

NAVAL HOSPITAL  
Camp Lejeune, NC 28542-5008

NHCLNCINST 6260.1  
371  
17 Apr 85

NAVHOSPCLNC INSTRUCTION 6260.1

From: Commanding Officer

Subj: MERCURY HYGIENE CONTROL PROCEDURES

Ref: (a) BUMEDINST 6260.19  
(b) BUMEDINST 6270.3  
(c) BO 6240.5

1. Purpose. To minimize hazards to personnel, equipment, and material from the use or handling of mercury by directing policy for the prevention of mercury exposure as required by references (a) through (c).

2. Cancellation. NAVREGMEDCENINST 6260.1B

3. Definitions

a. Free Mercury. Metallic mercury or mercury compounds outside the intended bounds of confinement.

b. Mercury Handling Area. Areas using or storing mercury or areas where special mercury controls are established.

c. Mercury Exclusion Area. Areas where any form of mercury is prohibited.

d. Mercury Spill. The release of mercury to any surface not specifically designed or intended for its storage use, or transfer.

4. Background

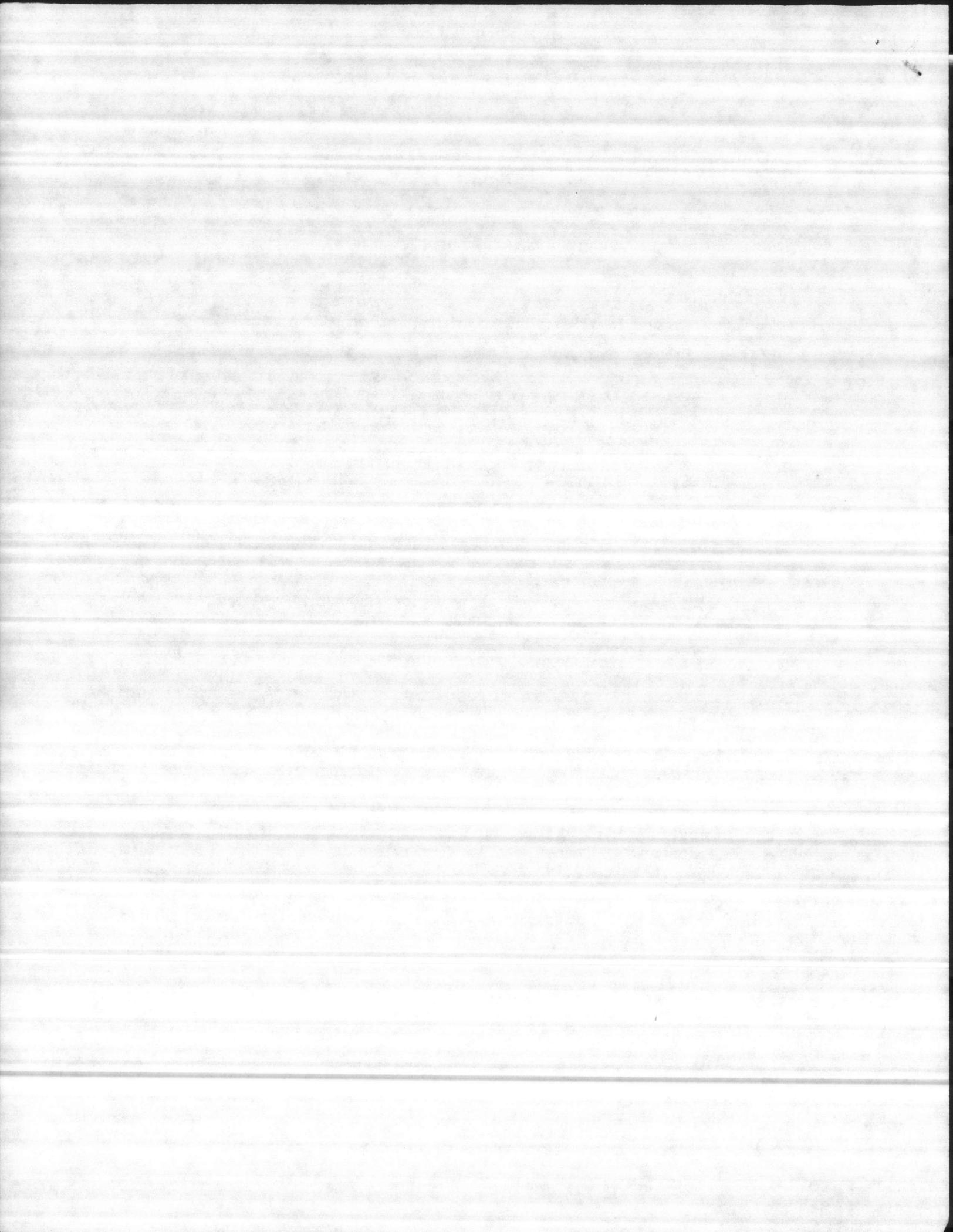
a. Mercury and related compounds may be toxic when ingested, absorbed through the skin or inhaled. Free or liquid mercury readily vaporizes at normal room temperature and when spilled, presents a significant hazard to all personnel in the immediate area. In mercury handling areas an 8 hour exposure limit of  $0.05\text{mg}/\text{m}^3$  has been established. Exposures exceeding this value may lead to acute or chronic physiological changes depending upon the exposure pattern.

