

<i>HEALTH AND SAFETY MANUAL</i>		
Title: Mercury Exposure Control Program		
Approved by: Greg Savoy		Rev. 1/1/08

1 Purpose/Scope:

To prevent exposure to employees while performing work assignments in and around areas with a potential for mercury exposure. The type of mercury most likely to be encountered is elemental mercury, also known as quicksilver or instrument grade mercury.

This Plan applies to all Company employees. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Company employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

2 Responsibilities:

2.1 Responsibilities:

2.1.1 Supervisors are responsible for ensuring that appropriate mercury handling procedures are followed and enforced. Contact the safety department if you have any questions concerning possible mercury contamination

2.1.2 Employees are responsible for following mercury handling safeguards as set forth by this procedure.

3 Requirements:

3.1 Elevated mercury concentrations may be encountered, but are not limited to the following equipment and/or operations:

3.1.1 Work within enclosed areas where manometers using mercury are, or have been, used. This may involve witnessing meter readings or changing gas charts within meter houses.

3.1.2 Work using portable mercury manometers, such as when balancing carburetors on gas engines.

3.1.3 Rebuilding dump valves that contain mercury.

3.1.4 In electrical work when encountering broken or damaged mercury switches.

3.1.5 In facilities where mercury is a by-product of the reservoir and collects in processing equipment.

3.2 Mercury Handling Procedures:

3.2.1 Mercury shall be stored in plastic containers to reduce the likelihood of breakage and spillage.

3.2.2 All containers of mercury shall be kept tightly closed except when in use.

3.2.3 Mercury should be handled in closed systems whenever possible.

3.2.4 Local exhaust ventilation or a ventilated hood must be provided where substantial quantities of mercury are handled.

3.3 Routes of Exposure and Exposure Limits:

3.3.1 Typical routes of mercury exposure are by ingestion, skin absorption, or inhalation. The most common and hazardous exposure usually occurs from breathing mercury vapors.

3.3.2 The allowable exposure concentration for mercury vapor is 0.05 milligrams of mercury per cubic meter of air (mg/m³) as averaged over an eight-hour workday - this is the same as 0.006 parts per million (ppm).

These exposure levels shall not be exceeded for any period of time without wearing respiratory protective equipment (see 3.4 this section).

3.3.3 Mercury vapor levels shall be determined for any job that has the potential for employee exposures. See the Industrial Hygiene Program for additional information.

3.4 Personal Protective Equipment:

3.4.1 Employees shall avoid entering areas known or suspected of having mercury vapor concentrations above 0.05 mg/m³ without proper personal protective equipment.

Full face supplied-air or self-contained breathing apparatus (SCBA) operated in the positive pressure mode shall be used whenever mercury vapor concentrations in the breathing zone exceed 0.05 mg/m³.

If an area can be ventilated so the mercury vapor concentration is below 0.05 mg/m³, respiratory protective equipment is not necessary.

As a safe work practice, mercury shall be handled only in well-ventilated areas.

3.4.2 Employees shall use impervious clothing, gloves, face shields and other equipment necessary to prevent exposure when the potential for skin contact with liquid mercury is present.

- Clothing contaminated with liquid mercury shall be removed and placed in closed containers prior to leaving work.
- Clothing contaminated with mercury shall not be re-worn until the mercury is properly removed.
- Consult Company's environmental manager for proper containment and disposal.

3.5 Personal Hygiene Practices When Handling Mercury:

3.5.1 Employees subject to skin contact with liquid mercury shall promptly wash, with soap and water, all areas of the body that may have contacted mercury.

- Employees who handle mercury shall thoroughly wash their hands with soap and water before eating, smoking or using toilet facilities.

3.5.2 Eating, tobacco use, or any other ingestion type activities shall not be permitted in areas where mercury is handled, processed, or stored.

3.5.3 The Material Safety Data Sheet for mercury should be referred to for additional details.

3.6 Signs and Symptoms of Mercury Intoxication:

3.6.1 Intoxication may occur in workers excessively exposed to mercury or its compounds. The exposure may be due to mercury vapor, mist, dust, or fumes, by inhalation, ingestion, or through skin contact.

- Two general types of mercury intoxication exist, chronic and acute.
- Chronic mercury intoxication is caused by exposure to a low concentration of mercury over an extended period of time - definite symptoms of chronic mercurialism may not appear until after six months of exposure, or longer.
- The symptoms primarily affect the nervous and digestive systems.
- Acute mercury intoxication is due to a greater exposure and is unrelated to time factors.

3.6.2 The symptoms of overexposure to mercury may include such personality manifestations as irritability, excitability, or excessive tepidness.

- Other symptoms include: headaches, drowsiness or insomnia, loss of appetite, digestive disorders, kidney damage, bleeding gums and weakness.

- Many cases also include reports of sore mouths, excessive salivation and perspiration.
- A common symptom, in mercury intoxication, is a tremor that is aggravated by emotion or excitement.

3.7 Spill Control Measures:

- 3.7.1 Clean up as much spilled material as possible with a water aspirator, dust pan and brush, or mercury vacuum cleaner.
- 3.7.2 Wash the fine particles with water into a drain with a trap, if possible, or to an area where the material can be collected.
- 3.7.3 If there is any possibility of mercury remaining from the spill, use a mercury spill clean up kit and/or special mercury vacuum.
- 3.7.4 After any spill and clean up activity, the area must be checked for contamination with detector tubes or vapor testing equipment.
 - If contamination remains above allowable concentrations, the cleaning process must be repeated.

3.8 Training:

- 3.8.1 Prior to work assignment at a location known to have potential mercury exposures, employees shall receive training that shall include:
 - Physical and toxic characteristics of mercury;
 - Signs and symptoms of overexposure to mercury;
 - Procedures for notifying supervisor of possible exposure;
 - Operations which could result in exposure to mercury above the permissible exposure limit;
 - Safe work practices for the handling, use, release, storage, or disposal of mercury or its compounds in normal operations;
 - Proper housekeeping practices, decontamination procedures in the event of mercury contact or spill;
 - Emphasis on the potential for ingesting mercury by hand-to-mouth contact when good personal hygiene is not practiced;
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 - Control measures necessary to protect employees from exposures in excess of the permissible exposure limit.

- The wearing and decontamination of protective clothing must be stressed;
- Purpose, proper use, and limitations of respirators;
- Description of and purposes for the medical surveillance program; and
- Written procedures and hazard information availability.

3.9 Medical Surveillance:

3.9.1 Medical surveillance shall be provided for all employees who are or will be exposed to airborne concentrations of mercury vapor or the dust of its organic compounds above the permissible exposure limit for 30 days or more per year.

3.9.2 Each employee shall be provided with an opportunity for biological monitoring and medical examination performed by or under the supervision of a licensed physician and provided during the employee's normal working hours without cost to the employee.

3.10 Disposal:

3.10.1 Contact the Company environmental manager to determine proper disposal methods.

4 References:

4.1 29 CFR 1910.252, Mercury

4.2 National Institute of Occupational Safety and Health; Occupational Health Guideline for Inorganic Mercury

5 Exhibits:

None.