



DEPARTMENT OF THE NAVY

BUREAU OF MEDICINE AND SURGERY  
2300 E STREET NW  
WASHINGTON DC 20372-5300

IN REPLY REFER TO

BUMEDINST 6260.30  
BUMED-631  
30 Mar 94

BUMED INSTRUCTION 6260.30

From: Chief, Bureau of Medicine and Surgery  
To: Ships and Stations Having Dental Personnel

Subj: MERCURY CONTROL PROGRAM FOR DENTAL TREATMENT FACILITIES

Ref: (a) OPNAVINST 5100.23C  
(b) NEHC Technical Manual TM-91-5, Sep 91  
(c) OPNAVINST 6000.1A  
(d) NAVSEAINST 5100.3B (NOTAL)  
(e) NAVSEASYSKOM S9593-A7-PLN-010: Shipboard Hazardous Materials/Waste Management Plan (NOTAL)  
(f) Naval Ships Technical Manual (NTSM) Chapter 634 - Deck Coverings (NOTAL)  
(g) Code of Federal Regulations (CFR) 29, 1910.1000

Encl: (1) Safety and Health Precautions for Handling Mercury  
(2) Mercury Control, Decontamination, and Disposal  
(3) Industrial Hygiene Technical Assistance Directory  
(4) Mercury Control Safety Program Materials

1. Purpose. To establish handling procedures for elemental mercury in dental treatment facilities to minimize personnel exposure and environmental contamination. This instruction does not apply to organic mercury compounds. References (a) through (g) are provided for additional information.

2. Cancellation. NAVMEDCOMINST 6260.2.

3. Scope. Applies to dental personnel working in dental spaces ashore and afloat. The provisions of this instruction supersede any conflicting requirements of reference (d) insofar as the practice of dentistry is concerned. However, certain uniform controls aboard ships and at shore stations are needed to ensure equipment does not become contaminated by mercury and to provide for proper mercury disposal. In those nondental areas, reference (d) applies.

4. Background. Mercury, which vaporizes at room temperature, is a significant health hazard if sufficient amounts are ingested, absorbed through the skin, or inhaled. The potential for personnel exposure to elemental mercury vapor has been greatly reduced by the use of pre-encapsulated amalgam. Industrial



hygiene surveys have shown that routine use of pre-encapsulated amalgam does not result in overexposure of dental personnel to elemental mercury vapor. Laboratory analysis of urine samples from dental personnel confirms there are no overexposures during routine operations.

5. Discussion

a. Mercury can enter the body by three routes: (1) inhalation of vapors; (2) ingestion of metallic mercury or mercury compounds; and (3) absorption through the skin. Mercury vaporizes at room temperature and concentrates more rapidly in confined spaces. Mercury vapor has no warning properties such as odor or color. Mercury can be absorbed directly through the skin or through cuts or abrasions in the skin. The permissible exposure limit is 0.05 milligrams per cubic meter of air (reference (g)).

b. Since dental mercury use has been restricted to pre-encapsulated amalgam, the sources of mercury contamination have been limited to: (1) debris from excavations of dental restorations falling to the floor, (2) improper storage of scrap amalgam, and (3) accidental breakage of amalgam capsules.

c. The survey requirements specified in reference (a), which apply to all Navy workplaces, are appropriate and adequate for dental facilities. Air sampling is not specifically required, but may be performed at the discretion of the cognizant industrial hygienist. Industrial hygiene assistance can be obtained from the sources listed in appendix 3-B to reference (a) or your local naval medical activity.

d. Biological monitoring is not required but may be prescribed by an occupational health professional as circumstances warrant. When conducted, biological monitoring shall be done by urine mercury analysis performed at one of the Navy consolidated industrial hygiene laboratories which are identified in chapter 3 of reference (a). When conducted, medical surveillance examinations shall comply with the requirements of reference (b). However, pregnant personnel will require a medical evaluation and mercury exposure screening per reference (c).

6. Action. Commanding officers and officers in charge of ships and stations that have dental facilities shall:

a. Ensure the requirements of enclosures (1) through (4) are implemented and continue to be enforced.