b. Mercury is corrosive to materials and equipment, especially to alloys of silver, copper, and aluminum. Discharge of mercury and its compounds into a water carriage system is specifically prohibited. It is considered to be a toxic environmental pollutant. The normal procedures for disposal of hazardous waste as specified in reference (c) apply.

5. Action. To prevent acute and chronic mercury exposure the following measures are required:

a. Hazard Reduction Procedures

(1) Wherever possible mercury free substitutes will be used for equipment or parts containing mercury.



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(2) Departments using mercury will maintain necessary equipment for mercury clean-up.

(3) The Head, Dental Department will comply with all requirements of reference (b).

(4) At least annually and more frequently if necessary, an inventory and audit of mercury containing equipment and components will be conducted by the Occupational and Preventive Medicine Department.

(5) The Pharmacy is the mercury handling area. Occupational and Preventive Medicine Department will conduct environmental monitoring for levels of mercury at least annually and more frequently as necessary.

(a) Departments requiring mercury will request the exact amount needed by prescription. The free mercury will be transferred to the item (e.g., nasogastric tube) by pharmacy personnel. No bulk mercury will be dispensed.

(b) Pharmacy personnel will be trained in the proper technique for handling free mercury when assigned to the Pharmacy and annually thereafter. This training will be documented.

(c) A SOP for handling mercury will be conspicuously posted in the mercury handling/storage area.

(d) Other mercury handling areas will be designated and approved by the Occupational and Preventive Medicine Department.

(6) Mercury contaminated waste will be stored and packaged according to reference (c).

(7) Functional area supervisors will insure that their personnel are biologically monitored as recommended by the Occupational and Preventive Medicine Department.

(8) Areas in which mercury may damage equipment and materials will be identified and posted as mercury exclusion areas.

b. Work Practices. The following work practices will be observed when using mercury:

