

**MANAGEMENT OF MERCURY IN VETERANS HEALTH ADMINISTRATION  
FACILITIES**

- 1. REASON FOR ISSUE:** This Veterans Health Administration (VHA) Directive assigns responsibility and describes procedures for the management, reduction, and virtual elimination of mercury and mercury containing compounds in VA medical facilities in a manner that is safe, protective of the environment and compliant with all applicable regulations.
- 2. SUMMARY OF MAJOR CHANGES:** Adds information related to a new executive order, updates responsibilities for VHACO offices and VISN Directors, and clarifies requirement to utilize non-mercury alternatives when possible.
- 3. RELATED ISSUES:** VA Directive 7700, Occupational Safety & Health; VHA Directive 7701, Safety and Health Program; VHA Directive 2009-065, Waste Minimization and Compliance Report, VHA Handbook 7701.01, Occupational Safety and Health (OSH) Program Procedures.
- 4. RESPONSIBLE OFFICE:** The Deputy Under Secretary for Health for Operations and Management (10N) is responsible for the contents of this Directive. Questions may be directed to the Director, Occupational Safety, Health and GEMS Programs (10NA8) at 202-632-7889.
- 5. RESCISSIONS:** VHA Directive 2002-018, dated April 1, 2002, is rescinded.
- 6. RECERTIFICATION:** This VHA Directive is scheduled for recertification on or before the last working day of January 2021.

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## MANAGEMENT OF MERCURY IN VETERANS HEALTH ADMINISTRATION FACILITIES

### 1. PURPOSE

This Veterans Health Administration (VHA) Directive assigns responsibility and describes procedures for the management, reduction, and virtual elimination of mercury and mercury containing compounds in VA medical facilities in a manner that is safe, protective of the environment and compliant with all applicable regulations.

**AUTHORITY:** 38 U.S.C. 7301(b).

### 2. BACKGROUND

Mercury (chemical symbol Hg) is a naturally occurring, highly toxic element most commonly seen as a shiny, silver-white odorless liquid metal. Mercury and its compounds may enter the body by inhalation, ingestion or absorption through the skin. The most likely routes of exposure in the VHA are inhalation of inorganic mercury vapors following a spill, or ingestion/absorption of methyl mercury. As a persistent, bioaccumulative neurotoxin, mercury and its compounds are subject to stringent environmental laws and other guidance governing its use and disposal. These include:

a. **The Pollution Prevention Act of 1990.** This law, codified at 42 U.S.C. chapter 133, introduced the concept of 'source reduction' as practices that reduce, eliminate, or prevent pollution at its source. Today it is called Pollution Prevention (P2), and has been established as a national objective. The act also establishes an environmental protection hierarchy where the most desirable method of pollution abatement is prevention, followed by source reduction and recycling. Disposal or other release into the environment should be done only as a last resort and then in an environmentally safe manner.

b. **The Resource Conservation and Recovery Act (RCRA) of 1976.** This law, codified at 42 U.S.C. chapter 82, covers the generation, treatment, storage, disposal and transportation of both hazardous and non-hazardous waste and emphasizes source reduction as the highest priority. RCRA requires the "cradle-to-grave" management of hazardous waste (HW), encourages recycling and reuse, and further requires HW generators and treatment, storage, and disposal facility owners to certify that the generator has a program in place to "reduce the volume or quantity and toxicity" of waste.

c. **Executive Order (EO) 13693, Planning for Federal Sustainability in the Next Decade.** Among other requirements, this EO requires that federal agencies reduce or minimize the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of through source reduction. It also requires (to the maximum extent practicable) purchase of products or services with a reduced environmental impact.

d. **VHA Directive 2009-065 Waste Minimization and Compliance Report.** This policy requires that VHA facility directors collect and report data on waste generation, waste disposal, and waste handling using Report Control Number 10-99-904, and on

data collection websites. This data is tabulated and reported to the Office of the Federal Environmental Executive, the Agency Environmental Executive, and the Environmental Protection Agency.

e. **Memorandum of Understanding (MOU), Environmental Protection Agency (EPA) and the American Hospital Association.** Signed on June 24, 1998, these two groups agreed to jointly develop a mercury waste elimination plan, with the goal of eliminating mercury from health care waste streams. This MOU identified stresses P2 techniques and source reduction as preferable to recycling and disposal into the waste stream. The MOU became the cornerstone of what is now called Practice Greenhealth.

### 3. POLICY

It is VHA policy to manage the use of elemental mercury and mercury-containing compounds in health care facilities, in compliance with applicable federal, state and local environmental regulations, and when possible reduce or eliminate mercury-containing compounds from inventories and waste streams.

### 4. RESPONSIBILITIES

a. **Under Secretary for Health.** The VHA Under Secretary for Health shall:

(1) Oversee VHA Environmental Programs and policies; and

(2) Establish Environmental program performance standards for the Deputy Under Secretary for Health for Operations and Management.

