

HAZARD COMMUNICATION, SPILL RESPONSE AND WASTE HANDLING TRAINING

Hazardous Materials

The Hazard Communication Standard defines a hazardous chemical as any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

A chemical is a **health hazard** if the chemical is classified as posing one of the following hazardous effects:

- Acute Toxicity (any route of exposure)
- Skin Corrosion or Irritation
- Serious Eye Damage or Eye Irritation
- Respiratory or Skin Sensitization
- Germ Cell Mutagenicity
- Carcinogenicity
- Reproductive Toxicity
- Specific Target Organ Toxicity (Single or Repeated Exposure)
- Aspiration Hazard

A chemical is a **physical hazard** if the chemical is classified as posing one of the following hazardous effects:

- Explosive
- Flammable (gases, aerosols, liquids, or solids)
- Oxidizer (liquid, solid, or gas)
- Self-Reactive
- Pyrophoric (liquid or solid)
- Self-Heating
- Organic Peroxide
- Corrosive to Metal
- Gas Under Pressure
- In contact with water emits flammable gas

Nearly all departments deal with some sort of hazard material. Examples include:

- Soaps and cleaners associated with Environmental Services/Building Services
- Paints and solvents located in the Facilities Maintenance Area
- Products used for disinfecting
- Disinfectants used in patient care

Health Effects

Routes of Exposure

- Inhalation
- Skin absorption
- Ingestion
- Injection

Biologic Damage

- Irritation - reddening of skin, itching
- Corrosivity - Chemical burns, skin damage
- Sensitization - allergic type reaction
- Toxicity - taken into body where it effects organs or systems

Physical Damage

- Thermal burns
- Fire
- Explosion

Local effects: Toxic effects are seen at the location of contact with the harmful materials, eg. corrosive burn to eye, and solvent dermatitis

Systemic effects: Organ system, other than (or in addition to) the site of exposure, and the substance is absorbed, transported and metabolized by body

Acute Toxicity: Ability of a substance to cause damage as a result of a one time exposure of relatively short duration

Chronic Toxicity: Harmful effects of a substance produced by low level, long-term exposures, due to cumulative damage

UT Chemical Exposures

Industrial Hygiene Monitoring

- Performed by the EHRS Department when required.
- Air sampling is completed through the use of exposure badge's and other air sampling devices.

Pathology (Formaldehyde)

- Some common indicators of overexposure are: Dizziness, Nausea, Loss of sense of smell, Respiratory irritation, Headache, and Fatigue and weakness etc.

Nursing Units

- Exposure to disinfectants and cleaning agents can be hazardous to your health if you are overexposed to them.
- Consult the label and the SDS to determine the exact hazards they present as well as their noted health effects.
- Some common indicators of overexposure are: Dizziness, Nausea, Respiratory and eye irritation, Headache, Fatigue and weakness etc., Irritation and burning of the skin, Dry skin, and Dermatitis
- Other areas and hazardous materials include mercury, glutaraldehyde, OPA, nitrous oxide, acids and alcohols.

Research and Clinical Labs

- Research laboratories on campus have a variety of chemicals. Hazard Communication is covered through the Lab Safety Training program and the Chemical Hygiene Plan HM-08-026.

Facilities and Environmental Services

- Cleaning chemicals, solvents, and paints used by Facilities and Environmental Services are covered under the hazard communication standard.

Hazard Communication

Global Harmonization System (GHS)

New changes to the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard are bringing the United States into alignment with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

The new hazard communication standard still requires chemical manufacturers and importers to evaluate the chemicals they produce or import and provide hazard information to employers and workers by putting labels on containers and preparing safety data sheets. However, the old standard allowed chemical manufacturers and importers to convey hazard information on labels and material safety data sheets in whatever format they chose. The modified standard provides a single set of harmonized criteria for classifying chemicals according to their health and physical hazards and specifies hazard communication elements for labeling and safety data sheets.

General

A Safety Data Sheet (SDS) is a document containing chemical hazard information and is prepared in accordance with the OSHA Hazard Communication Standard. Other reference material which describes the safe handling, storage and disposal of hazardous chemicals may be used.

SDS's

- Ensure you have an SDS for all "Hazardous Chemicals".
- Create a folder in Chemwatch if they wish to keep SDS's on file electronically.
- Ensure they are readily available to all employees on all shifts.

Employees should:

- Know where the SDSs for their department are located.
- Know where the Hazard Communication Plan is located and how to access it (HM-08-018).
- Gain familiarity with departmental labels and SDSs.
- Identify hazards and associated PPE and follow all procedures recommended by the hazard Communication Plan (HM-08-018).