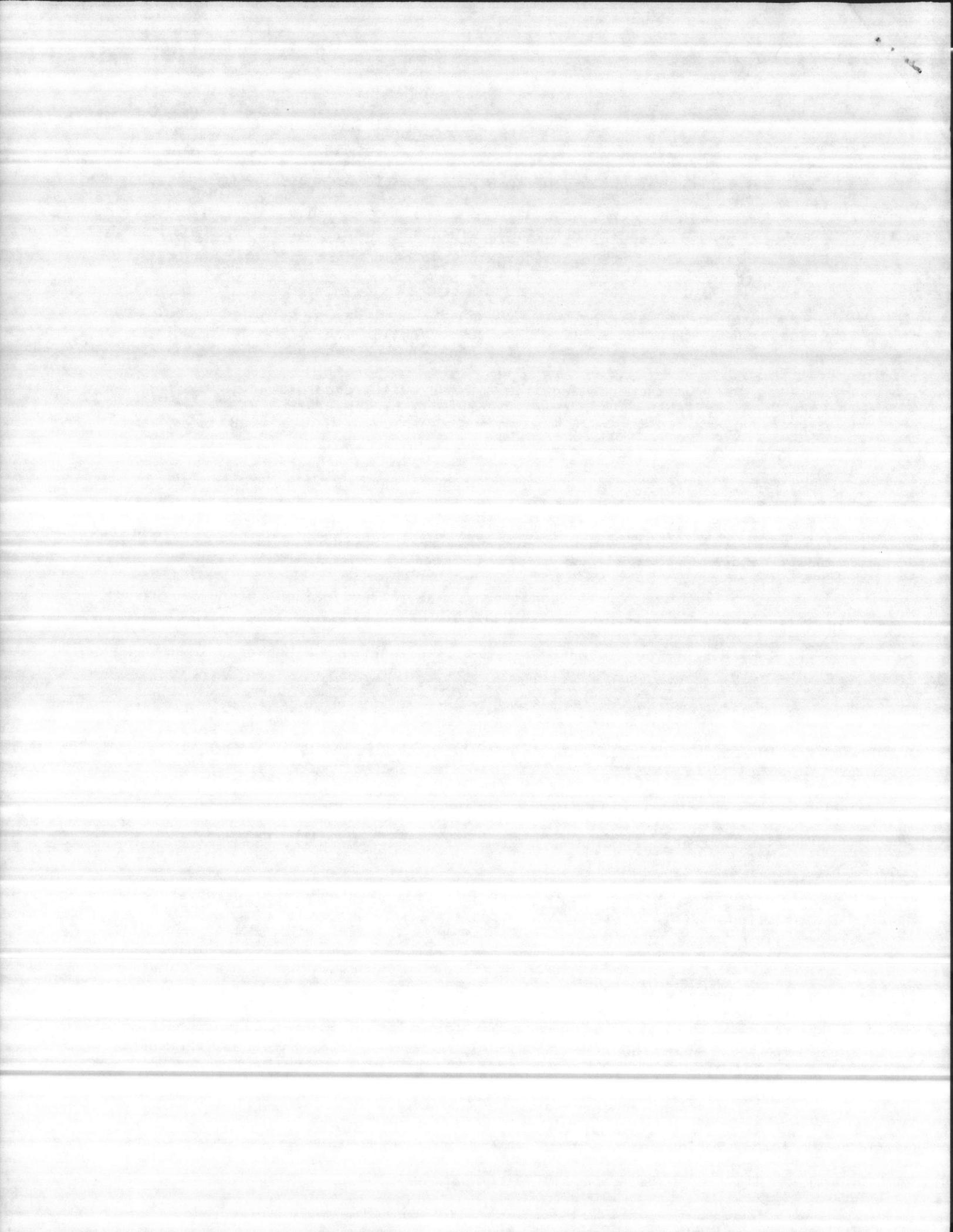
(1) Personnel will remove all jewelry including rings, wristwatches, and bracelets before working with mercury.

(2) All mercury must be stored in the original container. This container will be placed in a seamless stainless steel catch tray and stored in a dry, well ventilated area.

(3) Hands and fingernails will be kept away from the mouth when using mercury. Personnel should not eat, drink or smoke until hands are thoroughly washed.

(4) Avoid breathing vapors when possible.

(5) Periodically inspect work areas, baseboards, and deck for loose or spilled mercury.



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c. Mercury Spill Clean-up Procedures

(1) Spill Area/Environment - Mercury spills should be cleaned as soon as possible. The spill area should be isolated until cleanup is complete and monitoring indicates safe exposure levels.

