Mercury Release via Disinfectants and Line Cleaners (12/06)


Dental practices use disinfectants or line cleaners to flush dental unit wastewater lines to minimize odor generation, remove solid waste particles and remove biofilms in dental unit waterlines (DUWLs). The authors evaluated 47 disinfectants or line cleaners for their potential to release mercury from amalgam waste. Each product concentration was prepared according to the manufacturer's recommendations and gently agitated along with one amalgam specimen for 24 hours. The combined decanted liquid was filtered, rinsed and analyzed for mercury using a modified U.S. Environmental Protection Agency (EPA) method. Six preparations released significantly more mercury from amalgam (about 17 to 340 times) than did the deionized water control (P < .001). Three of these products contained sodium hypochlorite as the active ingredient; the other three contained sodium dichloroisocyanate, ethylenediaminetetraacetic acid (EDTA), or hydrogen peroxide and peracetic acid as active ingredients. Disinfectants or line cleaners containing phenols, glutaraldehyde or quaternary ammonium compounds did not release more mercury from amalgam than did deionized water. The amount of mercury released by the other disinfectants/line cleaners was not statistically different from that released by the control. This study and other published reports have demonstrated that preparations containing chlorine release more mercury from amalgam than did some other products and the deionized water control. As a result, the use of these products is not recommended for treating dental office wastewater lines or DUWLs.

DECS Comment: Because of environmental concerns, the effects of mercury in the environment have come under increased scrutiny by the U.S. EPA, state and local governmental agencies, and the general public. In response to these concerns the EPA is requiring wastewater treatment facilities to meet increasingly stringent limits for mercury in wastewater. Dental office wastewater has been identified as a source of mercury in wastewater. Additionally, the American Dental Association (ADA) has published Best Management Practices (BMPs) for Amalgam Waste. Disinfectants and line cleaners used in the dental office have the potential to react with amalgam waste and release dissolved mercury when flushing dental unit wastewater lines or when cleaning DUWLs. Therefore, dental personnel should choose products that release little or no mercury from amalgam waste. The results of this study indicate that chlorine-containing (i.e., bleach) disinfectants cause a significant release of mercury ions into solution and should not be used for treating dental office waste lines or DUWLs.

References: