The University of Arkansas
Office of
Environmental Health & Safety
presents
Hazard Communication
The Office of Environmental Health & Safety:

- Provides services to ensure the safety of all students, faculty, staff, and visitors to the campus.
- EH&S staff members include individuals specializing in all areas of safety including chemical, radiation, biological, occupational, and fire safety.
EH&S GENERAL INFORMATION

• Located in the Facilities Management complex

• Office Hours- Monday- Friday 7:30-5:00

• Phone: 575-5448
  (After Hours call UAPD: 575-2222)

• Fax- 575-6474

• Website:
EH&S Services

- EH&S provides safety training for faculty, staff and students including:
  - Classroom training
  - On line Power Point Presentations and quizzes
  - A library of training videos
  - Consult the EH&S website for training opportunities.
EH&S Services (Continued)

- Hazardous Materials:
  - Chemical, Radiological, and Biological Waste Pickup Services
  - Spill Response
  - Odor Investigation / Air Quality Testing
  - Respirator Fit Testing
EH&S Services (Continued)

• Fire Safety
  – Inspections
  – Fire Extinguisher Training (Hands-on)
  – Assistance with Fire Extinguishers in buildings
  – Evacuation Plans
  – Fire Code Compliance
Hazard Communication

In order to ensure chemical safety in the workplace, information must be available about the identities and hazards of the chemicals. OSHA's Hazard Communication Standard (HCS), (Subpart Z, Toxic and Hazardous Substances, 29 CFR 1910.1200) requires the development and dissemination of such information:

Chemical manufacturers and importers are required to evaluate the hazards of the chemicals they produce or import, and prepare labels and material safety data sheets (MSDSs) to convey the hazard information to their downstream customers.

All employers with hazardous chemicals in their workplaces must provide labels and MSDSs for their workers, and train them to handle the chemicals appropriately.
Hazard Communication

• The University of Arkansas has over 500 laboratories on campus, each of which is required by law to display appropriate signage and to have Material Safety Data Sheets (MSDS) on file.

• A printed copy of the University Hazard Communications policy is available through EH&S. (575-5448)
Hazard Types

• Chemical Hazards can be in the form of:
  – Dusts
  – Gases
  – Liquids
  – Solids
  – Fumes
  – Mists
  – Vapors
Hazard Types (continued)

• Biological Hazards can include:
  – Infectious Agents
  – Biological Toxins
  – Venomous Plants and Animals
Hazard Types (continued)

• Radiological Hazards:
  – X-Rays
  – Radioisotopes
Hazard Types (continued)

• Physical Hazards:
  – Lasers
  – Compressed Gasses
  – Energy Sources, e.g. electrical
  – Excessive Noise Levels
  – Magnetic Fields
Health Hazards

- Agents that can damage the lungs, skin, eyes, or other body parts:
  - Carcinogens
  - Corrosives
  - Irritants
  - Toxic agents
  - Neurotoxins
Routes of Exposure

• It is important to be aware of how chemical, biological and radiological materials can enter the body:
  – Absorption through skin
  – Entry through cut or abraded skin
  – Penetration of skin by needle stick or glass cut
  – Inhalation into the respiratory system
  – Ingestion into the digestive system
  – Contact with eyes, mucous membranes
Hazard Awareness

• Become aware of potential hazards and avoid accidents by:
  – Reading container labels.
  – Maintaining a chemical inventory.
  – Using safe work practices.
  – Attending training programs.
  – Reading Material Safety Data Sheets (MSDS).
Container Labels

• All containers must be labeled and must provide the following information:
  – Identity or name of chemical (no abbreviations or chemical symbols, name must be spelled out)
  – Name and address of the manufacturer
  – Warning of its hazardous contents
Hazard Labels

- Two standard systems are commonly used to identify workplace hazards:

1. Hazardous Materials Identification System (HMIS) developed by the National Paint and Coating Association (NPCA)

2. The diamond label format developed by the National Fire Protection Association (NFPA)
Hazard Labels - HMIS

• The National Paint and Coating Association Hazardous Materials Identification System (HMIS)