(2) Equipment and Decontamination

(a) Minor spill kits include a suction device, decontaminant and sponges. The kits are available from various commercial suppliers of Occupational Health and Safety products.

(b) A special mercury vacuum is required for large mercury spills. Ordinary vacuums do not contain the proper filtering system and spread mercury vapors increasing atmospheric levels. An industrial mercury vacuum is available for use from the Industrial Hygiene Section, extension 1930 or 2767.

(c) A positive pressure supplied air respirator (Type C) or a positive pressure self contained breathing apparatus approved by the National Institute for Occupational Safety and Health (NIOSH) should be on hand for emergency use in high vapor level/confined areas. Although some manufacturers advertise mercury vapor respirators it should be emphasized that most types of respirators do not meet NIOSH requirements and may not provide sufficient protection against inhalation of mercury vapor.

(d) The best skin protection is provided by butyl rubber or polyethylene gloves. Neoprene or natural (latex) provides good protection, polyvinyl chloride is fair and Vuna-n Rubber is a poor protector. Coveralls should be cuffless with a minimum of seams. Shoe covers/boots should be worn where floor contamination may occur. Disposable protective equipment is preferred. Safety glasses should be worn whenever there is danger of mercury splash.

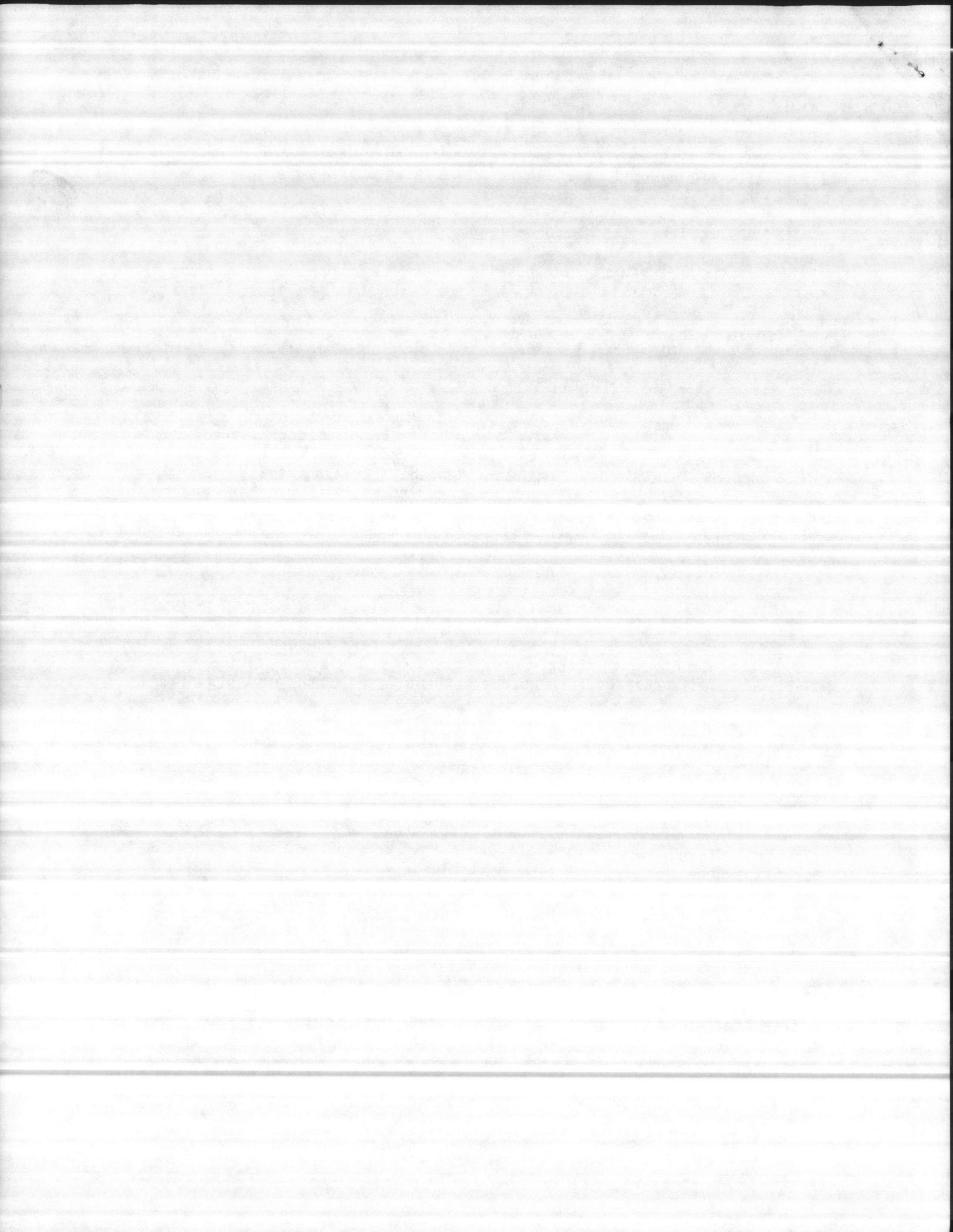
(e) A type of mercury decontaminant which has been effective is HgX, a water soluble metallic mercury sulfide converting powder. HgX is available from Action Associates, Pittston, Pennsylvania.

