluorescent lamps is “LampTracker,” a streamlined online service for the recycling of fluorescent lamps containing mercury. LampTracker allows companies to stay in compliance with universal waste regulations, while reducing the risk of mercury exposure for employees, customers and transporters.

Thank you for the opportunity to provide comments on this measure. We ask for your favorable consideration of our requested amendments to this bill.

Bill No. 2922

Support **Y N X**

Date 2/3

Time 1640

Cat **AF AS AX BC**

Type **1 2 WI**

A Division of Waste Management of Hawaii, Inc.

Cyndi Apana

2922

**From:** Chun Hui Chen [chunhui@emcchawaii.com]  
**Sent:** Thursday, February 04, 2010 12:03 PM  
**To:** EEPtestimony  
**Cc:** dante@emcchawaii.com  
**Subject:** HB2922 Walk in Testimony  
**Attachments:** Lamp & Ballast Recycling Program\_LEGSL.pdf

Aloha,

Please see below a summary of the verbal testimony given today:

**Current Situation in Hawaii:**

Due to the lack of recycling facilities, most lamps in Hawaii are being thrown into the dumpsters or sent to H-Power for incineration. The problem with disposal and incineration is the leaching of mercury into our atmosphere, soil, groundwater, and finally into our food supply. Elemental mercury turns into methylmercury as it moves up the food chain, increasing its potency and ill effects on humans.

8-10 million lamps are imported into the state annually, but recycling is not currently mandated.

Currently 12 states ban the landfill disposal of ALL mercury containing lamps:

[http://www.nema.org/gov/env\\_conscious\\_design/mercury/](http://www.nema.org/gov/env_conscious_design/mercury/)

Nationwide average is roughly 30%, the majority being from businesses:

<http://blog.lamprecycling.com/2009/09/alarming-fluorescent-bulb-recycling.html>

In Hawaii, Home Depot is the only place who accepts residential lamps for recycling. There are no programs for commercial recycling.

**Mercury content in common lamps:**

1 CFL has enough mercury (5mg) to contaminate 6,000 gallons of water. If 500,000 CFLs break or are not recycled, about 5.5 pounds of mercury is released back into the environment. The mercury content in lamps commonly used in commercial buildings is much higher:

49% of all linear fluorescent lamps contain 7 mg

66% of CFLS contain 2.5mg

97% of High Pressure Sodium (commonly used in exterior building and pole lights) contain 30mg or more

All components of a lamp can be recycled – glass, endcaps, phosphors, mercury. The benefits of energy efficiency will be outweighed by its negative impact on the environment if we are not responsible for a product's end of life handling.

Please see attached a recycling presentation. Mahalo for your time and consideration, please email me anytime with any questions.

Aloha,

Chun Hui Chen  
EMCC Hawaii  
[www.emcchawaii.com](http://www.emcchawaii.com)  
808.389.1803

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# **Lamp and Ballast Recycling**

# Agenda

- Why Recycle?
- Current Situation in Hawaii
- Mercury
  - Dangers
  - Effects on Humans
  - Mercury and the Environment
  - Recycling mercury

# Why recycle?

- Problems with current disposal methods
- Dangers of Mercury
- Proper disposal or recycling required by law according to Federal & State regulations
  - RCRA (Resource Conservation Recovery Act) 40 CFR 261, 262
  - Hawaii Title 11 Chapter 261 Subchapters 11.1-9
- All components of a lamp can be re-used
- Recycling contributes to LEED certification

## Problems with Current Disposal Methods

- Incineration – releases mercury vapors into atmosphere where it can travel for 200+ miles and falls back to earth in the rain
- Landfill – when lamps break in transit or compacted, mercury leaches into soil and eventually seeps into water supply.



Why dispose when almost ALL components of a lamp can be recycled?



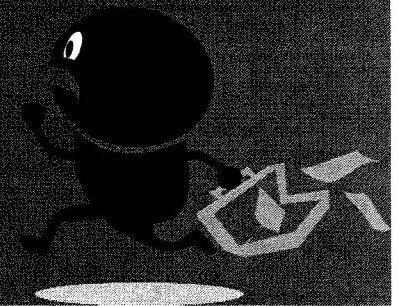
## **States enforcing landfill disposal bans**

- California\*
- Maine\*
- Massachusetts\*
- Minnesota\*
- Vermont\*
- Florida
- New York\*
- Rhode Island\*
- Connecticut\*
- Illinois
- Maryland
- New Hampshire\*

