



Community Environmental Advisory Commission

ACTION CALENDAR
July 16, 2013

To: Honorable Mayor and Members of the City Council
From: Community Environmental Advisory Commission (CEAC)
Submitted by: Laura August, Chairperson, CEAC
Subject: Reducing Exposure to Anthropogenic Mercury

RECOMMENDATION

Adopt a Resolution:

1. Strongly supporting local, national, and worldwide efforts to reduce exposure to anthropogenic mercury;
2. Encouraging dentists practicing in Berkeley to limit use of mercury dental amalgam;
3. Requesting DBC to remind dentists that they have a legal obligation to provide fact sheet to new patients and to patients on their initial amalgam application;
4. Requiring dental offices to:
 - a. Post standard Proposition 65 labels or posters regardless of the number of employees
 - b. Require all dentists to provide the Dental Board of California's Dental Materials Fact Sheet at each dental amalgam application;
5. Directing staff to write a letter to the Dental Board of California to update Dental Material Fact Sheet;
6. Supporting continued education and advisories for Berkeley residents about potential risks associated with consuming fish caught in the Berkeley Marina and exposure to mercury from other sources;
7. Directing staff to provide copies of this resolution to the city's state and federal representatives and to the other cities in Alameda County with a request that they use their authority to take the necessary steps to phase-down the use of mercury in dentistry;
8. Writing to FDA and National Institute of Health (NIH) evaluate the knowledge gaps in risks of dental amalgam;
9. Supporting the United Nations efforts on use of mercury products;
10. Writing to the World Health Organization (WHO) to pledge support for the phase down of use of dental mercury; and
11. Directing staff to continue educating the community on dental amalgam and other products containing mercury.

SUMMARY

Berkeley residents are exposed to anthropogenic mercury from two main sources — dental amalgam and in methylmercury in seafood. The CEAC recommends that the Council strongly support local, national, and worldwide efforts to reduce exposure to anthropogenic mercury. The CEAC strongly supports improved dental patient education and increased awareness of the potential health risks associated with exposure to mercury from dental amalgams and methylmercury in seafood. Specific actions to address these issues are outlined in this recommendation.

This recommendation would encourage dental offices in Berkeley to completely avoid or limit the use of dental amalgam for their patients, require dental offices to provide the standardized Dental Board of California's (DBC) Dental Materials Fact sheet which describes some of the potential risks and benefits associated with restorative materials to patients at each office visit prior to placement of each dental amalgam, and to require posting of the standard Proposition 65 warning on mercury regardless of the number of office employees. In addition CEAC urges the DBC update the fact sheet with new scientific evidence on the risks posed by mercury and other restorative materials. The recommendation also strongly encourages the City of Berkeley to take a leadership role in dissemination of current and understandable information about the potential risks and benefits of amalgam use, including placement and removal.

FISCAL IMPACTS OF RECOMMENDATION

The fiscal impacts for the City are minimal.

CURRENT SITUATION AND ITS EFFECTS

1. Dental amalgams are the most significant source of exposure to mercury in the absence of fish consumption and other industrial sources. Dental amalgam is composed of approximately 53% mercury and about 30% silver. Exposure to mercury and other dental restorative materials can occur during placement and removal of dental amalgam as well as over the years when dental amalgam is present in the mouth of the patient.
2. The public is generally aware that mercury is toxic. However, there is little awareness that mercury is a component of materials used in dentistry. The potential for exposure to mercury from dental amalgams, as well as the range of potential health risks associated with exposure are not well understood.
3. Patients are not routinely provided current and adequate information on the potential health effects of mercury and other dental restorative materials in order to clearly understand the facts and potential risks of these materials.
4. Currently, businesses with fewer than 10 employees are exempt from the Proposition 65 warning requirement which states that business are responsible for providing clear and reasonable warnings for exposures to listed chemicals. These signs and labels are commercially available.

