ASSEMBLY THIRD READING
AB 2208 (Kalra)
As Amended April 19, 2022
Majority vote

SUMMARY

Bans the offering for final sale, final sale, or distribution of compact fluorescent lamps starting January 1, 2024, and linear fluorescent lamps starting January 1, 2025, and makes exemptions for relevant products and applications.

Major Provisions

COMMENTS

Mercury in products: Mercury is a metallic element that occurs naturally and is also released in the environment by humans, where it has significant health effects on people and wildlife. Nonetheless, mercury is present in many 'everyday' products, including batteries (in the United States the only remaining batteries containing mercury are button cell and mercuric oxide batteries), thermometers and barometers, electric switches and relays, fluorescent and other lamps, dental amalgams (a mercury and metal alloy mixture used for dental fillings), 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.

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 (e.g. inorganic, organic, etc.); 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.

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.

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. Mercury pollution, specifically, is exacerbated by energy-inefficient light bulbs if the energy is derived from coal-burning power plants. 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.

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.

Exemptions: The bill makes several important exemptions, many of which are modeled after the list of exemptions outlined in EU Directives. The author's office and sponsor are further soliciting information from the academic research community on uses of fluorescent lamps for research purposes that would not be covered by current exemptions. If such uses are identified, the author is likely to include those in the measure moving forward.

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."

Arguments in Support
A coalition of supporters, including the sponsor of AB 2208, the National Stewardship Action Council, write, "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 WHO puts mercury in the top ten most problematic chemicals for public health. Much more energy-efficient, mercury-free 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."

Arguments in Opposition
None on file.

FISCAL COMMENTS

This bill is keyed non-fiscal by the Legislative Counsel.

VOTES

ASM ENVIRONMENTAL SAFETY AND TOXIC MATERIALS: 6-3-0
YES: Quirk, Arambula, Kalra, Bennett, Cristina Garcia, Muratsuchi
NO: Smith, Mathis, Waldron

UPDATED

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