## Contents list for: MERC-KIT
### Mercury Spill Kit:

<table>
<thead>
<tr>
<th>Qty</th>
<th>Pkg</th>
<th>Description</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Each</td>
<td>Mercury Aspirator</td>
<td>One Size</td>
</tr>
<tr>
<td>1</td>
<td>Each</td>
<td>MerconSpray - Patented, liquid concentrate designed spray in the ambient air at breathing level over spilled mercury, preventing the spread of mercury vapor. No-mixing required</td>
<td>250mL</td>
</tr>
<tr>
<td>1</td>
<td>Each</td>
<td>Merconvap - Patented, non-aqueous liquid concentrate designed to coat over spilled mercury and involved surface areas, preventing the spread of mercury vapor. Use full strength to clean and decontaminate mercury spills, and &quot;hot-spots&quot;. No-mixing required</td>
<td>250mL</td>
</tr>
<tr>
<td>1</td>
<td>Each</td>
<td>Mercontainer – Waste Storage Container</td>
<td>16 oz (475 mL)</td>
</tr>
<tr>
<td>1</td>
<td>Pair</td>
<td>Safety Goggles</td>
<td>One Size</td>
</tr>
<tr>
<td>2</td>
<td>Pair</td>
<td>Nitrile Gloves</td>
<td>One Size</td>
</tr>
<tr>
<td>2</td>
<td>Each</td>
<td>Disposal Bags</td>
<td>One Size</td>
</tr>
<tr>
<td>1</td>
<td>Each</td>
<td>Instruction Booklet</td>
<td>One Size</td>
</tr>
<tr>
<td>1</td>
<td>Each</td>
<td>Cardboard, Portable Case</td>
<td>14” x 10” x 5”</td>
</tr>
</tbody>
</table>
How to Handle Spills and Cleanup Mercury

Disclaimer: The information provided in this paper is based on data believed to be reliable, but is given without any guarantee or warranty of any kind, either expressed or implied. EPS Chemicals, Inc., its subsidiaries, employees, officers, directors and agents disclaim any liability incurred from the use thereof.

Note: Mercon (TM) products and waste materials should be stored, handled and used in accordance with municipal, state, federal and all applicable laws.

1. ABOUT MERCURY

1.1. Chemical Characteristics

• Chemical symbol: Hg
• In elemental form, Mercury is a silver/white metal
• Liquid at room temperature (melting point -38° C)
• Emits Mercury vapor
• Vaporization increases with temperature and surface area
• Metallic form is insoluble
• Metallic form is 13.5 time as dense as water (1 litre weighs 13.5 Kg)

1.2. Forms of Mercury

1.2.1. Vapor
• Extremely toxic
• Invisible, odorless & tasteless
• Biologically harmful
• Soluble in fat

1.2.2. Inorganic Forms (Mercury salts)
• Mercury combined with an element other than carbon
• Two different types (Hg + or Hg ++)
• Emits vapor
• Biologically harmful

1.2.3. Organic Mercury
• Mercury attached to a short chain of carbon molecules
• Can emit vapor
• Fat soluble and very toxic
• Insoluble in water
• Some organic forms such as methyl or alkyl mercury are particularly toxic and more readily absorbed into the body and more difficult to excrete
1.3. Useful Properties of Mercury
• Uniform volume expansion over a wide range of temperatures
• Liquid at room temperature
• Electrically conductive
• High density
• Low vapor pressure
• Forms alloys with metals (except iron and platinum)

1.4. Occupational Exposure
• Mining ore treatment, smelting of alloys, dental amalgam, hospitals (thermometers, sphygmomanometers), laboratories, coal-burning power plants, manufacturing of batteries, manufacturing of fluorescent and neon lights, incineration facilities, industrial catalysts, felt making, paints, mercury vapor lamps, meteorological instruments, temperature and pressure meters, mercury switches, electrical devices.