\* States that ban disposal of Toxicity Characteristic Leaching Procedure (TCLP) passing lamps

## Current Situation - Hawaii

- Each year, 8 – 10 million lamps are imported into Hawaii. With an average life of 3 years, where do all these lamps go after their useful life?
- No EPA approved lamp recycling facility in Hawaii
- DOH allows lamps being recycled to be treated as Universal Waste (Universal Waste Rule CFR 40 273.50)
- If not recycling, lamps must be handled as Hazardous Waste per Title 40 Parts 261-263
- First offense fines up to \$25,000 per violation



## Dangers of Mercury



The amount of mercury in 1 CFL is enough to contaminate 6,000 gallons to unsafe drinking levels.

- Once released into the air, mercury vapors can travel up to 200 miles.
- Breakage in dumpsters or en route to landfills & incinerators occurs almost 100% of the time
- Mercury increases in toxicity as it ascends the food chain

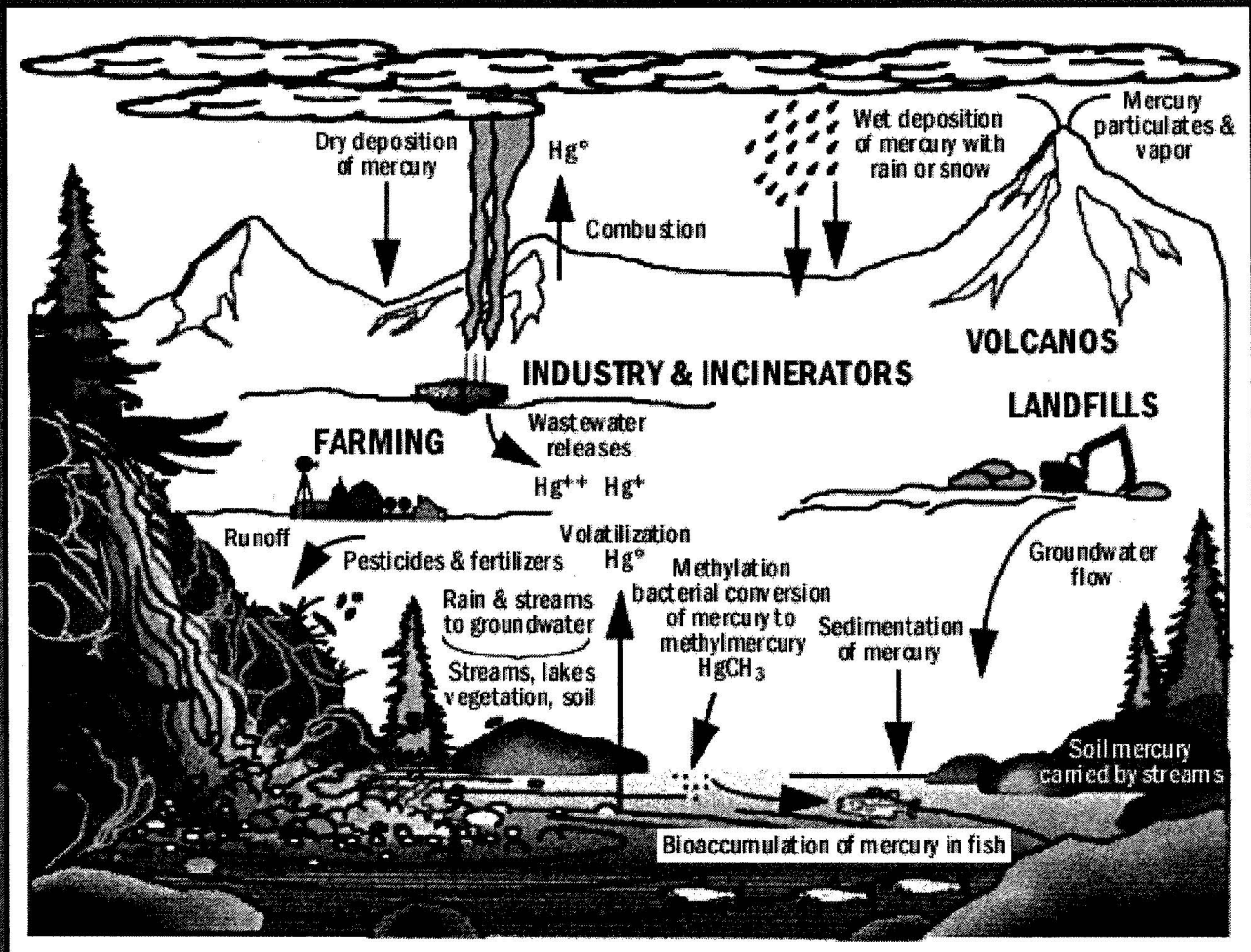
**Table 1: Mercury Use in Lamps Sold by NEMA Companies in 2004**