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b. Ensure facilities under their cognizance use only pre-encapsulated mercury amalgams.



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SAFETY AND HEALTH PRECAUTIONS FOR HANDLING MERCURY

1. Personnel Hygiene. Proper mercury handling and hygiene procedures are required of all dental personnel and shall be emphasized during training and indoctrination periods. Before working with mercury-bearing materials (amalgam or scrap amalgam), personnel shall remove all jewelry which could potentially become contaminated and permanently damaged. Food, drink, or tobacco products shall not be consumed while working with mercury bearing materials. The use of patient examination gloves is encouraged to minimize skin contact. Personnel shall wash their hands after working with mercury bearing materials before leaving the dental treatment room (DTR).

2. Work Surfaces. Work surfaces shall be of impervious material, preferably stainless steel or plastic laminate.

3. Handling

a. Personnel shall use a no-touch technique for handling amalgam. After trituration of the pre-encapsulated amalgam, personnel shall use an amalgam well while loading the amalgam carrier.

b. Personnel shall use water spray and high-volume evacuation when cutting or grinding amalgam restoration. All amalgam scraps shall be collected before removing the rubber dam.

c. Personnel shall use an amalgamator which completely encloses the capsule during amalgamation. The amalgamator enclosure shall be inspected weekly for mercury globules and cleaned following enclosure (2). The amalgamator shall be disassembled only by a qualified dental repair specialist. An impervious catch tray shall be used underneath amalgamators.

d. Amalgamators, capsules, and any other items which may be contaminated with mercury shall be stored in the impervious catch trays described in paragraph 3c. These items shall be checked at least weekly for mercury droplets.

4. Waste

a. Dental amalgam is an intermetallic compound comprised of various proportions of silver, copper, tin, and zinc alloy mixed with pure mercury. This mixture of metals form a compound that is stable both physically and chemically and will not spontaneously break down into the original elements. There is no indication that this intermetallic compound is toxic or hazardous to health.

b. The use of mercury vapor suppressant solutions, such as HgX® or unused film fixer, were required in the past when amalgam components were not pre-measured and excess pure mercury droplets were sometimes generated. Studies conducted by industrial hygiene personnel have concluded that amalgam scraps can be stored dry without exceeding any personnel exposure level for mercury vapors in the breathing zone of dentists and technicians.

c. Dental amalgam scraps stored dry without vapor suppressant solution is not a hazardous waste. Dry amalgam scraps do not fail toxicity characteristic leaching procedure (TCLP) tests. Therefore, dry amalgam scraps shall continue to be recycled for the precious silver metal content and will not be disposed of as a hazardous waste. All dental scraps shall be transferred to the local defense reutilization and marketing office (DRMO), in a tightly closed non-breakable container. Label the dental scrap container and all documentation as "Non-Hazardous Dental Scrap Metal."

5. Floors. Vinyl sheet is the preferred floor covering material for DTRS; carpet is not permitted. Use of pre-encapsulated amalgam products has not precluded dental waste or scrap from falling to the floor and being crushed into crevices, therefore, seamless floors are preferred. Since free mercury is no longer used, there is no longer a requirement for designing the floor covering to be lipped between the dental operatory floors and walls. Reference (f) specifies flooring material requirements for dental spaces afloat. Floors shall be kept clean, free of amalgam debris.

MERCURY CONTROL, DECONTAMINATION, AND DISPOSAL

1. Mercury Control. Reference (d) discusses the basic requirements for the control of mercury. Due to the health hazard potential of mercury, control procedures for the handling and disposal of amalgam, or mercury-contaminated items, are mandatory.