(3) Spill Cleanup

(a) Remove all personnel from area except those involved in the cleanup. Cleanup personnel will wear respiratory protection as appropriate, depending upon the adequacy of ventilation and/or the size of the spill.

(b) Protective gloves and clothing will be worn.

(c) Do not sweep mercury. Gather up as many globules as possible by vacuuming. If the mercury is submerged in fluid, be careful when using an industrial mercury vacuum to prevent the filter from becoming wet. If the amount of fluid is substantial it may have to be gently siphoned off permitting access to settled mercury. Globules caught in cracks, recesses, etc., may be collected with a suction device fitted with a mercury trap. A magnifying glass is useful in locating minute globules. Sponging is not a good practice because large globules will be broken into finely divided ones and will be very difficult to remove. If sponging is necessary, the sponge must be disposed of as contaminated waste. An efficient scoop/pusher can be fashioned from file cards or stiff paper to pickup all but the small globules. Scoops which cannot be decontaminated should be disposed of as hazardous waste.



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(d) After all visible globules have been picked up, cover the spill surfaces with generous amounts of wetted decontaminant mixture to convert the remaining mercury. Leave the decontaminant mixture on the surface overnight to obtain maximum conversion of mercury. The mixture should be worked into cracks and crevices. Check vertical surfaces for visible mercury. Finely divided particles will cling to surfaces such as walls, cabinet sides and furniture legs. Directions for mixing and use of HgX are provided with the product. Decontamination may have to be repeated, depending upon monitoring results.

(e) Mercury vapor level monitoring services will be requested at the earliest possible time. Monitoring services are available from the Industrial Hygiene Section.

(f) After the mercury concentration has fallen to a safe level, no greater than  $0.05\text{mg}/\text{m}^3$ , the spill area surfaces will be scrubbed with soap and water and rinsed.

(g) Sensible personal hygiene practices during and following cleanup are of utmost importance. Since mercury can be absorbed through the skin, care should be taken not to handle contaminated components directly. Exposed skin should be thoroughly washed with soap and water. Persons in contact with mercury should not smoke until their hands have been washed. Non-disposable clothing upon which mercury has been spilled should have the gross mercury removed. Contaminated clothing should be placed in double plastic bags for later monitoring and possible disposal.

(h) Personnel who have been in contact with free mercury and those involved with the clean-up procedure will be advised not to eat, drink, or smoke until hands and other exposed skin areas are thoroughly washed and clothing examined for mercury residue.

(i) Personnel from Occupational and Preventive Medicine Department will certify the area for normal operation and traffic when all mercury residue has been removed.

  
J. D. MARRIOTT

Distribution:  
List "A"