<b>Lamp Type</b>	<b>Amount of Mercury in Lamp (mg)</b>	<b>Percent of Lamps with Specified Mercury Amount</b>
<b>Fluorescent</b>	0 – 5	12%
	> 5 – 10	49%
	> 10 – 50	27%
	> 50 – 100	13%
<b>CFL</b>	0 – 5	66%
	> 5 – 10	30%
	>10 – 50	4%
<b>Metal Halide (MH)</b>	>10 – 50	24%
	> 50 – 100	40%
	> 100 – 1,000	35%
<b>Ceramic Metal Halide</b>	0 – 5	18%
	> 5 – 10	47%
	> 10 – 50	36%
<b>High Pressure Sodium</b>	>10 – 50	97%
<b>Mercury Vapor</b>	>10 – 50	58%
	> 50 – 100	29%
	> 100 – 1,000	12%
<b>Mercury Short-Arc</b>	> 100 – 1,000	65%
	> 1,000	23%
<b>Mercury Capillary</b>	> 100 – 1,000	100%

# Effects of Mercury on Humans

Intestinal Bleeding	Numbness and tingling in extremities
Can shut kidneys down	Violent chronic spasms of the extremities
Damage to the brain	Sudden personality change
Damage to fetus	Unexplained irritability
Damage to reproductive organs	Difficulty with short-term memory
Damage to auto-immune system	Severe depression
Damage to central nervous system	Delirium
"Asthenic-vegetative Syndrome"	Hallucinations
Tremors	Enlargement of the thyroid
Micro-mercurialism (chronic, low-level mercury poisoning)	Severe salivation
Labile pulse	Increased uptake of radioiodine in thyroid
Tachycardia	Hematological changes
Dermographism	Gingivitis