**NOTE:** *Hg reduction and control guidance and information are contained in Attachment A.*

b. **Deputy Under Secretary for Health for Operations and Management.**

(1) Oversee the development and implementation of the VHA Environmental Programs and policies; and

(2) Establish OSH Program performance standards for the Assistant Deputy Under Secretary for Health for Operations and Management for Administrative Operations.

c. **Assistant Deputy Under Secretary for Health for Administrative Operations.** The Assistant Deputy Under Secretary for Health for Administrative Operations shall:

(1) Oversee the Office of Occupational Safety, Health and Green Environmental Management System (GEMS) Programs; and

(2) Ensure staffing and funding are adequate to implement mercury management programs within the VHA Occupational Safety, Health, and GEMS Program Office.

d. **Director, Office of Occupational Safety, Health, and GEMS Programs.** The Director, Office of Occupational Safety, Health, and GEMS Programs shall:

(1) Interpret environmental compliance requirements for acquisition, storage and disposal of mercury and mercury-containing products.

(2) Review the results of the VISN External GEMS Audits and other VISN GEMS evaluations of facility-level mercury management programs.

(3) Identify national trends and develop program improvement recommendations to VHA mercury management policy; provide periodic updates to the Assistant Deputy Under Secretary for Health for Administrative Operations as needed.

(4) Ensure that Occupational Safety, Health, and GEMS Programs personnel designated as the VHA Mercury Management Program Manager have appropriate subject matter expertise and experience to oversee the program.

e. **Veterans Integrated Service Network Director.** The Veterans Integrated Service Network (VISN) Directors shall:

(1) Provide adequate resources for the implementation of this Directive.

(2) Ensure that the Mercury Management Program at each facility is evaluated at least annually by the VISN GEMS Program Manager.

f. **VA Medical Facility Directors.** VA Medical Facility Directors shall:

(1) Assign responsibility for the facility mercury management program to appropriate staff.

***NOTE:*** This can be the GEMS Program Manager, but other staff are acceptable based on qualifications and experience.

(2) Develop a facility-specific Mercury Control and Reduction Plan, to be reviewed annually by the respective VISN GEMS Program Manager. The plan must include a statement of management commitment to mercury control, reduction, and proper disposal.

(3) Develop an inventory of the number and types of devices or equipment containing mercury (medical and non-medical), including: mercury barometers, manometers or sphygmomanometers, mercury switches, mercury-compounds or reagents, dental materials, cleaning chemicals, and pharmaceuticals.

(4) Ensure that non-mercury alternatives are used during maintenance or end-of-service-life replacement of mercury-containing devices or equipment, unless required by patient care considerations.

(5) Develop a plan to reduce mercury containing waste, and the number of mercury-containing products, by 50 percent between calendar years 2014 and 2019 (calendar year 2013 baseline) where suitable substitutes are available. The ultimate goal is to achieve a mercury-free environment within the constraints of safe and effective patient care and supporting operations.

(6) Ensure guidance, policies and operating procedures are developed to implement mercury reduction in facility and research operations.

(7) Ensure mercury elimination and reduction is considered during all phases of acquisition and procurement, as well as the operation of the facility management program.

(8) Promote employee training and awareness programs on mercury reduction and hazard recognition.

(9) Complete the Report Control Number 10-99-904, Waste Minimization and Compliance Report, in accordance with VHA Directive 2009-065 (or subsequent guidance). Directive 2009-065 requires the following data to be collected by the Facility Director:

(a) Solid and regulated medical waste,

(b) Hazardous waste,

(c) Radioactive waste,

(d) Recycling activities, and

(e) Information regarding procurement of biobased, biopreferred, and recycled content products (required for RCRA, Section 6002 reporting).

(10) Dispose of mercury-containing products in accordance with all applicable regulations.

(11) When requested, provide facility mercury management program information to VHA Central Office.

g. **Chief Facilities Management.** The Chief of Facilities Management shall:

(1) Incorporate mercury control, reduction and tracking into a local work practices, procedures, and specifications.

(2) Implement facility-level mercury replacement, control and reduction projects.

(3) Communicate recommendations for mercury program improvement or correction to the VA Medical Facility Director.

(4) Document waste reduction accomplishments into the VHA Environmental Programs Service Green Health Tracker web based waste management tracking system.

## 5. REFERENCES

- a. Pollution Prevention Act of 1990, codified at 42 U.S.C. chapter 133.
- b. Resource Conservation and Recovery Act of 1976, codified at 42 U.S.C. chapter 82.
- c. EO 13693, Planning for Federal Sustainability in the Next Decade, March 19, 2015.
- d. VHA Directive 2009-065 (Report Control Number 10-99-904) Waste Minimization and Compliance Report.
- e. [Memorandum of Understanding between United States Environmental Protection Agency Region V, and the American Hospital Association](#), June 24, 1998 (In January of 2008, efforts related to this initiative were reorganized and renamed Practice Greenhealth).
- f. VA Directive 7348 Utilization and Disposal of Personal Property and VA Handbook 7348 Transmittal Sheet March 30, 2012 Utilization and Disposal of Personal Property.
- g. Mercury-Free Healthcare Device List, found at Mercury Free Healthcare <http://www.mercuryfreehealthcare.org/>.