5. Mercury, mercury compounds, and methylmercury are included on the Proposition 65 list of chemicals known to the State of California to cause developmental or reproductive harm, Methylmercury compounds are also listed as known to the State of California to cause cancer.
6. The United States Environmental Protection Agency (U.S. EPA) and the California Environmental Protection Agency (Cal/EPA) have conducted risk assessments to determine estimates for which adverse effects are not expected to occur. The U.S. EPA determined a tolerable dose of 4.8 micrograms (ug) mercury per day and Cal/EPA determined a tolerable dose of 0.48 ug of mercury per day. The Cal/EPA estimate included specific safety factors sensitive populations and population variability. Some people may exceed tolerable levels set by both U.S. EPA and Cal/EPA based on Center for Disease Control and Prevention's estimates of exposure from dental amalgam.

BACKGROUND

Humans can be exposed to mercury in multiple forms including elemental mercury and methylmercury. Elemental mercury is found in dental amalgam and some common household products such as compact fluorescent light bulbs. Methylmercury is another form of mercury that can be present in some fish. The U.S. EPA summarized potential acute effects from both forms of mercury, which may include tremors, emotional changes, insomnia, neuromuscular changes, headaches, and loss of cognitive function. For fetuses, infants, and children the primary health effect from methylmercury is impaired neurological development. The health effects from chronic low-dose exposure to elemental mercury, such as from dental amalgam, are not well understood.

Mercury used in dentistry

Mercury dental amalgam has been used throughout the world since the 1800s. Until about 30 years ago, it was the only material widely available for use, aside from gold, a more expensive alternative. Other alternatives to dental amalgam include porcelain and composites (also known as "white fillings"), which are also more expensive, compared to dental amalgam.

The U.S. Food and Drug Administration (FDA) regulates dental amalgam under the 1976 Medical Device Amendments to the federal Food, Drugs, and Cosmetics Act. Amalgam was grandfathered into the regulatory system and is Generally Regarded as Safe (GRAS) by the FDA. The advent of composite materials in the 1970s allowed patients to replace mercury, however its use remains and the amalgam controversy has continued ever since.

In general, most human epidemiology studies do not show an association between dental amalgams and adverse health effects. Two of the most comprehensive human epidemiology studies are the New England Children's Amalgam Trial and the Portugal Children's Amalgam Trial. Initial publications in 2006 found no significant results between adverse neurological outcomes and number of amalgams. These studies

have been widely cited as evidence for safety of dental amalgam. A recent publication using a subset of children from the Portugal Children's Amalgam Trial reported a statistically significant association between mercury levels in urine and adverse neurological effects in boys with a common genetic variant. In addition, studies in laboratory animals and cell cultures exposed to mercury at doses equivalent to what humans may receive from dental amalgams show potential for harm. Despite the lack of consistent evidence in the scientific literature on potential health risks of dental amalgam, use of the Precautionary Principle is warranted. The Precautionary Principle supports a reduction in the use of mercury in dental amalgam and informing patients of potential health risks if dental amalgams are needed.

Other sources of exposure to mercury

The presence of methylmercury in fish results from human release of mercury into waterways. To prevent/limit the entry of mercury into the aquatic environment, Berkeley dentists are required to use amalgam separators to prevent mercury from reaching the sewer system and environment per East Bay Municipal Utility District (EBMUD) regulations.

For residents who currently regularly consume fish caught at the Berkeley Marina, methylmercury present in the seafood is a source of exposure to mercury. Currently, the City has 13 fish advisory signs in multiple languages located throughout the marina to alert and warn fisherman of the potential risks of consuming certain types of seafood caught in these waters. Many health authorities recognize that some common species of fish contain unhealthy levels of methylmercury. CEAC is currently reviewing sustainable seafood labeling practices for Berkeley merchants, part of which involves informing consumers of fish species that are low in methylmercury. No further City actions are recommended at this time.

CEAC also evaluated mercury in household products, such as compact fluorescent light bulbs. This is another potential source that could contribute to acute high-dose exposure to individuals if the bulbs are broken. Recycling of mercury-containing products such as CFLs is encouraged, but no further City actions are recommended at this time

On May 2, 2013 the CEAC voted to approve the report, including all recommendations, and the full resolution.

Action: Motioned/Seconded/Carried (Gomberg/August)

Votes: Ayes: August, Goldhaber, Gomberg, Lim, Torkelson.

Noes: None. Absent: None. Abstain: None.

