

## ***What are hazardous materials?***

A hazardous material is that which **poses substantial or potential threats to public health or the environment**. There are four factors that determine whether or not a substance is hazardous:

- **Ignitability** - Can create fires under certain conditions, are spontaneously combustible, or have a flash point less than 60°C (140°F). Examples include waste oils and used solvents.
- **Corrosive** - Acids or bases that are capable of corroding metal containers, such as storage tanks, drums, and barrels. (Acids with a pH  $\leq$  2; Bases with a pH  $\geq$  12.5) Examples are battery acid.
- **Reactivity** – Substances that are unstable under "normal" conditions. They can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water. Examples include lithium-sulfur batteries and explosives.
- **Toxicity** – Substances containing concentrations of certain substances in excess of regulatory thresholds which are **expected to cause injury or illness to human health or the environment**.



Your **prompt handling** and **strict adherence** to hazardous spill cleanup and disposal procedures are necessary **to protect yourself and the community**. In order to quickly react to an accidental spill or release, you must first **be familiar with the chemicals with which you are working**. The product label and SDS **should always be reviewed** prior to working with any chemical.

**With any hazardous spill you should always contain the spill if possible and then immediately contact your manager.**

The hazardous materials that you are most likely to be exposed to at Auto-Chlor System are **spilled or contaminated corrosives** and **defective mercury containing devices**. We will cover how to best handle each of these situations and the **proper disposal** procedures.

### ***Corrosives***

Corrosives can be **identified by determining their pH**. Chemicals with a **low pH (below 7) are acidic** and chemicals with a **high pH (over 7) are alkalines**. Corrosive hazardous spills (high or low pH) can be processed so that the **hazardous component of the waste is eliminated**; making it a non-hazardous waste. For example, a Scale Kleen spill neutralized with sodium bicarbonate to a pH of 7 is no longer hazardous.

**Spill Clean Up Steps for Corrosives**

1. Don appropriate **PPE** for the chemical
  - Refer to SDS (Section 8)
2. **Isolate** the spill
  - Dam the leak to prevent spread
  - Contain leaking container in tote
  - Replace lid or cap
3. **Identify** the spill
  - Find source of leak
  - Test pH of spill
4. **Neutralize** the spill
  - Sprinkle a light layer of the neutralizing chemical over the affected area
    - Sodium bicarbonate (for acid spills)
    - Citric acid (for base spills)
  - Lightly spray area with clean water to help reach crevices, etc.
  - Allow to work
    - Chemical reaction will diminish as neutralized
  - Re-test with pH paper in several areas
    - Repeat previous steps until a neutral reading is obtained
    - Once a neutral reading is reached move on to absorb
5. **Absorb**
  - Spread absorbent and allow to work
6. **Dispose**
  - Sweep absorbent into bag, seal and dispose

**Mercury**

Mercury is **highly toxic**. Proper disposal of mercury-containing products is important to ensure that mercury **does not get into the environment**. Because mercury does not break down, it **tends to build up in the environment**. If improperly disposed, mercury-containing products can end up in landfills or incinerators, allowing mercury to eventually **find its way back** into surrounding soils, surface water, groundwater, and the food chain.

- **Never put mercury in the trash** or in a burn barrel.
- **Never use a vacuum cleaner** to clean up mercury.
- **Never pour** or allow mercury to go **down the drain**.

Some relays and contactors contain liquid mercury. Breached relays can form droplets that accumulate in cracks and other small places.

**These droplets can emit vapors that can't be seen or smelled.**  
Breathing mercury vapors is **extremely dangerous**.



Every branch should have a 5-gallon bucket labeled “Mercury” for **collection of defective and breached mercury relays**. Each Sales & Service and on-call vehicle should have a mercury recovery kit. Each mercury recovery kit should contain:

- 2 Eye Droppers
- Small Spray Bottle (water)
- 2-4 Zip top bags
- 3 x 5 index card
- Permanent marker



**-OR-**

As an alternative you may choose to purchase **mercury sponge clean-up kits** for all service vehicles.

**Grainger Part #49Y398** (pictured)

***Clean up steps for breached relays***

- **Retrieve** mercury recovery kit
- **Remove** two zip top bags and label with the date
- **Don PPE** (foam surround safety glasses and latex/nitrile disposable gloves)
- Gently **spray** mercury beads and surrounding area with water
- **Place** broken pieces in one of the zip top bags
- Using eyedropper, gently **pull mercury pellets** into eye dropper (use index card if necessary)
- **Place dropper and index card** (if used) into zip top bag with broken pieces
- **Respray area** and wipe down with paper towel.
- **Place paper towel and gloves** in second zip top bag
- **Seal** both zip top bags
- Both bags should be **placed in collection container at branch** at the end of the day.

**-OR-**

- If using a **mercury sponge clean-up kit**
- **Absorb** the mercury using the specially treated sponge
- **Reseal** the kit once cleaned up
- **Place** the kit in the mercury collection container at the branch

**Remember....**

- No matter what the spilled material is, **always TELL YOUR MANAGER IMMEDIATELY!**
- **Review the SDS** for instructions on handling hazardous waste
- Wear the appropriate **PPE**
- Always **follow instructions** for proper disposal

**EXERCISE**

As a group clean up a small hazardous spill (approximately 20-30ml of machine detergent). Use a spill cleanup kit from a route vehicle and follow the steps listed for cleanup of a corrosive spill.

**QUIZ**

Each participant should complete the Spill Cleanup Response quiz. Review the answers as a group.

**1. What does not determine whether a material is hazardous?**

- a. Ignitability
- b. Corrosive
- c. Reactivity
- d. Temperature

**2. Product labels and SDS should be reviewed prior to:**

- a. Working with any new chemical
- b. Cleaning a chemical spill
- c. Both a and b

**3. With any hazardous spill you should always contain the spill then contact your manager immediately.**

- a. True
- b. False

**4. Chemicals with a low pH are:**

- a. Bases
- b. Acids
- c. Neutral
- d. Radioactive

**5. To neutralize an alkaline corrosive spill what neutralizing chemical should be used?**

- a. Scale Kleen
- b. Sodium Bicarbonate
- c. Citric Acid
- d. Chlorine

**6. To neutralize an acidic corrosive spill what neutralizing chemical should be used?**

- a. Water
- b. Sodium Bicarbonate
- c. Citric Acid

**7. What are the six steps to neutralizing a corrosive spill?**

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_

**8. What happens to mercury that is released to the environment?**

- a. It can contaminate ground water, surface water, soil and the food chain.
- b. It does not break down
- c. Tends to build up in the environment
- d. All of the above

**9. What is the proper PPE for breached mercury relay clean up?**

- a. Faceshield & leather gloves
- b. Goggles
- c. Eye protection and latex/nitrile gloves

**10. Every branch should have a “Mercury Relay” disposal bucket.**

- a. True
- b. False



# SPILL CLEANUP RESPONSE QUIZ

*By signing, I acknowledge that I understand and will abide by any directives or policies contained within this document.*

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_