**ADDITIONAL GUIDANCE FOR MERCURY CONTROL AND REDUCTION****1. Health Impacts.**

a. All forms of mercury are toxic to humans, but the various forms of organic and inorganic mercury have different toxicity. Generally, organic forms are much more toxic than inorganic forms.

b. The organic forms of mercury are primarily neurotoxins. Therefore exposure can damage the brain and nervous system. The developing brain of a fetus or child is especially vulnerable to organic mercury exposure. Inorganic forms of mercury primarily affect the kidney, but are also neurotoxins.

c. Other organs and systems of the body can also be harmed by exposure to mercury. Recent studies suggest that exposure to mercury contaminants may also alter the immune response to pathogens, contribute to the development of cardiovascular disease, and favor the growth of populations of multiple antibiotic resistant bacteria.

d. Occupational exposure to mercury may occur via three routes: inhalation, ingestion and absorption. The most likely routes of exposure are inhalation of inorganic mercury vapor after a spill, or during a manufacturing process, or through accidental ingestion of methyl mercury hand-to-mouth as a result of improper barrier protection protocol or cross-contamination.

**2. Mercury in VA Medical Facilities.**

a. Common medical uses of mercury or it's compounds include:

(1) Thermometers;

(2) Sphygmomanometers (blood pressure monitors);

(3) Esophageal dilators (also called 'bougie tubes');

(4) Cantor tubes and Miller-Abbott tubes (used to clear intestinal obstructions);

(5) Feeding tubes;

(6) Dental amalgam;

(7) Laboratory Chemicals (fixatives, stains, reagents, preservatives);

(8) Medical batteries containing mercury;

(9) Pharmaceuticals (vaccines, insulin); and

(10) Calibration thermometers used in Laboratory and Pathology Service and Research Laboratories.

b. Mercury may also be encountered in the following non-medical settings or applications:

- (1) Cleaning solutions with caustic soda or chlorine (may be contaminated with mercury during the production process);
- (2) Batteries containing mercury;
- (3) Fluorescent lamps and high-intensity mercury lamps;
- (4) Bulb-crushing operations (used to reduce waste volume);
- (5) Non-electronic thermostats;
- (6) Pressure gauges;
- (7) Some electrical switches used for lights and appliances;
- (8) Laboratory glassware cleaners used in clinical and research laboratories; and
- (9) Combustion of fossil fuels and incineration of medical wastes.

**3. Hg Exposure.** There is minimal risk of mercury exposure during normal use of products that are handled correctly. However, problems may occur if the mercury in a product is exposed to air, or if a product is not properly discarded in a manner to keep mercury out of the environment. Concerns about the health impacts of mercury are leading to mercury pollution prevention programs at the Federal, state, and local levels. The highest priority of any pollution prevention program is source reduction, which means avoiding the use of mercury and mercury containing products where practical.

**4. When Adequate Hg Alternatives are Unavailable.** When adequate mercury alternatives are not available and mercury must be used, it may be possible to recycle mercury in order to prevent release into the environment. Recycling is the second tier of mercury pollution prevention. Disposal of mercury that is irreversibly contaminated should be the last resort.

**5. Examples of Hg Control and Reduction.** Some excellent examples of mercury control and reduction include the following:

- a. Replace mercury sphygmomanometers (blood pressure monitors) with aneroid/electronic sphygmomanometers;
- b. Replace mercury thermometers with non-mercury thermometers;
- c. Replace mercury intestinal and esophageal dilators and feeding tubes with alternatives using water, saline or tungsten;



- d. Use low-mercury fluorescent lights and recycle used fluorescent lighting. Replace mercury-containing fluorescent lights with light-emitting diode (LED) lamps;
- e. Use mercury-free batteries and/or rechargeable products;
- f. Replace mercury thermostats, pressure gauges, barometers, switches and other building or facility equipment with mercury-free alternatives;
- g. Replace mercury fixatives and preservatives with mercury-free alternatives;
- h. Use mercury-free bleach and cleaning chemicals, and;
- i. Set up a program for appropriate collection of used amalgam and install amalgam separators in sinks and drains in the dental clinic.

**6. Best Management Practices.** Best Management Practices for the management of mercury within VA medical facilities include, but are not limited to:

- a. Train employees who work with mercury containing materials on the hazards, proper use, handling, disposal, and use of alternatives.
- b. Recycling of mercury-containing products when they can no longer be used.
- c. Pre-planning for mercury spill response and cleanup, including external vendors; emergency contacts; federal/state reportable quantities and reporting requirements.
- d. Occupational exposure monitoring for personnel at elevated risk.
- e. Require suppliers to certify the mercury content on the medication or medical product before purchase.
- f. Document mercury-containing products with no alternative product available; periodically re-evaluate to determine if suitable substitutes have been developed.

**7. Benefits of Hg Pollution Prevention Programs.** Pollution prevention programs protect human health by reducing occupational exposures and release of mercury to the air, water and land. They reduce costs associated with the use of mercury, including:

- a. Disposal or recycling;
- b. Collection and storage prior to disposal;
- c. Paperwork for tracking hazardous waste disposal;
- d. Training and equipment for spill response;
- e. Training for hospital employees who handle mercury-containing products; and
- f. Liability for environmental contamination or worker exposure.