

Subj: STANDARD OPERATING PROCEDURES (SOP) FOR MANAGEMENT OF DENTAL AMALGAM

- Ref:**
- 1) OSHA 29 CFR 1910.1200, Hazard Communication
 - 2) OSHA 29 CFR 1910.1200, Personal Protective Equipment
 - 3) BUMEDINST 6260.30A, MERCURY CONTROL PROCEDURES FOR DENTAL SPACES
 - 4) NMCLINST 5100.1I, Chapter 10 and Chapter 11
 - 5) NHCQUANTINST 6220.4F, Blood Borne Pathogen Exposure Plan
 - 6) CHAIRSIDE FILTRATION SYSTEM INSTRUCTION MANUAL, NAVAL INSTITUTE, DENTAL AND BIOMEDICAL RESEARCH
 - 7) “Best Management Practices for Amalgam Waste”, ADA, October 2007
 - 8) “Health Services Industry Detailed Study, Dental Amalgam”, EPA, August 2008
 - 9) “Dental Amalgam Effluent Guideline,” EPA, 15 May 2012

- Incl:**
- 1) Chairside DD2009 Amalgam Filter Training/Qualification Form
 - 2) NHCQUANTINST6220.4FBlood Borne Pathogen Exposure Control Plan, Attachment K, Protocol Following Blood Borne Pathogen (BBP) Exposures
 - 3) RAMVAC Amalgam Separator User Manual
 - 4) BU10 Amalgam Separator User Manual
 - 5) DD2009 Chairside Amalgam Separator User Manual

1. The Environmental Protection Agency (EPA) and state environmental regulatory agencies regulate hazardous and medical waste generated by healthcare facilities. As healthcare professionals, we must utilize the best management practices to ensure that any hazardous or medical waste, generated by this facility, is disposed properly. Our policies and procedures must be reviewed periodically to ensure we comply with current federal and state environmental regulations for managing hazardous materials from cradle to grave.

2. Central Amalgam Separator Systems and chairside amalgam filtration systems have been designed to satisfy the requirements for the management of mercury and reduction of mercury into the environment as directed by the Environmental Protection Agency (EPA) and the Natural Resources Environmental Affairs Branch of the Quantico Marine Corps Base (NREA). The disposable filters/separators are designed to capture amalgam and mercury residue during dental procedures in which amalgam will be removed and/or placed.

3. Definitions

- a) Non-contact amalgam (clean scrap): amalgam excess from mixture at end of patient treatment.
- b) Contact amalgam: amalgam that has been in contact with the patient. Examples are carving scrap collected at the chairside and amalgam captured by chairside traps, filters or traps
- c) Empty amalgam capsules: unit dose amalgam containers remaining after patient treatment.
- d) Hazardous residue waste collection containers: plastic containers with tight fitting lids in each operatory that provides amalgam restorations and labeled with "Amalgam Hazardous Waste."
- e) Amalgam sludge: mixture of liquid and solid material collected within the filtration system or other amalgam capturing devices
- f) Filtration/separator systems:
 1. Chair side traps and filters: collection point for amalgam waste suctioned from patient treatment on each dental unit
 - i. Disposable plastic screen in the dental chair unit
 - ii. Collection container attached at the base of the dental chair
 2. Central units for collection of amalgam waste from operatories:

4. Work Process Exposure

Exposure to chemical hazardous product, chemical hazardous waste and biohazardous waste occurs primarily during the following activities:

- a) Placement of amalgam containing products during patient restorative treatment.
- b) Disposal of residual product after patient care.
- c) Removal of the filters from the chairside filtration system.
- d) Removal of plastic traps from the dental chair evacuation system.
- e) Placement of plastic traps in the hazardous waste satellite accumulation container.
- f) Placement of the separator filters in the plastic transport container during periodic maintenance.
- g) Placement of clean filters during periodic replacement process.
- h) Removal and preparation for transport of central separator units to contracted terminal disposal site.
- i) Transportation of the Mainside separator filter waste to the Hazardous Waste storage facility for storage awaiting pickup for terminal disposal.