Guidelines for Reading and Understanding an SDS Section by Section

SDS's now require a 16 section format (see 1910.1200 Appendix D). The following section numbers and headings must be included, in order:

Section 1 – Identification

Section 2 – Hazard(s) identification

Section 3 – Composition/information on ingredients

Section 4 – First-aid measures

Section 5 – Fire-fighting measures

Section 6 – Accidental release measures

Section 7 – Handling and storage

Section 8 – Exposure controls/personal protection

Section 9 – Physical and chemical properties

Section 10 – Stability and Reactivity

Section 11 – Toxicological Information

Section 12 – Ecological Information

Section 13 – Disposal Considerations

Section 14 – Transport Information

Section 15 – Regulatory Information

Section 16 – Other information including date of preparation or last revision

Labeling

Labeling is an important means of communicating container contents and potential hazards associated with chemicals. Furthermore, it is important to use a coding or labeling system which communicates such hazards to the people who come in contact with chemicals.

Global Harmonization System (GHS) Labeling System

Under the GHS system, labels on shipped containers must contain the following:







- Product identifier
- Signal word
- Hazard statement(s);
- Pictogram(s);
- Precautionary statement(s); and,
- Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party.

All chemicals in the lab must be labeled with the original shipping label or the following:

Product identifier and words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical. Labels for secondary containers can be printed on Chemwatch.

HCS Pictograms and Hazards

Health Hazard	Flame	Exclamation Mark
 <ul style="list-style-type: none">▪ Carcinogen▪ Mutagenicity▪ Reproductive Toxicity▪ Respiratory Sensitizer▪ Target Organ Toxicity	 <ul style="list-style-type: none">▪ Flammables▪ Pyrophorics▪ Self-Heating▪ Emits Flammable Gas▪ Self-Reactives	 <ul style="list-style-type: none">▪ Irritant (skin and eye)▪ Skin Sensitizer▪ Acute Toxicity▪ Narcotic Effects▪ Respiratory Tract Irritant

<ul style="list-style-type: none"> Aspiration Toxicity 	<ul style="list-style-type: none"> Organic Peroxides 	<ul style="list-style-type: none"> Hazardous to Ozone Layer (Non-Mandatory)
<p style="text-align: center;">Gas Cylinder</p>  <ul style="list-style-type: none"> Gases Under Pressure 	<p style="text-align: center;">Corrosion</p>  <ul style="list-style-type: none"> Skin Corrosion/Burns Eye Damage Corrosive to Metals 	<p style="text-align: center;">Exploding Bomb</p>  <ul style="list-style-type: none"> Explosives Self-Reactives Organic Peroxides
<p style="text-align: center;">Flame Over Circle</p>  <ul style="list-style-type: none"> Oxidizers 	<p style="text-align: center;">Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> Aquatic Toxicity 	<p style="text-align: center;">Skull and Crossbones</p>  <ul style="list-style-type: none"> Acute Toxicity (fatal or toxic)

Personal Protective Equipment (PPE)

Chemical Handling

- Is to shield or isolate individuals from the chemical, physical and biological hazards that may be encountered in the workplace.
- Careful selection and use of adequate PPE should protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing.
- No single combination of protective equipment and clothing is capable of protecting against all hazards.
- PPE should be used in conjunction with other protective methods (i.e. hand washing, engineering controls).
- Engineering and Administrative controls (ie local exhaust hoods and substitution of less hazardous chemicals, respectively) should always be investigated prior to using personal protective equipment.
- PPE should always be removed prior to exiting the area of use, unless such removal endangers the safety and health of the wearer.

Selection

- The type of PPE chosen is dependent upon the given set of circumstances or conditions;
- The relative health risk presented by the hazard;
- The physical and chemical characteristics of the hazard;

- The duration of exposure;
- Route of exposure
- In extremely hazardous situations or when the above factors are poorly defined the highest level of protection is required.
- PPE constructed of various materials are available and decisions to use these should be based upon the hazards ability to penetrate the chosen barrier (gowns and gloves, tyvek) for example.

Type of PPE (includes both disposable and reusable)

Body

- Lab coat or jacket - Protects against splashes, dust, and other matter.
- Apron - Provides additional splash protection, for chest.
- Pants or bib overalls - Provides legs and lower torso with splash protection.
- Coverall - Protects whole body from splashes, and dust but not gases and vapors.
- Full body encapsulating suit - Protects against splashes, dusts, gases and vapors.

Head

- Surgical bonnet - Protects against hair contamination
- Hood - Protects against chemical splashes, particulates and rain.
- Hard Hat - Protects head from blows.

Eye and Face

- Face shield - Protects against chemical splashes, provides limited eye protection.
- Safety glasses - Protects eyes against large particles and projectiles.
- Goggles - Selection for protection against vapors splashes, particles and projectiles.

Ears

- Ear Plugs - Protect against physiologic damage to auditory system and psychological disturbances.
- Ear Muffs - Protect against physiologic damage to auditory system and psychological disturbances.

