ZMWG Views on Mercury Use in Dental Amalgam

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The Zero Mercury Working Group (ZMWG) believes that the mercury treaty should contain effective "phase down" reduction measures to decrease dental amalgam use, leading to a global amalgam phase-out (for most applications) by a fixed date.

Country experiences clearly demonstrate that phasing out amalgam over time – while still providing quality dental care – is achievable. The Nordic countries, Finland and Japan have all phased out most amalgam uses. Amalgam is only used in about 8% of restorations in Russia;[i] 10% in the Netherlands, Switzerland and Mongolia; 20% in Singapore and Vietnam;[ii] and 26% in India.[iii] The following countries have legislation, restrictions or guidance on amalgam in place: Spain, Italy, Austria, Germany, United States, Canada, Australia, Singapore, Kuwait, Mexico, Bulgaria, Malaysia, China, Vietnam, Indonesia, Myanmar, Thailand and the Philippines.[iv]

Some countries may face challenges in fostering the transition to mercury-free dental restorations. For countries with limited resources, assistance and extra time should be provided to train dentists, nurses and dental care providers, inform consumers and promote mercury-free alternatives. Therefore, the treaty should include a multi-pronged approach with short, medium and long term strategies to reduce amalgam use, including those discussed below.

Dental Mercury Release Pathways

Dental amalgam represents about 10% of global mercury consumption.[v] Dental amalgam is often the largest source of mercury in municipal wastewater; in the soil via wastewater sludge, land disposal and the burial of the deceased with fillings; as well as an increasing source of mercury air pollution from wastewater sludge incineration and crematoria, due both to the rise in cremation and the increasing percentage of amalgam retained in the teeth of the deceased.[vi] A significant amount of mercury is released into the environment through various pathways, including as an indirect result of the diversion of traded dental mercury for other purposes.[vii]

Major pathways of mercury due to use of dental amalgam every year[viii]

Major release/pathways	Mercury (metric tonnes/year)
Atmosphere	50-70
Surface water	35-45
Groundwater	20-25
Soil	75-100
Recycling of dental amalgam	40-50
Sequestered, secure disposal	40-50
Total	260-340

Source: UNEP

However, these estimates are determined to be "soft," because amalgam shipments are not coded as elemental mercury (resulting in no UN "Comtrade" data on dental mercury) and few countries track dental mercury use.[ix] Therefore, obtaining better baseline data is imperative.

Transition to Available and Cost Effective Mercury-Free Alternatives

Material alternatives to dental amalgam are readily available and a global phase-down of amalgam "…will contribute considerably to reduction of mercury use and release," states a 2010 World Health Organization (W.H.O.) report,[x] one of many advocating for reduction. Previously, an EU scientific committee had concluded "that dental health can be adequately ensured by both types of materials" (i.e. mercury-free alternatives and amalgam), noting that alternatives have been used for over 30 years, and revealed little evidence of clinically significant adverse effects."[xi] "Substituting alternative materials for mercury-based dental fillings also has less negative impact on human health and the environment," according to a new report released by Health Care Without Harm, although the report emphasizes that particular care should be paid to such transitions in economically impoverished areas.[xii]

The W.H.O. has been promoting the use of mercury-free alternatives in impoverished areas for quite some time. As an earlier W.H.O. report explains, "the majority of the world's population still suffers from untreated dental decay" because "of the continued dependency on traditional approaches to oral health care." W.H.O. believes that Atraumatic Restorative Treatment (ART) provides communities with safe and effective dental care without amalgam or expensive dental equipment. ART inexpensively removes dental decay with hand instruments and the cavity is filled with a tooth-colored adhesive material. According to WHO, "ART is one of the most suitable caries controlling approaches for use in primary oral health care programmes and therefore the continuation of the global promotion of ART is one of its major objectives."[xiii]

In its 2010 report, the W.H.O. indicates that it "will facilitate the work for a switch in use of dental materials" because, as the report stated, "for many reasons restorative material alternatives to dental amalgam are desirable."[xiv] Among others, mercury-free filling alternatives foster use of minimally interventional adhesive techniques, helping to preserve the tooth.[xv]

In addition, the W.H.O. report recommends that the transition away from dental amalgam should involve careful planning. "Dental professionals will need to be made aware of the environmental impact of dental materials. Similarly, educating other stakeholders, governments, insurance companies and manufacturers is needed."[xvi] The new Health Care Without Harm study concurs. "Such a phase-out should take into account the practical availability of alternative materials, the equipment needed to utilize non-mercury alternatives, the training of dentists to utilize these alternatives, and the costs to the patient and society."[xvii]

Consumer education and patient outreach is also essential. When patients learn that amalgam is mainly mercury, they overwhelmingly prefer the alternatives.[xviii] Disseminating public information provides patients with the information needed to make informed decisions.

Based on current mercury reduction trends, amalgam use is expected to continue declining and the use of mercury-free alternatives to increase. Amalgam costs will likely increase because of tighter mercury regulations and the rising price of silver and mercury.[xix]

Amalgam is already a higher-priced dental material when "external" environmental and societal costs are factored in. The adverse effects on the environment and society over the entire life cycle of dental amalgam – including mercury production, preparation of filling materials, removal of old fillings and replacement with new ones, the environmental and health impacts from mercury recycling, discharges to wastewater, solid waste disposal, emissions from crematoria and releases from cemeteries – can only be sustainably avoided by phasing out amalgam.[xx]

Equitable Coverage for Mercury-Free Dental Fillings

In many countries, financial coverage for dental care is not distributed fairly, while in others, steps have been taken to make it more equitable. For example, to make amalgam more cost-neutral against other filling materials, the Swedish Parliament decided in 1999 that no financial support should be given for amalgam fillings via the national dental insurance.[xxi] In another example, the Mexico City Health Secretariat promotes the use of mercury-free alternatives by de-authorizing the purchase of amalgam for its 31 public hospitals and 230 clinics.[xxii]

As explained in the 2010 W.H.O. report, "Existing or planned third-party payment systems must consider reimbursement schemes incorporating dental care which make use of material alternatives to dental amalgam."[xxiii] The dental industry also has a responsibility to adapt to higher use of material alternatives to amalgam. This should include collaborating with authorities and health professionals on reducing the price of alternatives and ensuring supply and distribution of materials for restorative dental care in all countries, says W.H.O."[xxiv]

Discouraging Amalgam Use in Sensitive Populations

The treaty text should also include provisions encouraging countries to protect vulnerable populations, such as women of childbearing age, lactating mothers and children. In many nations, placing small composites or glass ionomers is already less expensive than small amalgams and "...alternative restorative materials of sufficient quality are available for use in the deciduous [baby] dentition of children" according to W.H.O.[xxv] Many countries discourage amalgam use in sensitive populations. These include placing restrictions on amalgam use in vulnerable populations and directives on the use of dental restorative materials. [xxvi]

In Summary

Clearly, both the scientific literature and the experience in some countries indicate that dental amalgam use can be both phased down and ultimately phased out (for most applications). The treaty should include both elements so that the mercury releases associated with this product use can be virtually eliminated over time.

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