2. Mercury Decontamination and Spill Cleanup Procedures

a. A mercury decontaminant, such as HgX<sup>®</sup>, shall be readily available for immediate mixing and application to a contaminated surface. HgX<sup>®</sup> works by binding with the elemental mercury. If larger droplets of mercury are present, the HgX<sup>®</sup> only reacts with the outer surface of the droplet forming a shell. This shell can easily be broken, releasing elemental mercury. Therefore, care shall be used during removal of large droplets.

b. When mercury contamination occurs, it shall be cleaned up immediately. Follow the instructions provided in the mercury decontamination kits discussed in paragraph 4, below.

c. Eating, drinking, and smoking shall be prohibited during cleanup procedure.

d. Patient examination gloves shall be worn during cleanup.

e. Collected mercury shall be placed into a sealed, suitable liquid and vapor tight container and removed to a designated area for disposal as mercury waste per references (d) or (e).

f. Contaminant surfaces shall be scrubbed with mercury decontaminant to convert any trapped mercury.

g. Any equipment or instruments, such as amalgamators, which become contaminated with mercury shall be thoroughly cleaned with mercury decontaminant.

h. The cognizant industrial hygiene office shall be contacted to test the decontaminated area and equipment for residual mercury.

3. Mercury Disposal

a. Mercury and mercury compounds shall not be dumped into any body of water including open seas or oceans, or intentionally released into any ship's waste disposal system. Shipboard mercury storage and handling areas shall not be connected to deck drainage systems.

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b. For shipboard only, all mercury-contaminated waste, including scrap amalgam, shall be collected, packaged with a double boundary of confinement using plastic bags, sealable drums, or polyethylene bottles, and labeled per reference (e).

c. For shore facilities, packaged mercury waste shall be disposed of in cooperation with the base environmental public works department.

d. Special disposal procedures are not required for items contaminated with trace amounts of mercury, such as used, disposal amalgam capsules. Reclose amalgam capsules after use or seal used capsules in a denture bag.

4. Mercury Decontamination Kits. Mercury decontamination kits are commercially available and shall be obtained by commands to be available for facilities requiring their use. Contact the cognizant dental safety management office for specific ordering information (see enclosure (3)) .

INDUSTRIAL HYGIENE TECHNICAL ASSISTANCE DIRECTORY

1. General. Industrial hygiene personnel at Medical Department activities are available to:

a. Provide consultation on occupational health matters.

b. Provide specific assistance in identifying and evaluating personnel exposures to toxic contaminants and other hazardous agents.

c. Evaluate the need for, and recommend as appropriate, the administrative and engineering controls, and personnel protective equipment required to control personnel exposures to toxic chemicals and harmful physical agents.

2. Forces Afloat. Forces afloat which are located in a port supported by one of the regional services listed below, and which require the services of an industrial hygienist, should request assistance from the cognizant regional service.

INDUSTRIAL HYGIENE SERVICES

	DSN	COMMERCIAL
NATNAVMEDCEN Bethesda, MD	295-1202	(301) 295-1202
NAVHOSP Patuxent River, MD	356-1496	(301) 863-1496
NAVMEDCLINIC Annapolis, MD	281-2501	(301) 267-2501
NAVMEDCLINIC Quantico, VA	278-2236	(703) 640-2236
NAVMEDCLINIC Washington Navy Yard, DC	288-3491	(202) 433-3491
NAVHOSP Great Lakes, IL	792-2492	(312) 688-2492
NAVHOSP Groton, CT	241-4613	(203) 449-4613
NAVHOSP Newport, RI	948-2496	(401) 481-2496
NAVMEDCLINIC Philadelphia, PA	443-8145	(215) 897-8145
NAVMEDCLINIC Portsmouth, NH	684-2302	(207) 438-1102
NAVHOSP Beaufort, SC	821-2551	(803) 525-5301
NAVHOSP Camp Lejeune, NC	484-4007	(919) 451-4007
NAVHOSP Cherry Point, NC	582-2244	(919) 466-2244
NAVHOSP Charleston, SC	563-6100	(803) 743-6100
NAVHOSP Guantanamo Bay, Cuba	723-3960	(0115) 399-4063
NAVHOSP Roosevelt Roads, PR	831-7133	(809) 865-7133
NAVMEDCEN Portsmouth, VA	564-7610	(804) 444-7610
NAVMEDCLINIC Norfolk, VA	564-6841	(804) 444-6841
NAVHOSP Corpus Christi, TX	861-2685	(512) 939-2685
NAVHOSP Jacksonville, FL	942-2532	(904) 727-2532
NAVHOSP Millington, TN	966-5654	(901) 872-5654