Hands and Arms

- Gloves - 1st line - Protect hands from chemical and biological contamination. - 2nd gloves constructed different materials provide protection against different hazards (i.e. safety gloves).
- Sleeve protectors - protect upper arms from contamination.

Feet

- Disposable boot covers - Protect from shoe contamination
- Safety shoe and boots - Protect feet from compression or crushing.

Lungs

- Respirator (air purifying) - higher form of respiratory protection require training, and medical surveillance

Emergency Procedures Involving Hazardous Materials

Spills (Consult Policy #HM-08-013)

*Note: If at anytime you feel you are not qualified or are unsure of yourself, call and report any chemical spills to UTP at X2600 so that trained personnel may be involved.

Remember

- Protect yourself first, personal protective equipment.
- Protect the people around you.
- Protect contamination of materials, equipment, and environment lastly.

Small spills less than 1 gallon

- Assess the situation and determine types of materials involved.
- Put on appropriate personal protective equipment
- Apply suitable absorbent materials (paper towels).
- Dispose of all waste materials to suitable waste stream.
- Mop area with plain water.

Larger spills or for more dangerous materials or for spills involving a fire

- Call X2600 Campus Police
- Restrict area to traffic

Biohazard Spills

- Assess the situation and determine types of materials involved (contact x2600 if unsure how to properly handle)
- Obtain a Biohazard Spill
- Put on appropriate personal protective equipment, follow directions included
- Apply suitable absorbent materials (paper towels) and disinfectant in accordance with spill procedure.
- Dispose of all waste materials to suitable waste stream.
- Contact Environmental Services to mop area.

Chemo Spills (contact x2600) Small spills less than 10 mls

- Assess the situation and determine types of materials involved, obtain a Chemo Spill kit from Stock Room or Central Service.
- Put on appropriate personal protective equipment, follow directions included.
- Apply suitable absorbent materials (paper towels).
- Dispose of all waste materials to suitable waste stream.
- Contact Environmental Services to mop area.

Code Orange (#EP-08-003)

- Chemically or Radioactively contaminated patients being received in the Emergency Department.

IF YOU DON'T FEEL COMFORTABLE WITH SPILL DIAL X2600

Non-routine Tasks and Outside Contractors

Non-routine tasks

- Any job duty that you do not perform on a regular basis falls into this category.
- You should immediately discuss the hazardous nature of this duty with your supervisor before proceeding.

Outside Contractors

- Contractors working for the company will receive the necessary SDS's and hazard information before beginning any work on the premises.
- If you are asked to provide additional information, refer the contractor to your supervisor.
- Outside contractors are required to provide SDS's to your company for any materials they will be bringing into the workplace, these SDS's will be made available to you.

Waste Disposal Procedures

Waste Categories at UT

- Wastes are separated because of their differing hazards.
- Wastes are packaged and separated to:
 - Protect staff who handle the wastes.
 - Comply with requirements set forth by governmental regulations.
 - Identify the waste category and determine if any additional treatment is needed prior to disposal in a landfill.

Solid Wastes

1. Generated throughout the institution (i.e. office waste)
2. Placed in clear, gray or black plastic bags and require no special treatment prior to disposal in a landfill.

Infectious Wastes

1. Generated throughout the institution both in patient care and laboratory settings.
2. Placed in red plastic bags or red labeled "sharps" containers.
3. Treated by autoclaving, chemicals or by incineration to render it non-hazardous prior to disposal in the landfill.

Chemotherapeutic Wastes

1. Generated within areas of the institution where chemo drugs are administered.
2. Disposed of to yellow bags with black Chemotherapy lettering and white and yellow chemo "sharps" containers.
3. These materials are then incinerated.

Chemical Wastes (Hazardous Wastes)

1. Generated throughout the institution both in patient care and laboratory settings in the forms of solids, liquids and gases.
2. Handled exclusively by the the Environmental Health and Radiation Safety Department call 419-530-3600 to have it removed.
3. Permitted by the EPA and utilize various treatment methods to dispose of these wastes.
4. This can include certain classes of medications that will have a black label when it arrives from Pharmacy. These materials will be disposed of in the black bins in dirty utility rooms.

Radioactive Wastes

1. Consult Radiation Safety Office.
2. Yellow bags with the Radiation Symbol in magenta.

Pharmaceutical Waste

1. Certain medications, because of their chemical make-up, may persist in the environment. These materials will have a blue label when they arrive from the Pharmacy. They will be disposed of in the black bin in the dirty utility room.

Important

1. Don't mix the waste streams and remember the colored bags are a form of labeling.
2. **Remember**, wastes have specific treatments required by federal and state laws and intermingling of streams causes the new stream to take on the highest hazard class. (i.e. mixed solid and infectious is now all infectious)
3. Always wash hands after handling wastes and do not eat, drink, or smoke around wastes.
4. Contact Environmental Health and Radiation Safety at 419-530-3600 for any questions.

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