  — Codes entered in the circles for each category

![Hazard Labels Diagram]
HMIS Codes

HMIS - HEALTH HAZARD RATINGS

0 - Minimal Hazard  - No significant risk to health
1 - Slight Hazard  - Irritation or minor reversible injury possible
2 - Moderate Hazard  - Temporary or minor injury may occur
3 - Serious Hazard  - Major injury likely unless prompt action is taken and medical treatment is given
4 - Severe Hazard  - Life threatening, major or permanent damage may result from single or repeated overexposures
HMIS Codes (Continued)

**HMIS - FLAMMABILITY RATINGS**

0 - **Minimal Hazard** - Materials that will not burn.

1 - **Slight Hazard** - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F.

2 - **Moderate Hazard** - Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 F but below 200 F.

3 - **Serious Hazard** - Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 F and boiling points above 100 F. as well as liquids with flash points between 73 F and 100 F.

4 - **Severe Hazard** - Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air.
HMIS Codes (Continued)

HMIS- REACTIVITY RATINGS

0 - **Minimal Hazard** - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

1 - **Slight Hazard** - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

2 - **Moderate Hazard** - Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

3 - **Serious Hazard** - Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion.

4 - **Severe Hazard** - Materials that are readily capable of explosive water reaction, detonation or explosive decomposition, polymerization, or self-reaction at normal temperature and pressure.
HMIS Codes (Continued)

HMIS- PPE Codes

A - Safety glasses
B - Safety glasses and gloves
C - Safety glasses, gloves and an apron
D - Face shield, gloves and an apron
E - Safety glasses, gloves and a dust respirator
F - Safety glasses, gloves, apron and a dust respirator
G - Safety glasses, a vapor respirator
H - Splash goggles, gloves, apron and a vapor respirator
I - Safety glasses, gloves and a dust/vapor respirator
J - Splash goggles, gloves, apron and a dust/vapor respirator
K – Supplied air mask, gloves, full suit and boots
L - Z - Custom PPE specified by employer
Hazard Labels - NFPA

- National Fire Protection Association
- Diamond Format Label:

- 1. Slightly Hazardous
- 2. Hazardous
- 3. Extreme Danger
- 4. Deadly

- 0. Normal Material
- 1. Above 200°F
- 2. Above 100°F not exceeding 200°F
- 3. Below 100°F
- 4. Below 73°F

- 0. Will not burn
- 1. Unstable if heated
- 2. Violent Chemical Change
- 3. Shock & Heat may detonate
- 4. May Detonate

- ACID Acid
- ALK Alkali
- COR Corrosive
- OXY Oxidizer
- Radioactive
- Use No Water

- HEALTH HAZARD

- REACTIVITY

- SPECIFIC HAZARD

- FIRE HAZARD Flash Points

- Facilities Management Office of Environmental Health & Safety

Hazard Communications
Material Safety Data Sheet

- MSDS provide extremely detailed information for each chemical or material in your workplace
  - Identification
  - Ingredients or compounds
  - Physical and chemical characteristics
  - Fire and explosion hazard
  - Reactivity data
  - Health hazard data
  - Spill procedures
  - PPE
  - Special procedures
MSDS (continued)

• How can I obtain an MSDS?
  – Ask your Supervisor
    Your supervisor is required by law to have MSDSs for any chemical you work with. MSDSs must be available to employees at the work site for immediate access. If this is a new substance, or if a replacement MSDS is needed, try one of the following options.
• How can I obtain an MSDS?

– The Internet

At home or at work, the internet is probably the quickest and easiest way to find an MSDS for a common chemical or compound. Using your favorite search engine to search on "manufacturer + chemical name + MSDS" or "chemical name + MSDS" or "CAS number + MSDS" will turn up the correct result 99% of the time. EH&S has also found the free [http://hazard.com/msds/](http://hazard.com/msds/) site to be useful and up to date for chemicals in common university use.
MSDS (continued)

• How can I obtain an MSDS?
  – The Environmental Health & Safety Office Library
The Office of Environmental Health and Safety maintains an extensive library of MSDSs. All students, faculty and staff are invited to search these volumes for any required MSDS. Copies can be made free of charge.
Bloodborne Pathogens (BBP)

- OSHA Bloodborne Pathogen Standard (29 CFR 1910.1030) requires bloodborne pathogen training for all personnel who may come in contact with bloodborne pathogens.
What is a Bloodborne Pathogen?

