

Dental mercury hygiene recommendations

ADA COUNCIL ON SCIENTIFIC AFFAIRS

The American Dental Association has long recognized the importance of observing proper mercury hygiene practices for the safety of dental health care workers. The following recommendations were developed as an update of the ADA Council on Scientific Affairs' 1999 recommendations¹ to provide guidance to dentists in adopting an appropriate mercury hygiene program, ensuring the safety of all dental personnel involved in the handling of mercury or dental amalgam and minimizing the release of mercury into the environment. They are not intended to establish a standard of care or to set requirements that must be followed in all cases.

The current update

- uses a new format to make the information more accessible;
- recommends against the use of carpeting in dental operatories, where a mercury spill might occur;
- provides more information on the management of mercury spills.

In February 2003, the ADA published Best Management Practices for Amalgam Waste.² Dentists are strongly urged to follow the ADA Best Management Practices, or BMPs, and any that may have been adopted by their state or local dental associations. The ADA BMPs are available online in the members-only portion of the ADA Web site ("www.ada.org"); interested readers also can obtain a copy of the ADA BMPs by sending an e-mail to "science@ada.org" or calling the ADA toll-free number, Ext. 2878, or 1-312-440-2878. Dentists are urged to include the ADA BMPs in their mercury hygiene training programs.

SOURCES OF MERCURY IN THE DENTAL OFFICE

Dental personnel potentially can be exposed to mercury through direct skin contact with mercury (or freshly mixed dental amalgam) or through exposure to the following potential sources of mercury vapors: accidental mercury spills; malfunctioning amalgamators, leaky amalgam capsules or malfunctioning bulk mercury dis-

Background. The ADA has long recognized the importance of observing proper mercury hygiene practices for the safety of dental professionals. In 1999, the ADA Council on Scientific Affairs adopted mercury hygiene recommendations to provide guidance to dentists and their staff members for safe handling of mercury and dental amalgam. These mercury hygiene recommendations have been developed to update those previously adopted by the Council.

Overview. In addition to discussing sources of mercury in the dental office, this Council report describes office engineering considerations and hygiene recommendations to be used during preparation and placement of dental amalgam restorations. New information included in this report covers the management of mercury spills.

Practice Implications. These recommendations are intended to provide guidance to the dental practitioner in ensuring the safety of personnel who handle dental amalgam and in minimizing the release of mercury into the dental office environment.

pensers (although the ADA recommends against the use of bulk elemental mercury); trituration, placement and condensation of amalgam; polishing or removal of amalgam; vaporization of mercury from contaminated instruments; and open storage of amalgam scrap or used capsules.

GENERAL MERCURY HYGIENE RECOMMENDATIONS

- Train all personnel involved in the handling of mercury and dental amalgam regarding the potential hazards of mercury vapor and the necessity of observing good mercury hygiene practices.
- Remove professional clothing before leaving the workplace.

OFFICE ENGINEERING

- Work in well-ventilated work areas, with fresh air exchanges and outside exhaust. If the work areas are air-conditioned, the air-conditioning filters should be replaced periodically.

- Use proper work area design to facilitate spill containment and cleanup. Floor coverings should be nonabsorbent, seamless and easy to clean. The Council does not recommend the use of carpeting in operatories, where an accidental mercury spill might occur. Chemical decontamination of carpeting may not be effective, as mercury droplets can seep through the carpet and remain inaccessible to the decontaminant. Removal of the contaminated carpet may be the only way to ensure decontamination.

- Periodically check the dental operatory atmosphere for mercury vapor. This may be done using dosimeter badges or through the use of mercury vapor analyzers for rapid assessment after any mercury spill or cleanup procedure. The current Occupational Safety and Health Administration, or OSHA, standard for mercury is 0.1 milligram per cubic meter of air averaged over an eight-hour work shift.³ The National Institute for Occupational Safety and Health has recommended the permissible exposure limit to be changed to 0.05 mg/m³ averaged over an eight-hour work shift over a 40-hour workweek,⁴ but OSHA has not yet adopted this recommendation.

HYGIENE RECOMMENDATIONS DURING PREPARATION AND PLACEMENT OF AMALGAM

- Use only precapsulated amalgam alloys. The ADA recommends against the use of bulk alloy and bulk elemental mercury, also referred to as liquid or raw mercury, in the dental office. If you still have bulk elemental mercury in the office, it should be recycled (refer to the ADA BMPs²).
- Use an amalgamator with a completely enclosed arm.
- If possible, recap single-use capsules after use, store them in a closed container and recycle them.
- Use care when handling amalgam. Avoid skin contact with mercury or freshly mixed amalgam.
- Use high-volume evacuation systems (fitted with traps or filters) when finishing or removing amalgam.

MANAGEMENT OF MERCURY SPILLS

In case of an accidental mercury spill (regardless of size), the Council endorses the following recommendations⁵:

- Never use a vacuum cleaner of any type to clean up the mercury.
- Never use household cleaning products to clean up the spill, particularly those containing

ammonia or chlorine.

- Never pour mercury, or allow it to go, down the drain.
- Never use a broom or a paintbrush to clean up the mercury.
- Never allow people whose shoes may be contaminated with mercury to walk around or leave the spill area until the mercury-contaminated items have been removed.

MANAGEMENT OF SMALL MERCURY SPILLS

A spill is considered small if there are less than 10 grams of mercury present (a pool no larger than the size of a quarter).^{6,7} Small spills can be cleaned safely using commercially available mercury cleanup kits and by observing the steps listed in the Michigan Department of Environmental Quality's table entitled "Management of Mercury Spills."⁸

MANAGEMENT OF LARGE MERCURY SPILLS

A mercury spill is considered large if there are more than 10 g of mercury present (a pool larger than the size of a quarter).^{6,7} Cleanup of large mercury spills requires the use of an experienced environmental contractor who specializes in toxic spill cleanup. Contact your state or local Environmental Protection Agency office for a list of contractors who clean up toxic spills. ■

This report was prepared on behalf of the ADA Council on Scientific Affairs by Division of Science staff members Dr. Yasser Elseweifi; P.L. Fan, Ph.D.; Kathleen Todd; and Roger Connolly.

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3. Occupational Safety and Health Administration. Standard interpretations. (1996) PEL for inorganic mercury is a time weighted average, not a ceiling. Available at: "www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=23866&p_text_version=FALSE". Accessed April 17, 2003.

4. National Institute for Occupational Health and Safety. Occupational health guidelines for inorganic mercury. Available at: "www.cdc.gov/niosh/pdfs/0383.pdf". Accessed April 8, 2003.

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7. Prince Edward Island [Canada] Department of Fisheries, Aquaculture, and Environment. Guidelines for the safe clean-up of household mercury spills. Available at: "www.gov.pe.ca/photos/original/fae_mercury.pdf". Accessed April 8, 2003.

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