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**SENATE COMMITTEE ON ENVIRONMENTAL QUALITY**

**Senator Allen, Chair**

**2021 - 2022 Regular**

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**Bill No:** AB 2208

**Author:** Kalra

**Version:** 5/25/2022

**Hearing Date:** 6/8/2022

**Urgency:** No

**Fiscal:** No

**Consultant:** Gabrielle Meindl

**SUBJECT:** Fluorescent lamps: sale and distribution: prohibition

**DIGEST:** Phases out the sale of compact fluorescent lamps and linear fluorescent lamps used for general lighting applications.

**ANALYSIS:**

Existing law:

- 1) Establishes the Lighting Toxics Reduction Act which, starting January 1, 2010, prohibits the manufacture, offer for sale, or sale of general purpose lights in the state that contain levels of hazardous substances that would result in the prohibition of that general purpose light in the European Union pursuant to the Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC. (Health and Safety Code (HSC) § 25210.9 et seq.)
- 2) Specifies that mercury-containing fluorescent lamps are exempt from management requirements for hazardous waste and are instead managed as universal waste. (22 California Code of Regulations (CCR) § 66261.9)
- 3) Defines "universal waste" as any waste listed in 22 CCR § 66261.9. (22 CCR § 66273.9)
- 4) Specifies regulations that apply to universal waste handlers for mercury-containing lamps. (22 CCR § 66273.33)

This bill:

- 1) Defines "compact fluorescent lamp (CFL)" as a compact low-pressure, mercury-containing, electric-discharge light source in which a fluorescent coating transforms some of the ultraviolet energy generated by the mercury discharge into visible light, and includes specified characteristics.

- 2) Defines "linear fluorescent lamp (LFL)" as a low-pressure, mercury-containing, electric-discharge light source in which a fluorescent coating transforms some of the ultraviolet energy generated by the mercury discharge into visible light, and includes specified characteristics.
- 3) Prohibits, on and after January 1, 2024, the offering for final sale, final sale, or distribution in the state as a new manufactured product of a CFL.
- 4) Prohibits, on and after January 1, 2025, the offering for final sale, final sale, or distribution in the state of a LFL as a new manufactured product.
- 5) Exemptions from the above provisions include:
  - a) A lamp used for image capture and projection, including photocopying, printing, directly or in preprocessing, lithography, film and video projection, and holography;
  - b) Specified lamps that have a high proportion of ultraviolet light emission;
  - c) Any lamp used in a sunlamp product, as defined;
  - d) A lamp used for medical or veterinary diagnosis or treatment, or used in a medical device;
  - e) A lamp used in pharmaceutical product manufacturing or quality control; and,
  - f) A lamp used for spectroscopy and photometric applications.

## Background

- 1) *Mercury in products.* Mercury is present in many 'everyday' products, including batteries, thermometers and barometers, electric switches and relays, fluorescent and other lamps, dental amalgams, skin-lightening products and other cosmetics, and pharmaceuticals. Mercury can occur or be incorporated in various forms and has different toxicities and bioavailability depending on these. Thus, some products, such as thermometers containing mercury, are considered hazardous waste. Fluorescent lamps, specifically, contain mercury in vaporized form, elevating inhalation risk significantly in the event a lamp breaks. These lamps can break and release mercury at any time during their lifespan, from manufacturing to disposal, which is often done improperly.

2) *Neurotoxicity of mercury.* According to the World Health Organization (WHO), exposure to mercury, even in small amounts, can cause serious health problems and be a particular threat to child development in the womb and early life. All humans are exposed to some level of mercury and the factors that determine whether health effects occur and their severity include the type of mercury to which a person was exposed; the dose; the age or developmental stage; the duration of exposure; and, the exposure route. Fetuses are most susceptible to the toxic effects of mercury. Such exposure most commonly results from the mother's consumption of fish and shellfish containing methylmercury. Methylmercury easily travels in the bloodstream and has the ability to cross the blood-brain barrier. Primarily, mercury exposure at this early stage leads to impaired nervous system development, but may also affect other organ systems. Fetal mercury exposure can lead to impairments in cognition, memory, attention, language skills, and fine motor and visual spatial skills.