5. Safe Work Practices

a) Each facility handling/placing amalgam containing products, using/changing/disposing of the chairside traps, chairside amalgam separator filter system containers or the central amalgam separator unit must develop safe work practices to reduce employees' exposure to chemical hazardous materials and biohazardous materials. Only trained, designated personnel shall be made responsible for such procedures. Safe work practices must include selection and use of personal protective equipment, storage requirements, transportation, spill control, cleanup and

disposal. Each facility shall tailor its practices to the specific procedures recommended by the manufacturer. These procedures shall emphasize prevention of employee contact with the amalgam containing products and the contaminated sludge in the chairside traps, separator/filtration systems and any transport container.

b) In the event that there are multiple manufacturers' filtration/separator systems, user manuals will be the primary source for removal, packaging, shipping and tracking. However, the Base environmental resources personnel (NREA) will provide the ultimate guidance based on the protocols established by the Base, which may supersede instructions from the manufacturer.

c) Naval Health Clinic Quantico, Hazardous Waste Department, Safety Department, Dental Infection Control Professional and Natural Resources Environmental Affairs Branch, Quantico Marine Corps Base will evaluate the operations/procedures and work practices to prevent all potential sources of exposure.

Selection and Use of Personal Protective Equipment

Based on the hazards associated of handling chemical/biological hazardous waste, employees must wear personal protective equipment (PPE) designed to protect skin and eyes from contact with the hazardous material. The following identified PPE must be worn pursuant to the requirements of 29 CFR 1910.132.

a. **Skin Protection**

Dental Department is responsible for ensuring employees are provided with appropriate hand protection when exposed to hazardous chemicals and potential chemical/blood borne pathogens. Gloves must be impervious to chemical hazards, chemical/blood borne pathogens and must protect the hands and forearms from permeation of hazards.

To satisfy these requirements, eleven-inch **NITRILE** gloves must be worn when handling chemical/bloodborne pathogens.

Additional protection for skin and clothing is provided through the use of isolation gowns, lab coats, or aprons (ensuring arm protection). Protective clothing that has become saturated should be removed quickly and laundered prior to re-use (if re-use is appropriate). If skin contact with chemical/blood borne pathogens occurs, the skin should be washed thoroughly with soap and water for at least 15 minutes. Such exposure should be reported to the Occupational Health Department and the Safety Department.

b. **Eye Protection**

Supplied, well adapted goggles must be worn to prevent any hazardous product contact with the eyes. Suitable emergency eyewash equipment must be immediately available for quick drenching or flushing of the eyes (for at least 15 minutes) in Dental clinic areas.

Eye exposure to contaminants must be reported to Occupational Health and Safety Departments.

c. **Hazardous Waste Coordinator** will wear appropriate personal protective equipment when collecting hazardous waste jars from the operatory collection points. Gloves, mask/shield/eyewear, protective covering for clothing will be worn when using Cetylclide G (high level disinfectant/sterilant).

Employee Information and Training

Employees who use, handle, or may have potential exposure to amalgam products, chairside amalgam filtration systems filters/separator systems must be provided information and training prior to their initial work assignment. Employees must be provided information regarding the requirements of the Hazard Communication standard (NMCLQUANTICOINST 5100.1I, Chapter 10 and 11), Blood Borne Pathogen instruction, OSHA regulations for personal protective equipment / hazard contact and user manuals and the location and availability of the written hazard communication program. Employee training must include, at a minimum, the following elements:

- The physical and health hazards of mercury and blood borne pathogens; the measures employees can take to protect themselves, including specific procedures implemented to protect employees from exposure to mercury and blood borne pathogens, such as appropriate work practices, emergency procedures, and personal protective equipment;
- How employees can obtain and use the appropriate hazard information.

Handling of Amalgam Waste at Mainside Dental Clinics

A. Mainside:

1. Dental areas collecting amalgam residue waste (listed above under “Definitions”) will be identified as hazardous waste satellite accumulation areas. Each area must have an appropriately labeled container with tight-fitting lid for the amalgam residue wastes. Each container must be labeled with words “Amalgam Hazardous Waste.” Dental personnel will notify the Hazardous Waste Coordinator when the container is $\frac{3}{4}$ full to schedule a pickup. The container WILL NOT be dated until it is accepted by the Hazardous Waste Coordinator at the time of pick up, the Hazardous Waste Coordinator will mark the container with accumulation start date. The full container will be stored in Naval Health Clinic less than 90 day storage area until the container is picked-up by Natural Resources Environmental Affairs (NREA) Branch and taken to Hazardous Waste Storage building 27401, for storage/ disposal.

