

Understanding Materials Inventory and Hazard Identification

The first step in using hazardous materials or chemicals safely is to recognize and identify those materials that are hazardous to your health. Taking an inventory identifies locations hazardous materials are likely to be located and identifies materials to be reviewed and evaluated for potential hazards. A list of hazardous materials present in any work area, including laboratories, is also required by the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard (HCS). Job analyses and industrial hygiene monitoring are also tools used to identify hazards. Once these hazards are identified, the hazards or potential hazards can be communicated and appropriate protective measures can be taken.

Where are Hazardous Materials located?

Hazardous materials are substances in containers and pipes and can be found in work or lab operations. They can be solids, liquids, gases, and vapors. Hazardous materials located anywhere a person can be potentially exposed are regulated under the HCS.

What makes a Material Hazardous?

- "**Hazardous material**" means any chemical or material that is a physical hazard or a health hazard.
- "**Physical hazard**" means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.
- "**Health hazard**" means a chemical for which there is statistically significant evidence based upon at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals that are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents that act on the hematopoietic system, and agents that damage the lungs, skin, eyes, or mucous membranes.

How can a Job Analysis Identify Hazardous Materials?

A job analysis studies and records each step of a job and identifies existing or potential hazards, and determines the best way to perform the job in order to reduce or eliminate the risks. This information can be used to identify which employees will need to be trained and identify the content of the communication or training that needs to be completed to comply with the HCS.

For hazardous communication training, however, the primary source of information is the **Material Safety Data Sheet (MSDS)**, which spells out the type and extent of hazard for each chemical, in addition to all the measures that should be followed to protect employees and to deal with emergencies. Tying in the information on an MSDS with a location by location inventory will show **who** has to be trained and about **what**.

What are the benefits of a chemical inventory?

A Chemical Inventory is essential for good laboratory management. Specific benefits include:

- Identifies substances that require additional precautions – access, storage, handling, labeling, transporting, and proper PPE (Personal Protective Equipment) selection
- Needed for risk assessment/job hazard analysis of substances and procedures
- Keeps inventories to manageable levels – reduces purchase and disposal costs and the associated environmental impact
- Monitors substances with expiration dates
- Identifies substances for the *chemical orphan program* or disposal
- Allows for the development of a university-wide web-based chemical inventory database system
- Is essential to complete the annual reporting requirements of the Chemical Facility Anti-Terrorism Standard from the Department of Homeland Security.
- Is required by law to comply with the HCS

A Chemical Inventory is a list of substances with the following information: chemical name, CAS number, building and room number, location, manufacturer, container amount, number of containers, and maximum number of containers. With an accurate chemical inventory EHS can assist you with your responsibilities under the HCS. **For guidance on setting up your inventory contact Marjorie Markopoulos, EHS Specialist, at ext. 2797.**

TEST YOUR KNOWLEDGE! SEE HOW MANY YOU CAN MATCH.

- | | | | |
|----|------------------------|-------|--|
| 1 | Carcinogen | _____ | able to ignite and burn readily |
| 2 | Corrosives | _____ | are fire and explosion hazards when in contact with organic material or strong reducing agents |
| | | _____ | cause damage to the nervous system. The nervous system is especially sensitive to organic metallic |
| 3 | Explosive | _____ | compounds and certain sulfide compounds |
| 4 | Flammable | _____ | are poisonous in very small amounts |
| 5 | Teratotoxins | _____ | can cause inflammation of tissue at point of contact, including bronchitis or other lung damage if inhaled. |
| | | _____ | can seriously damage the skin upon contact, mucous membranes and lungs if inhaled, or the gastrointestinal |
| 6 | Hemotoxins | _____ | tract and stomach if ingested |
| | | _____ | cause allergic reactions after repeated exposures. The reaction may be as mild as a rash (contact dermatitis) or |
| 7 | Hepatotoxin | _____ | as serious as anaphylactic shock |
| 8 | Highly Toxic Chemicals | _____ | cause birth defects in developing fetuses but effects are not hereditary |
| 9 | Irritant | _____ | cause damage to blood cells or bone marrow |
| 10 | Nephrotoxin | _____ | cause damage to the kidneys |
| 11 | Neurotoxin | _____ | cause damage to the liver |
| 12 | Oxidizer | _____ | reacts with water to release a gas that is either flammable or presents a health hazard |
| | | _____ | causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, |
| 13 | Sensitizers | _____ | pressuer, or high temperature. |
| 14 | Pyrophoric | _____ | has been shown to, or may potentially, cause cancer in animals or humans |
| 15 | Unstable or Reactive | _____ | will ignite spontaneously in air at a temperature of 130 deg. F (54.4 deg. C) or below |

(Answers can be found at <http://www.wright.edu/admin/ehs/resources/newsletter.html>)