Written Testimony Urging the Board of Health to Reject the Draft Amalgam Information Brochure

In light of the page and time limits, the following represents only a few of the major problems with the draft amalgam brochure – a radical departure from the current brochure that has not benefited from the input of stakeholders (who are also being denied their representative of choice at the meeting scheduled for December 12).

The draft amalgam brochure will mislead consumers

The draft amalgam brochure is misleading – and even contains outright false information. For example:

- **Mercury is more than a “type of metal”:** Describing mercury – a neurotoxin and reproductive toxin – as a “type of metal” is a grossly misleading understatement. The United Nations Environmental Programme describes mercury as “a notorious heavy metal of global concern and known to be a potent poison of the human nervous system since Greek and Roman times.”

- **BPA is not an ingredient in composites:** Stating that some composites contain BPA is pure scare-mongering. The fact is amalgam is 50% mercury and composites are 0% BPA because modern dental composites do not contain BPA. Instead, the most common monomer used in composites is Bis-GMA, and there is no evidence that it can even be converted into BPA. Since neither the Board of Health nor the other stakeholders have expressed any concern about dental sealants – which contain more monomer than composite fillings, but are still promoted for use in children – it would appear that this issue was raised merely as a political matter.

- **Composites do not put children at risk:** Claiming that composite fillings can cause problems with behavior, stress, anxiety, and depression is not evidence-based. This misleading claim originated with one poorly-designed study (Maserejian et al.), whose failures include:
  - the researchers relied on self-reports instead of actual testing
the researchers did not control for all possible confounding factors (most significantly, exposure from canned food and beverages)

the researchers themselves exposed study participants to dental sealants (another potential source of exposure) placed during the course of the study

the study was not blind (both participants and researchers could see what material was used in their mouths)

no measure of BPA was even taken – in fact, there is no indication that BPA was detected at all, much less that it caused any problems

in a later study, researchers did a battery of neuropsychological testing that failed to find even a statistically significant association between composites and test scores – much less any connection to BPA

By contrast, there is strong scientific evidence that even low levels of mercury – including mercury from amalgam – can cause problems in children and others. The federal government recognizes the risks of amalgam: after warnings from both the U.S. FDA and the U.S. EPA (“The developing neurological systems in fetuses and young children may be more sensitive to the neurotoxic effects of mercury vapor [from amalgam]” and “certain microorganisms can change elemental mercury [from amalgam] into methylmercury, a highly toxic form”), the U.S. government signed and ratified a treaty requiring the phase-down of amalgam use – and calling for “objectives aiming at minimizing its use” and promoting use of “mercury-free alternatives for dental restorations.”

The draft amalgam brochure omits information required by ordinance

The draft amalgam brochure omits almost all of the information required by ordinance – information that consumers need to make educated decisions about amalgam. For example:

• **Most alternatives are omitted:** The ordinance requires that the brochure “describes what alternatives are available to dental amalgam.” The draft amalgam brochure lists only one out of many, including glass ionomers and compomers. Consumers have a right to know about the existence of these valuable alternatives.

• **Potential advantages and disadvantages to oral health are omitted:** The ordinance requires that the brochure disclose the potential advantages and disadvantages to oral health. The draft amalgam brochure fails to address this issue. Consumers particularly want to know that amalgam placement requires the removal of a significant amount of healthy
tooth structure, while the alternatives without mercury are less invasive. Consumers have a right to know that amalgam requires unnecessary destruction of a healthy part of their body.

- **Potential advantages and disadvantages to environment are omitted:** The ordinance requires that the brochure disclose the potential advantages and disadvantages to the environment. The draft amalgam brochure fails to address this issue. "A significant amount of mercury is estimated to be released to the environment" from the use of amalgam in dentistry, the World Health Organization reports.\(^9\) Between 313 and 411 tons of dental mercury is consumed each year, accounting for 10% of global mercury consumption.\(^10\) This makes dental amalgam among the largest consumer uses of mercury in the world, more than lighting (120-150 tons), measuring and control devices (320-380 tons), and electrical and electronic devices (180-220 tons).\(^11\) This dental mercury enters the environment via many unsound pathways. For example, dental mercury enters:
  
  - **AIR** via cremation, dental clinic emissions, sludge incineration, and respiration
  - **WATER** via dental clinic releases and human waste
  - **SOIL** via landfills, burials, and fertilizer\(^12\)

After amalgam is in the environment, certain microorganisms can change its elemental mercury into methylmercury, a highly toxic form that can damage children’s developing brains and nervous systems even before they are born.\(^13\)

Consumers have a right to know about one of the largest sources of mercury pollution from products.

**The draft amalgam brochure needs to be rejected**

The world is moving to discourage the use of mercury – including mercury in amalgam – as evidenced by the new *Minamata Convention on Mercury*. But this draft amalgam brochure is completely out-of-step: spreading misleading information about mercury, discouraging the use of mercury-free alternatives, and even going so far as to endorse the website of a pro-mercury trade group. In light of its inaccuracies, omissions, and inconsistency with federal policy, the Board of Health should reject this draft as an embarrassment to the city of Philadelphia.

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\(^3\) Socialstyrelsen (2012), *Bisfenol A i dental material* (2012), p.8 ("No scientific studies have been identified to date which show that Bisphenol A diglycidyl methacrylate (Bis-GMA), a very common monomer in polymer-based dental materials, can be converted into HPA.")

\(^4\) Maserejian et. al., *Dental Composite Restorations and Neurodevelopmental Deficits in Children: Treatment Level Analysis from a Randomized Clinical Trial*, Neurotoxicology 34 (2012), 513-521.


\(^6\) FDA, *Class II Special Controls Guidance Document: Dental Amalgam, Mercury, and Amalgam Alloy - Guidance for Industry and FDA Staff*(2009)


\(^8\) Minamata Convention on Mercury (2013).


\(^10\) Socialstyrelsen (2012), *Bisfenol A i dental material* (2012), p.8 ("No scientific studies have been identified to date which show that Bisphenol A diglycidyl methacrylate (Bis-GMA), a very common monomer in polymer-based dental materials, can be converted into HPA.")


\(^12\) Socialstyrelsen (2012), *Bisfenol A i dental material* (2012), p.8 ("No scientific studies have been identified to date which show that Bisphenol A diglycidyl methacrylate (Bis-GMA), a very common monomer in polymer-based dental materials, can be converted into HPA.")

\(^13\) EPA, *EPA Will Propose Rule to Protect Waterways by Reducing Mercury from Dental Offices* (2010).


\(^16\) Concorde East West, *The Real Cost of Dental Mercury* (March 2012).

\(^17\) EPA, *EPA Will Propose Rule to Protect Waterways by Reducing Mercury from Dental Offices* (2010).