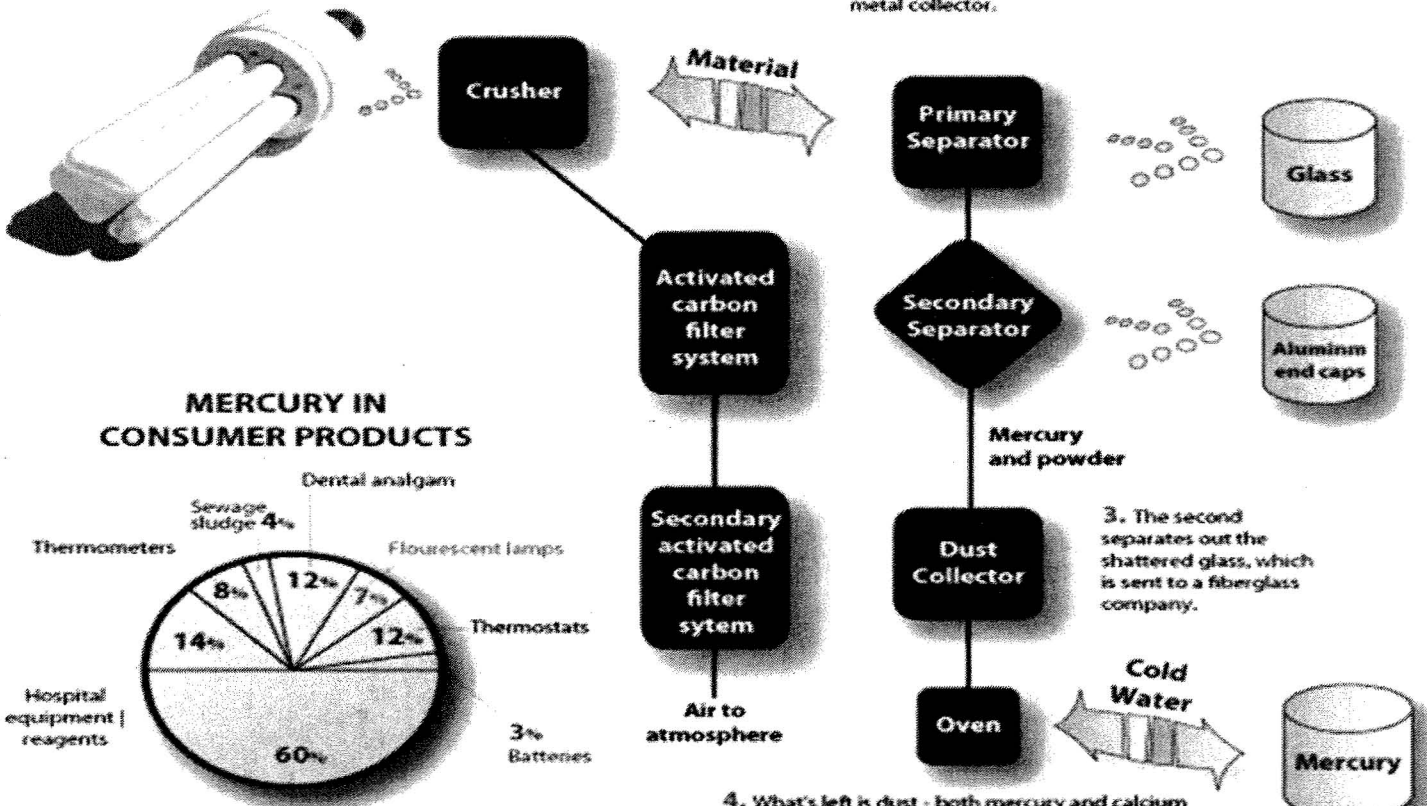
# Mercury and the Environment



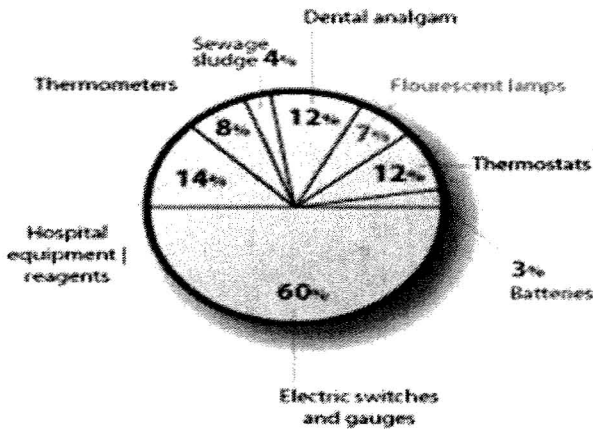
1. The fluorescent tubes are placed manually on a conveyer belt and sent up a floor to a giant metal crusher that breaks them.

2. Air in the tube that contains mercury vapour is cleaned by being filtered through two carbon beds.

All the crushed glass and metal and powder is sent to a system of giant colanders, which separate the pieces in three stages. The first separates out the aluminum ends, which are sent to a scrap metal collector.



### MERCURY IN CONSUMER PRODUCTS

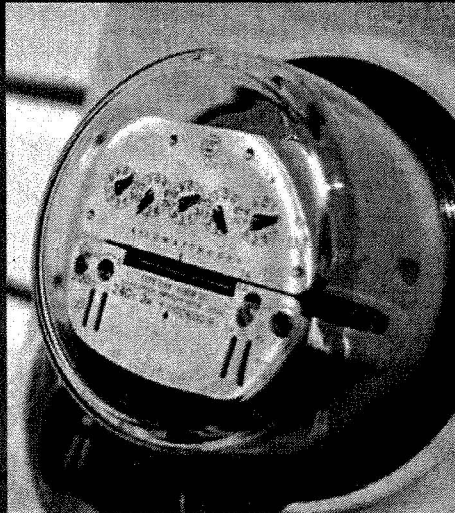


3. The second separates out the shattered glass, which is sent to a fiberglass company.

4. What's left is dust - both mercury and calcium phosphate. That is baked in a vacuum oven, for up to 12 hours at 425 degrees. The mercury then evaporates, and is sent through a cold water pipe to condense. It then is sent to a company in Pennsylvania, which triple distills it and sells it back to the market for other lighting products.

# What about the Cost?

- Cost of materials: 3%
- Cost of installation and maintenance: 10%
- Cost of energy consumption: 35%



Cost of recycling over life cycle = 1%





# What can be recycled

- **Straight Fluorescent (all lengths and diameters)**
- **Compacts Fluorescent (both with and without ballast)**
- **Circular**
- **U-bend**
- **UV Lamps (all sizes)**
- **Flood Lamps**
- **Halogen**
- **HID (High Pressure Sodium, Metal Halide, Biax, High Intensity, Bi-Metal)**
- **Shattershield or Coated Lamps**
- **PCB and non PCB ballasts**