



G21 The Greening of Cremation: The Elimination of Cremercury

Winnie Furnari, MS, 82 Onondaga Street, Yonkers, NY 10704*

After attending this presentation, attendees will understand the past and present impact that cremating mercury fillings has had on the environment and the future possibilities to see the elimination of this effluent. Attendees will be informed regarding the trends in the usage of mercury fillings and the practice of cremating teeth with amalgams. The goal of this presentation is to provide a review of the negative effects of dental amalgam fillings after remains are cremated, present options for reducing dentistry's contribution to the heavy metal bioburden, and introduce novel approaches for mitigation.

This presentation will impact the forensic science community by providing a review of crematory mercury emissions worldwide and the significant effect amalgam fillings have on the environment. This presentation will educate the community on responsible alternatives that can be used by scientists for global public health and the environment.

The practice of cremation is ancient, and there is presently a growing trend of enormous increase in the number of cremations throughout the world every year. This rising popularity is attributed to several factors, including consumer cost considerations, fewer religious prohibitions, changing consumer preferences, such as the desire for simpler, less ritualized funeral practices, decreasing burial space, and environmental concerns. Cremation has become socially acceptable. In the United States in 2015, the cremation rate was 48.5%. In 2016, the rate surpassed the burial rate. That rate is projected to grow to 78% by 2035, far exceeding the burial rate.

An area of concern is the environmental impact that human remains containing toxic substances, such as amalgam dental restorations, contribute to the release of the heavy metal mercury and its effects on the living and the environment. Dental amalgam is already releasing a significant amount of mercury into the environment. The Environmental Protection Agency (EPA) has proposed effluent limitations guidelines and standards for the dental category but does not address cremation.

There is a wide variation in the number of amalgam restorations placed in developed countries, and many dentists in North America no longer place amalgam restorations; however, amalgam is still being used at least some of the time by the majority of practitioners in North America. What should be noted is that, even though in some parts of the world amalgam use may be decreasing, it is rising in others. There is a need to look at the fact that dental caries is becoming an increasing problem in middle- and low-income countries as they adopt Western lifestyles, including high consumption of sugars, but have not yet begun widespread preventive programs, such as fluoridation. As a result, the need for filling materials is expected to grow in these countries.

The population that will likely be dying in the next 20 years comes from a time when amalgam placement was more prevalent than it is now. In underdeveloped countries, amalgams placed currently will remain in the population the next 30 to 50 years. Because of the increase in the number of cremations yearly, it is forecast that an increased amount of mercury will be released in the next few decades due to an increase in the number of cremated decedents that have retained their teeth with amalgam restorations. This increase is expected to be followed later by a decrease in mercury emissions in industrialized countries, as the next generation of people have both fewer cavities and fewer amalgam restorations.



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A deputy associate administrator for congressional affairs in 2010 reported that, as of 2007, dental amalgam remained the second-largest category of mercury use in all products. It is estimated that in the United States in 2005 nearly 3,000 kilograms (6,613 lbs.) of mercury were released to the environment from crematoriums. At this time, no federal or state regulations restrict mercury emissions from crematoriums, and the EPA does not plan to regulate human crematoriums at this time.

Generally speaking, there are no legally recognized property rights in a dead body, and laws in the United States regarding the treatment of dead bodies derive from the government's police power to guard public health. Based on its police powers, the state probably could mandate the removal of amalgam fillings from dead bodies to prevent mercury releases to the environment.

Cremercury, Cremation, Amalgam