*Note: this is not meant to be a complete list.*

1.5. Routes of Entry
1.5.1. *Inhalation* of mercury vapor and/or dust
1.5.2. *Absorption through skin* of vapor, dust and direct contact
1.5.3. *Ingestion* of metallic inorganic, organic forms directly or indirectly through our food chain

1.6. Disposition of Ingested, Inhaled or Absorbed Mercury
• Due to fat-soluble nature, Mercury is not easily excreted from the body
• Tends to concentrate and accumulate in brain, liver, nervous and fetal tissue

1.7. Mode of Biological Action
• Alters cell membrane physiology
• Inhibits production and action of enzymes
• Damages liver and kidneys
• Decreases velocity of nerve impulses which leads to trembling of hands and eventual loss of fine motor control

1.8. Cumulative Nature
• Mercury has a half-life of 70 days
• Mercury can be slowly excreted from the body, but its effects (and damage) are not easily repaired. Therefore, the effects of mercury exposure tend to be cumulative and irreversible.
1.9. Biological Symptoms of Mercury Exposure

- Headaches, vertigo, nausea, diarrhea
- Restlessness, irritability
- Tremors, loss of fine motor control
- Psychological disturbances such as mood and personality changes
- Blurring of vision
- Lesions on skin with prolonged contact
- Increased peri-natal mortality

2. MERCURY LEVEL REGULATIONS

2.1. Ambient Mercury Vapor Levels

- **National Institute for Occupational Safety and Health**
  Note more than 50 milligrams per cubic metre (0.05/m³) of air. This standard may vary in various jurisdictions.

- **American Conference of Governmental and Industrial Hygienists**
  Not more than 150 micrograms per cubic metre (0.15 mg/m³) of air, based on 15 minute exposures at intervals of 60 minutes.

- **OSHA**
  Not more than 10 micrograms per cubic metre (0.010 mg/m³) for alkyl compounds.

*Note: Please check with your local health, environmental and/or occupational health and safety authorities to ensure you are using the applicable standard for your situation.*

2.2. Physiological Indicators of Biological Mercury Levels

- **Urine:** Limit of 15 micrograms per litre (15 ppb), since Mercury does not concentrate in urine.
- **Blood:** Limit of 10 micrograms per litre (10 ppb).
- **Hair:** Higher than urine or blood concentrations. Analysis of hair is best measure of longterm mercury exposure.
3. HOW MERCON (TM) PRODUCTS WORK

Mercon (TM) is first and foremost a powerful mercury vapor suppressant. All products work by immediately oxidizing with the physical mercury. Then a chemical change occurs converting the elemental mercury in the more stable non-vapor-producing mercuric sulphide. In addition, all Mercon (TM) spill control kits, solutions absorb mercury vapor and dust from the air and stop the methylation of mercury in water.

3.1. MerconTainer (TM), Mercon-X (TM)

- Converts mercury to mercuric sulphide, which is the natural compound found in nature before mercury ore is mined and refined
- Patented mercury decontamination formula is designed to increase the surface reactivity between the active ingredients and available mercury molecules
- Formula absorbs available mercury molecules from surfaces and the surrounding air

3.2. MerconSpray (TM), MerconVap (TM)

- Produces mercuric iodide
- Antibacterial
- Absorbs available mercury molecules from surfaces and the air