2. Empty amalgam capsules will be collected and disposed of in the same labeled container for amalgam residue waste.

3. Chair side traps (within the structure of the dental chair). The disposable trap in the chair evacuation system will be monitored and changed as necessary, but at least weekly, by the Dental Assistant of the operatory. This trap, when disposed of, will be placed in the securely closed amalgam residue waste container. **Under no circumstances will the trap be washed and re-used.** Containers must remain closed at all times except when adding or removing waste. At no time is it permissible for a container to remain open. Notify the Hazardous Waste Coordinator when the container is $\frac{3}{4}$ full. These containers will remain in the operatory until the Hazardous Waste Coordinator has picked them up for disposal. Hazardous Waste Coordinator will add the Cetylcid G (high level disinfectant/sterilant) after removing from the dental operatories.

4. Chair side filters (separate component at the base of the dental chairs). Filters will be replaced as needed, usually when the amalgam filter cassette loses suction. The filter cassette will be cleaned prior to initiation of replacement process by running the line cleaner through the suction system. After the filter cassette has been cleaned with the suction line cleaner, it will be disconnected, capped and replaced with a new filter cassette. The used filter cassette will be turned in the NHCQ Hazardous Waste Coordinator, where it will be stored in a 55 gallon drum bearing a hazardous waste label. When the drum is $\frac{3}{4}$ full the Hazardous Waste Coordinator will contact Natural Resources and Environmental Affairs (NREA) for pick-up.

5. Extracted teeth with amalgam filling are collected and placed in sealable biohazard plastic bag, transported for placement in a hard plastic container with securable top. When container is $\frac{3}{4}$ full or foul, dental personnel will contact the Hazardous Waste Coordinator for turn-in. The Hazardous Waste Coordinator chemically cleans/disinfects teeth with Cetylcid G (high level disinfectant/sterilant). The coordinator will then contact NREA Branch to schedule to be pick-up.

6. Personal Protective Equipment (gloves, mask and eyewear) must be worn while handling amalgam in the operatory. Personal protective equipment to include eyewear, mask, jacket or

gown to protect clothing and gloves will be worn during the changing of the chairside filter. Personal Protective Equipment consisting of face mask/shield/eyewear, covering for clothing and nitrile gloves will be worn by the Hazardous Waste Coordinator during the use of the high level disinfectant/sterilant.

B. Marine Corps Air Facility (MCAF):

1. Chair side traps (within the structure of the dental chair). The disposable trap in the chair evacuation system will be monitored and changed as necessary, but at least weekly, by the Dental Assistant of the operatory. This trap, when disposed of, will be placed in the securely closed amalgam residue waste container. **Under no circumstances will the trap be washed and re-used.** Containers must remain closed at all times except when adding or removing waste. At no time is it permissible for a container to remain open.

2. Upon reaching $\frac{3}{4}$ full the technician should contact Marine Corps Base Waste program personnel to set up time for pick-up. Command Hazardous Waste Coordinator will be able to provide contact information.

3. Dental central unit amalgam filters will be changed on yearly basis. Central unit amalgam filters cassette will be cleaned and packaged in accordance with the manufacturer's instructions for use and returned to them for recycling. Disposal documentation must be kept and turned into BioMed and Hazardous Waste Coordinator according to Command Instruction.

C. The Basic School (TBS):

TBS dental clinic will follow the same protocol as above.

Handling of Amalgam Waste at Branch Dental Clinics

A. Washington Navy Yard (WNY) Branch Dental Clinic:

1. WNY will follow the locally established protocol (as established by the WNY Safety and Environmental Program office, District of Columbia and BUMED) for collection and handling amalgam waste. WNY Safety and Environmental Program office will provide guidance on arranging for waste pick-up through the hazardous waste contractor.

2. Container for collecting amalgam scrap (contact and non-contact) will be provided by NHCQ.

3. Disposal documentation must be kept and turned into BioMed and Hazardous Waste Coordinator according to Command Instruction.

B. Sugar Grove Branch Dental Clinic:

1. Staff will collect contact and non-contact dental amalgam per the above guidance.

2. The Washington Navy Yard Dental Clinic, in coordination with Sugar Grove Safety and Environmental Program office, will be responsible for the proper disposal of any amalgam waste generated at the Sugar Gove Branch Dental Clinic.

3. Disposal documentation must be kept and turned into BioMed and Hazardous Waste Coordinator according to Command Instruction.