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INDUSTRIAL HYGIENE SERVICES  
(Continued)

	DSN	COMMERCIAL
NAVHOSP Orlando, FL	791-4901	(407) 646-4901
NAVHOSP Pensacola, FL	922-6611	(904) 452-6611
NAVMEDCLINIC Key West, FL	483-2796	(305) 296-2461
NAVMEDCLINIC New Orleans, LA	485-2400	(504) 361-2400
NAVHOSP Camp Pendleton, CA	993-1304	(619) 725-1304
NAVHOSP Long Beach, CA	873-9201	(213) 420-5201
NAVMEDCEN San Diego, CA	735-1084	(619) 545-1084
NAVMEDCLINIC Port Hueneme, CA	551-6352	(805) 982-6352
NAVMEDCLINIC San Diego, CA	958-2808	(619) 696-1011
NAVHOSP Oak Harbor, WA	820-2426	(206) 679-2426
NAVHOSP Bremerton, WA	439-3286	(206) 478-9555
NAVHOSP Lemoore, CA	949-4376	(209) 998-4376
NAVMEDCEN Oakland, CA	253-2458	(415) 633-6066
NAVMEDCLINIC San Francisco, CA	869-5975	(415) 765-5975
NAVHOSP Guam, MI	344-9234	(671) 344-9234
NAVHOSP Okinawa, JA	631-7216	(206) 631-7216
NAVHOSP Yokosuka, JA	244-7521	011-81-46-826-1911
NAVMEDCLINIC Pearl Harbor, HI	430-0111	(808) 474-4242
ext.	474-4242	(808) 471-3025
NAVHOSP Naples, IT	425-4500	(39) (81) 724-4500
NAVHOSP Rota, SP	727-3127	011-34-56-82-3127

NAVY ENVIRONMENTAL AND PREVENTIVE MEDICINE UNITS  
(NAVENPVNTMEDUS)

UNIT NO.	LOCATION	DSN	COMMERCIAL
2	Norfolk, VA	564-7671	(804) 444-1547
5	San Diego, CA	526-7070	(619) 556-7070
6	Pearl Harbor, HI	430-0111	(808) 471-2208
	ext.	474-4428	
7	Naples, IT	625-1110	(39) (81) 724-4468
	ext.	724-4468	

NAVY ENVIRONMENTAL HEALTH CENTER

LOCATION	DSN	COMMERCIAL
Norfolk, VA	564-7575	(804) 444-7575

Enclosure (3) 2

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NAVAL DENTAL CENTER SAFETY MANAGEMENT

LOCATION	DSN	COMMERCIAL
NAVDENCEN Norfolk, VA	564-5287	(804) 444-5287
NAVDENCEN San Diego, CA	958-1065	(619) 235-1065

BUREAU OF MEDICINE AND SURGERY, WASHINGTON, DC

CODE	DSN	COMMERCIAL
Director, Preventive Medicine and Occupational Health Division (MED-24)	294-1220	(202) 653-1220
Director, Materials/Facilities Division (MED-64)	294-1250	(202) 653-1250

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MERCURY CONTROL SAFETY PROGRAM MATERIALS

The following materials may be used in the Mercury Control Safety Program:

1. Decontaminating agent (HgX®), NSN 6850-00-495-5506.
2. Cup, dental amalgam, skid-resisting base, corrosion-resistant steel, NSN 6520-00-138-9748.
3. Jar, surgical needle, with cover, 3 1/16" high and 3 1/8" overall, NSN 6530-00-782-7400, or bottle, urine specimen, NSN 6640-00-165-5778 (for amalgam scrap).
4. Stainless steel tray, 19" X 12 5/8" X 1/2," NSN 4931-01-007-0276 or equivalent (for catch tray).
5. Bag, dental prosthesis, NSN 6520-00-926-9041.

Enclosure (4)