

Mercury Release into the Environment (9/05)

Roberts HW, Marek M, Kuehne JC, Ragain JC. Disinfectants effect on mercury release from amalgam. J Am Dent Assoc 2005;136:915-919.

The purpose of this study was to evaluate the effect of nine disinfectants abilities to mobilize mercury ions into solution. Five samples of each disinfectant were mixed with pulverized amalgam alloy and left undisturbed for the contact time recommended by the disinfectants manufacturer. The mixtures were filtered and then assayed for the presence of mercury ions. Chlorine disinfectant materials discharged the most mercury ions into solution, followed by bromide, iodophor, peroxide/peracetic acid and phenolic disinfectants. The quaternary ammonium compound disinfectant did not cause mercury ion release that was detectable. **The authors concluded that the chlorine containing disinfectants destabilized the tin oxide of dental amalgam decreasing the oxides ability to reduce the amount of mercury release. The reduction-oxidation potential and corrosion potential of amalgam alloy was also substantially lower in the quaternary ammonia compound than in the bleach.**



DECS Comment: Concerns about the effects of mercury in the environment have come under increased scrutiny by the U.S. Environmental Protection Agency (EPA), state and local governmental agencies, and the general public. In response to these concerns the American Dental Association (ADA) issued its Best Management Practices (BMPs) for Amalgam Waste in February 2003 and updated these recommendations in March 2004.¹ The ADA strongly recommends recycling of dental amalgam waste for dental offices. This includes non-contact amalgam (i.e., scrap), contact amalgam (i.e., amalgam that has been in contact with the patient), chair side traps, vacuum pump filters, amalgam sludge, empty amalgam capsules, and extracted teeth with amalgam restorations. Some waste management companies and /or agencies (e.g., Defense Reutilization and Marketing Service) require that amalgam waste that has been in contact with a patient be disinfected before it can be recycled. The results of this study indicate that chlorine-containing disinfectants cause a significant release of mercury ions into solution and should not be used for disinfecting waste amalgam before recycling.

Reference

American Dental Association. Best Management Practices for Amalgam Waste. Available at http://www.ada.org/sections/publicResources/pdfs/topics_amalgamwaste.pdf. Accessed September 2010.