According to the WHO, "[t]here are several ways to prevent adverse health effects, including promoting clean energy, stopping the use of mercury in gold mining, eliminating the mining of mercury and phasing out non-essential mercury-containing products." The California Legislature has taken action to ban or limit several such non-essential products, including mercury thermostats AB 1369 (Pavley, Chapter 626, Statutes of 2004), mercury relays and switches AB 1415 (Pavley, Chapter 578, Statutes of 2005), and mercury from cosmetic products AB 2762 (Muratsuchi, Chapter 314, Statutes of 2020). AB 2208 would ban mercury-containing compact and linear fluorescent lamps, except in applications that rely on such lamps and no alternatives currently exist.

3) *Mercury in the environment.* Mercury occurs naturally in the earth's crust and can be released into the environment from volcanic eruptions, weathering of rocks, forest fires, and as a result of human activity, the primary source of environmental mercury release. Coal-fired power plants, residential coal burning for heating and cooking, industrial processes, waste incineration, and mining can all release mercury. Once released into the atmosphere, mercury can travel hundreds of miles with the wind and can remain in the air, deposit on soil, or end up in water bodies and sediment. Mercury persists in the environment by cycling between air and soil in different chemical forms. Inorganic elemental mercury has an atmospheric lifetime of up to two years; methylmercury, an organic form of mercury, can persist in soil for decades. Methylmercury in aquatic environments moves up the food chain and biomagnifies, resulting in especially high levels of methylmercury in specific fish and shellfish species, such as swordfish, king mackerel, tilefish, and shark.

4) *Alternatives to fluorescent lamps.* Despite the known health effects of mercury, fluorescent lamps were long hailed as an important energy-saving alternative to incandescent lamps. Incandescent lamps lose 90% of the energy they draw to heat, as they are designed to heat a metal wire filament (e.g., tungsten) to such high temperatures that it starts glowing. Because of the significant loss of energy to dissipated heat, incandescent lamps are expensive over their lifespan and contribute to environmental pollution if the electricity to power them is derived from fossil fuels. According to the Union of Concerned Scientists, 42% of all anthropogenic emissions of mercury in the U.S. are from coal burned for energy generation.

Light emitting diodes (LEDs) produce light when an electrical current passes through the semiconductor light source. LEDs have a much longer lifespan than incandescent and fluorescent lamps, as they do not 'burn out'. Rather, the brightness of LEDs slowly decreases over time (known as lumen depreciation). Lumen depreciation can be mitigated by designing LEDs with proper heat sinks, as heat is the driving factor for this phenomenon. According to Energy Star, thermal management is the single most important factor for the successful performance of an LED over its lifetime.

5) *Why ban fluorescent lamps now?* While the relative energy efficiency of LEDs has been known, cost was a significant barrier to broad uptake and a ban such as that proposed in AB 2208 would have raised important equity concerns not long ago. The cost of LEDs has dropped significantly, however. Due to energy cost savings, LEDs will be more economical over their lifetime, even if upfront costs may be higher. As policies to phase out fluorescent lamps take effect around the world, LEDs will continue to become more affordable. To align cost considerations with market estimates, the author of this bill bans linear fluorescent lamps starting 2025 to allow for replacement LEDs to further drop in price. The phase-out of mercury-containing lamps in the European Union will also likely reduce the cost of LED lamps and ramp up supply. As the Lighting Toxics Reduction Act AB 1109 (Huffman), Chapter 534, Statutes of 2007 aligned California with some of the EU's regulations, it seems sensible to update California law to reflect advances in technology and continue its alignment with the European single market. The EU has started the phase-out of mercury-containing lamps over several years, beginning with specified compact and linear fluorescent lamps next year.

## Comments

1) *Purpose of Bill.* According to the author, "Now that safe, energy-efficient LEDs are widely available, fluorescent lamps are no longer the best lighting option for California. In order to function, fluorescents must contain mercury, a

potent toxin with the ability to do serious and permanent neurological damage to anyone who comes in contact with it. The effects are especially severe in children, who can suffer irreparable setbacks in their cognitive development after being exposed to mercury. If a fluorescent lamp breaks, it will release mercury vapor that can easily injure entire families.

“We can no longer sit idly by and let fluorescent lamps poison our communities and harm our environment. By phasing out the sale of fluorescent lamps, AB 2208 will allow better alternatives to light the way to a safer, more energy-efficient future.”