4. PREVENTIVE MEASURES

- **Provide Adequate Ventilation (air changes)** to the contaminated area.
- **No Eating or Smoking** in work areas.
- **Wear Protective Clothing** with daily changes.
- **Preclude Exposure of Any Kind** for pregnant or lactating women, and for anybody with a nervous system disorder, or for those with skin, lung, liver, kidney or gastro-intestinal problems.
- **Regular Physical Examination** of exposed persons at periodic intervals; including determination of mercury levels in urine, blood as well as neurological evaluations with specific attention to tremors, visual field changes, sensory changes, insomnia and weight loss.
- **Employee Education.** All employees must be educated to the risks of unmanaged exposure to mercury, and must be trained in proper procedures for transporting, handling, storing, and spill management.
- **Use Mercon (TM) or Equal Mercury Vapor Control and Decontamination Products** wherever mercury materials are being used, stored, transported, cleaned up and disposed. **Caution:** A lot of products make vapor control and decontamination claims. Don’t rely on the claims alone. Use a mercury vapor meter before; during and after mercury cleanups to ensure that mercury vapor is no longer being emitted. Mercon (TM) products work, while others don’t work as well, or in some cases don’t work at all. **Be cautious when it comes to Mercury cleanup!**
- **Never Ignore a Possible Mercury Event.** Good education, housekeeping, preparedness, and prompt action are needed wherever Mercury materials are being stored, transported and/or used.
4.1. Helpful Hints

• Weekly preventive maintenance and workstation cleanup will reduce the danger of mercury vapor build-up; thereby creating a safer environment. After the initial use of any Mercon(TM) Mercury Management products, always ensure that you have a back-up unit or replacement products available.

• Replace Mercon(TM) products every 3 years to ensure full effectiveness and compliance with applicable health and safety regulations.

• Always contact your local Health and Safety Officer prior to disposal of mercury waste or contaminated material, instruments or tools. Always seek professional advice if mercury spills occur near a heat source, or if mercury in any form makes its way into air handling or water systems. Do not incinerate or bury Mercury waste.

• Never heat Mercury rich materials to refine gold or silver at home.

• Never attempt to clean up Mercury spills if you are pregnant, and ensure that those that are pregnant do not work or enter areas where Mercury materials are being used, stored or being cleaned up.

• Do not ‘play’ with Mercury; and teach your children about Mercury’s hazards.

4.2. Points to Remember

• Mercury and Mercury Amalgam vaporize at room temperature. Mercury vapor is extremely toxic.

• Ambient Mercury levels in your breathing zone can be controlled if you and other personnel are aware of and trained in safe mercury management.

• Be conscious of the hazard of unseen Mercury contamination in cracks, corners and untreated storage containers.

• Never dispose of Mercury into toilets, drains, sinks or other wastewater collection systems. It may find its way back!

• If you are not certain about anything related to Mercury – ASK!
5. SPILL MANAGEMENT PROCEDURES

5.1. Small Scale Spill Cleanup (using MerconKit™)

Step 1:
Block off from foot traffic a large radius (approximately 6 feet) around center of spill site. Check clothing and footwear for mercury debris. Remove any contaminated clothing and footwear at edge of spill site.

Step 2:
Remove the MerconSpray™ from the spill kit, and wearing gloves and goggles; proceed to spray the ambient air zone above the spill zone. Spray generously (18 – 20 pumps) into the air, starting at the breathing level and working down towards the floor, concentrating on the actual spill itself.

Step 3:
On the MerconVap™ bottle, replace shipping cap with squirt nozzle from kit. Cover all visible Mercury with MerconVap™, leaving a wide margin for any unseen Mercury beads. Ensure that any cracks in the flooring are saturated with MerconVap™ to suppress any Mercury beads that may be out of sight. The spill is now safe to clean up.

Step 4:
Open the MerconTainer™ in the kit. Using the Mercury aspirator pick up any visible mercury and deposit them in the Mercontainer™. Ensure that all Mercury waste is placed in the MerconTainer™. The same MerconTainer™ may be used for several spills, provided that it is no more than ½ full. Always ensure that there is a back-up MerconTainer™ available.

Step 5:
To complete the decontamination of the Mercury spill site, re-apply MerconVap™ liquid to spill zone; and, using disposable towels soaked in MerconVap™ wipe any remaining residue.

Step 6:
Dispose of used MerconTainers™ and any contaminated items as per local environmental regulations. Do not incinerate. Do not throw away in ordinary garbage. Wipe shoes, gloves and any other contaminated items with disposable towels soaked with MerconVap™.