Responsibilities specific for MCAF (RAMVAC) and TBS (BU10) Central Amalgam Separator Systems:**A. Dental:**

(1) Prior to being assigned to the position of LPO at the MCAF and TBS Dental Clinics, personnel will be required to get instructions specific to the amalgam separator unit at their facility, e.g., pressure in the suction lines dictating maintenance by BioMed. The LPO will be required to check suction pressure at least quarterly, either through self-testing or inquiring of the staff. Staff will report any deviation from suction pressure that will necessitate BioMed maintenance of the amalgam separator unit. The LPO will report any such deviations to BioMed. The LPO will be responsible for communicating with the Dental Officer in charge the need to include a filter purchase in the annual budget request.

(2) Budget for replacement filter costs, approximately \$500 annually. (The service life of the filters is determined by the workload placed on it, consequently the exact length of time it will be serviceable cannot be determined. It is generally anticipated that they will last approximately one year.)

(3) Notify Bio Medical repair when there is a loss of suction that may indicate the filter is full.

B. Bio Medical Repair:

(1) When notified by the Dental Department that there is a loss of suction, determine whether the filter needs to be replaced.

(2) Coordinate with Dental and order appropriate replacement filter.

(3) When the replacement filter is received, remove the old filter and package it for return to recycler in accordance with the manufacturer's/recycler's requirements. (See attached for current requirements.)

(4) Ensure appropriate personal protective equipment is worn when handling amalgam filters, i.e. gloves, face shield, and eyewear.

(5) Install new filter in accordance with the manufacturer's instructions.

(6) Provide copies of all documentation (shipment of used filter to recycler and the tracking documents to terminal disposable provided by company) to the Industrial Hygiene Department.

C. Hazardous Waste Coordinator:

(1) Maintain copies of all documents of shipment of amalgam filters to recycler. Additionally, recycler's tracking documents for terminal disposal must be maintained.

(2) Provide technical advice regarding handling of hazardous waste, when requested.

Protocols specific for disposal of the DD2009 Chairside Filtration System filters

At the end of each work day, suction line cleaner will be run in both high speed and low speed suction lines. The filter canister at the base of the chair will be changed should the suction level drop below required volume.

Prior to filter canister removal, ensure proper plastic collection bin is available from Hazardous Waste Coordinator; place appropriate hazard label on the top and sides of the plastic bin to designate biological/chemical hazard. Line the bin with a heavy plastic bag. If there is NO container, DO NOT remove the canisters. Contact Hazardous Waste Coordinator: room 2G04 (784-1674) to coordinate pick up of plastic bin.

Don personal protective equipment: will consist of utility gloves over exam gloves, surgical mask, cover garment, protective eye wear or face shield

A tray will be placed under the still connected filtration canister to contain any fluid drainage and contact with floor during the removal process.

The inflow side of the filtration canister is angled up at approximately 45 degrees and the vacuum hose is pulled off the inflow side hose barb. The end of the vacuum lines should be kept in the tray to trap any wastewater that may remain in the lines. The red vinyl cap is then placed over the inflow hose barb, which seals this side of the filter.

The filter canister will be inverted so that the outflow side is up. The outflow vacuum hose is separated from the filter and the red vinyl cap is placed securely over the outflow hose barb.

A new filter canister will be installed. The inflow (for the line coming from the chair) side of the canister has the port that is off center on one of the square sides. The outflow (the line going to the compressor) side of the canister has the port that is in the center of the other square side.

Any wastewater that collects on the process tray should be disposed of by suctioning the wastewater into the newly installed filtration canister. DO NOT pour any of the wastewater down the drain since it may contain substantial amounts of mercury. Wipe tray with paper towels and put in plastic collection bin. Wash tray prior to putting in plastic bag for storage.

Once the sealed amalgam filter canister has been removed from the unit, it will be placed in a securable (tight fitting lid), hard plastic collection container in the designated room. The container must have an appropriate label designating the contents to be a chemical and biological hazard. The container will be transported immediately at the completion of the facility filter removal process to the Command locked Hazardous Waste storage room. Prior communication with the Hazardous Waste Coordinator will be made to alert them to the need for storage room access.

Start date for accumulation will begin when Hazardous Waste Coordinator has taken receipt of the container. Storage will not exceed 90 days.

Spill Control and Cleanup Procedures

All spills, regardless of size, must be cleaned immediately. Chemical and biological spill protocols will be utilized to pick up and clean up contaminated spillage and filters. Place filters and discarded cleanup materials in the securable, hard plastic collection container for disposal according to Biological / Chemical Hazard protocols.

Director of Dental Services

Date

Head, Industrial Hygiene

Date

Head, Bio Medical Repair

Date