### **Related/Prior Legislation**

AB 707 (Quirk, Chapter 703, Statutes of 2021) revises the Mercury Thermostat Collection Act of 2008 and establishes it as the Mercury Thermostat Act of 2021. Revises the funding structure and requires thermostat manufacturers to contract with a qualified third party that meets specified criteria to implement the thermostat collection program statewide.

AB 2762 (Muratsuchi, Chapter 314, Statutes of 2020) prohibits, commencing January 1, 2025, the manufacture, sale, delivery, holding or offering for sale in commerce of any cosmetic product containing specific intentionally added ingredients, including mercury.

AB 1109 (Huffman, Chapter 534, Statutes of 2007) enacts the Lighting Toxics Reduction Act which, starting January 1, 2010, prohibits the manufacture, offer for sale, or sale of general purpose lights in the state that contain levels of hazardous substances that would result in the prohibition of that general purpose light in the European Union pursuant to the Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC.

AB 1415 (Pavley, Chapter 578, Statutes of 2006) bans the sale and distribution in the state of all products with mercury-containing switches, relays, measuring devices, and gastrointestinal tubes with specified exceptions.

AB 1369 (Pavley, Chapter 626, Statutes of 2004) prohibits, on and after January 1, 2006, a person from selling, offering to sell, or distributing for promotional purposes in the state a mercury-added thermostat, unless it meets specified criteria.

**SOURCE:** National Stewardship Action Council

**SUPPORT:**

7th Generation Advisors  
Active San Gabriel Valley  
American Illumination, INC.  
American Suntanning Association  
Appliance Standards Awareness Project  
Atrium 916  
California Electronic Asset Recovery (CEAR)  
California Product Stewardship Council  
California Resource Recovery Association  
California Teamsters Public Affairs Council  
Californians Against Waste  
Calpirg  
Center for Environmental Health  
City and County of San Francisco Department of the Environment  
City of Sacramento  
City of Sunnyvale  
Clasp  
Clean Power Campaign  
Clean Water Action  
Coalition for Clean Air  
County of Santa Clara  
Eco-healthy Child Care  
Ecology Center  
Environment California  
Environmental Working Group  
Friends Committee on Legislation of California  
Green Science Policy Institute  
Greenwaste Recovery  
Los Angeles County Solid Waste Management Committee/integrated Waste  
Management Task Force  
Made Safe  
Mercury Policy Project  
National Association of Environmental Medicine (NAEM)  
Natural Resources Defense Council (NRDC)  
Planet Cents, INC.  
Product Stewardship Institute  
Recology  
Republic Services INC.  
Responsible Purchasing Network  
Rethinkwaste  
Safer States  
San Francisco Baykeeper

San Francisco Department of The Environment  
Santa Clara Valley Water District  
Sea Hugger  
Sierra Club California  
Soltech LLC  
Stopwaste  
Story of Stuff  
Swana California Chapters Legislative Task Force  
The Atrium  
The Story of Stuff Project  
Tri-ced Community Recycling  
Turtle Island Restoration Network  
Unisc International  
V. John White Associates  
Western Placer Waste Management Authority (WPWMA)  
Wm (waste Management)  
Women's Voices for The Earth  
Zero Waste Sonoma

**OPPOSITION:**

National Electrical Manufacturers Association (NEMA)

**ARGUMENTS IN SUPPORT:** According to Clean Power Campaign, "We support AB 2208 because:

- 1) Mercury-free alternatives are readily available, making the sale of CFLS and LFLs unnecessary: Mercury and its compounds are highly toxic to humans and the World Health Organization puts mercury in the top ten most problematic chemicals for public health. Much more energy-efficient, mercury-free light emitting diode (LED) technology can easily and affordably replace fluorescent lamps and are readily available.
- 2) LED alternatives are better for the environment: LED replacements for fluorescent lamps do not contain any mercury, use approximately half the electricity as fluorescents to produce the same amount of light, and last 2-3 times longer.
- 3) It will save Californians money: According to estimates from the Appliance Standards Awareness Project (ASAP), by 2030 California residential, commercial, and industrial consumers would save about \$1 billion annually on their utility bills by transitioning from the most common fluorescent lamps to LEDs.

“AB 2208 would not only help protect Californians from the unnecessary threat of mercury exposure from fluorescent lamps, but it is also an important climate protection initiative that would accelerate the transition to a low-carbon economy through increased use of energy-efficient LED lighting solutions.”

**-- END --**