RATIONALE FOR RECOMMENDATION

As above.

ALTERNATIVE ACTIONS CONSIDERED

A full ban on mercury dental amalgam was considered. Recommendations from the California Dental Association were that dentists need the option to choose the material that is most suitable for the patient both for their health and overall well-being, including financial considerations for the patient. Dental amalgam is a less costly alternative to other materials used for fillings such as gold and composites, therefore the above recommendation was decided upon.

In addition, CEAC considered implementation of standardized procedures for obtaining informed consent from patients prior to placement of each dental amalgam restoration, however, there were discussions regarding resources for enforcement and the legality of the informed consent requirement.

CITY MANAGER

See companion report.

CONTACT PERSON

Nabil Al-Hadithy, Hazardous Materials Manager, Planning & Development / Toxics Management (510) 981 7461

Attachment:

1: Resolution

RESOLUTION NO. ##,###-N.S.

REDUCING EXPOSURE TO ANTHROPOGENIC MERCURY IN THE CITY OF
BERKELEY

WHEREAS, the City of Berkeley is charged with protecting the public health and welfare of its residents; and

WHEREAS, the City of Berkeley has adopted the precautionary principle, where threats of serious or irreversible damage to people or nature exist, lack of full scientific certainty about cause and effect shall not be viewed as sufficient reason for the City to postpone measures to prevent the degradation of the environment or protect human health; and

WHEREAS, on average about 50% of cavities restored are filled with dental amalgam containing mercury; and

WHEREAS, the scientific debate continues on whether this mercury in dental amalgam poses a risk to the population; and

WHEREAS, according to the U.S. Food and Drug Administration's (FDA) most recent labeling instructions to dentists on amalgam was "very limited to no clinical information is available regarding long-term health outcomes in pregnant women and their developing fetuses, and children under the age of six, including infants who are breastfed." Since the safety of amalgam for children and fetuses is unknown, and as mercury and methylmercury are listed as a developmental toxin under California's Proposition 65, it is the position of the City of Berkeley that this information bears additional disclosure to patients and parents than is currently practiced.

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that dentists implanting dental amalgams containing mercury in the mouths of patients in Berkeley will provide the Dental Board of California's (DBC) Dental Materials Fact Sheet¹ at each amalgam application.

BE IT FURTHER RESOLVED that the City:

1. Will request that the standard Proposition 65 labels or posters be posted in all dental offices regardless of the number of employees;
2. Will request and strongly encourage that the DBC update the Dental Materials Fact Sheet to convey new scientific information on the absence of proof of safety for dental amalgam in susceptible subpopulations such as children and women who may become pregnant and request the DBC to remind dentists of their legal obligation to provide the fact sheet to new patients and to patients considering initial restorative treatment options;
3. Write a letter to the FDA and the National Institutes of Health (NIH) to request that they close specific knowledge gaps in the field of dental amalgam by soliciting and

¹ Dental Materials Fact Sheet "Facts about Fillings." Dental Board of California (2004)
http://www.dbc.ca.gov/formspubs/pub_dmfs2004.pdf

reviewing peer-reviewed scientific papers that address each specific issue that the 2010 FDA panel requested specific research on regarding mercury and dental amalgam;

4. Support the efforts of the United Nations Environment Programme to negotiate a global, legally binding instrument on mercury that will encompass all products and uses;

5. Write a letter to the World Health Organization (WHO) pledging to support the WHO's strategies to phase down the use of dental mercury whenever possible;

6. Direct staff to provide copies of this resolution to the city's state and federal representatives and to the other cities in Alameda County with a request that they use their authority to take the necessary steps to phase-down the use of mercury in dentistry;

7. Direct staff to continue educating the community about strategies to prevent dental caries and risks relating to dental amalgams. This could also include dental professional workshops on the topic of mercury amalgam risks to better enable dental professionals to discuss the issue with their patients. In addition, city staff should continue to educate the community on ways to minimize other sources of mercury in their bodies from fish and shellfish consumption, and proper disposal of batteries, fluorescent lights, and other mercury-containing household hazardous waste. This could include a webpage and or a factsheet.

8. Encourage dentists practicing in Berkeley to limit use of mercury dental amalgam

