**Problem**

**What**
- What's the Problem? Why did it happen? What will be done?
- Problem:
  - Death of professor from mercury exposure

**When**
- When
  - June 8, 1997
  - Different, unusual, unique

**Where**
- Facility, site
  - New Hampshire College
- Unit, area, equipment
  - Ventilated hood in laboratory
- Task being performed
  - Research on biologic toxicity of heavy metals

**Impact to the Goals**
- Safety
  - Exposure to dimethylmercury (limited to victim)
- Customer Service
  - ?
- Regulatory
  - ?
- Production/ Schedule
  - ?
- Property/ Equipment
  - ?
- Labor Time
  - ?
- Frequency
  - Only 3 known previous cases of dimethylmercury exposure (2 in 1865 and 1 in 1972), all of which were fatal

**Solutions**

"Before she lapsed into a vegetative state, the patient requested that her case be presented to the general medical community, to scientists working with mercury, and to toxicologists, in the hope of improving the recognition, treatment, and prevention of future cases of mercury poisoning."


**MERURY POISONING Cause Map**

**Toxicity researcher is killed with a few drops**

**Analysis**

Possible solution:
- Use of less toxic mercury compounds
- Immediate reporting of possible exposure
- Use of chemically resistant gloves
- Inadequate protective gloves
- Clarify guidance on personal protection
- Wear appropriate chemical-resistant gloves

**Evidence:**
- Dimethylmercury “supertoxic”
- Symptoms not noted until 148 days after exposure
- Professor believed protection was adequate
- Dimethylmercury contacted gloves
- Exposure via transdermal absorption
- Exposed latex gloves have high permeation rates
- Professor wore only disposable latex gloves
- Inadequate guidelines on MSDS
- Environmental Goal Impacted
- Inadequate protection was given

**Detailed Cause Map** - Add detail as information becomes available.

**Death of professor**

**Problem:**
- Spilled drops of dimethylmercury (Hg(CH₂)₂) onto gloved hand

**Analysis:**
- Profesor cleans up spill & removes gloves
- Professor notices deterioration in balance, gait & speech
- Results of routine laboratory tests normal
- Results of CT & MRI of head normal except for incidental finding of probable meningioma
- Laboratory values report whole-blood mercury 4000 µg per liter (normal range 1 to 5, toxic level >50)
- Vitamin E added to regimen
- Repeated CT & MRI scans remain normal
- Professor becomes unresponsive to stimuli
- Autopsy determines extremely high mercury content of brain

**Solutions**

Possible solution:
- Use of chemically resistant gloves
- Clarify guidance on personal protection
- Wear appropriate chemical-resistant gloves

**Evidence: Material Safety Data Sheet reads “Wear appropriate chemical-resistant gloves.”**

**ThinkReliability**

Investigate Problems. Prevent Problems.

Houston, Texas      281-412-7766      ThinkReliability.com

Copyright ThinkReliability 2014