- Bloodborne Pathogens are microorganisms, such as viruses or bacteria, that can cause disease in humans, and that are carried in blood or other body fluids.
BBP Disease Examples

- Hepatitis B (HBV)
- Human Immunodeficiency Virus (HIV)
- Hepatitis C (HCV)
- Malaria
- Brucellosis
- Syphilis

(Hepatitis B Virus)
Modes of Transmission

• Bloodborne Pathogens such as HBV and HIV can be transmitted through:
  – Blood
  – Semen
  – Vaginal Secretions
  – Saliva
  – Any body fluid that is visibly contaminated with blood
Common Transmission Routes

• In most work and lab situations, transmission is most likely to occur because of an accidental puncture from a contaminated needle, broken glass, or other sharps OR contact between cut or abraded skin and infected body fluids
Protect Yourself!

• USE UNIVERSAL PRECAUTIONS. Treat all blood and other potentially infectious material as if it were infectious.
Personal Protective Equipment (PPE)

- The first thing to do in any situation where you may be exposed to bloodborne pathogens is to don PPE, which may include:
  - Gloves
  - Goggles
  - Face Shield
  - Apron
Hygiene Practices

- Wash hands thoroughly (Scrub with disinfectant soap for 15 – 20 seconds) if you have touched potentially infected material.
- Never eat, drink, smoke, apply cosmetics, or handle contact lenses if you are working in an area where exposure is possible.
- No food or drink is permitted in labs or refrigerators designated for lab use.
Decontamination & Sterilization

• All surfaces, tools, equipment, and other objects that come in contact with potentially infectious material must be decontaminated immediately. Use a 10% bleach and water solution or other disinfectant specifically approved for this purpose.
Emergency Procedures

• Always use Universal Precautions!
• If exposed, wash exposed area thoroughly with soft disinfectant soap and water.
• Report the exposure to your supervisor.
• Seek immediate medical attention from the closest health care facility. In most cases, this will be the Pat Walker Health Center.
Hepatitis B Vaccination

• Strongly endorsed by medical community.
• Required of all at risk employees.
• Available at the Health Center.
• Employee must sign a waiver if vaccination is declined.
• Contact the Health Center for more information.
Fire Safety

• Fire Safety devices
  – Fire Alarm Pull Boxes
  – Smoke and Heat Detectors
  – Sprinkler Systems

• Learn about YOUR building
  – Evacuation Routes (posted by each building entrance/exit).
  – Dead Ends
  – Fire Extinguisher Locations
Fire Extinguishers

• Located in every building.
• May be red or chrome.
• Approximately 4000 on campus.
• Placed in buildings for quick access in case of a fire.
  – In hallways stored in cabinets or hung directly on the wall
  – In high hazard areas such as labs or studios
Fire Extinguishers (continued)

• Only to be used on SMALL fires.
• Always keep a path of escape open.
• Never let the fire trap you in the room.
• If you see any fire extinguisher or equipment that appears to be damaged or discharged, call EH&S at 575-5448.
The Fire Tetrahedron

- There are four ingredients necessary to sustain combustion:
  1. Fuel
  2. Oxygen
  3. Heat
  4. Chemical Reaction

- Fire Extinguishers work by removing one (or more) of the necessary ingredients.
Types of Fires

- Class A - Wood, paper, cloth, trash
- Class B - Oil, gas, grease, flammable liquids
- Class C - Electrical, Energized electrical equipment
Fire Extinguisher Types

• Each fire extinguisher on the campus will have a label telling you what kind of fire it is designed to extinguish.

• Most extinguishers on this campus are ABC.
Using Fire Extinguishers

• Remember PASS
  – **P** - Pull the Pin
  – **A** - Aim at the base of the fire
  – **S** - Squeeze the top handle or lever
  – **S** - Sweep from side to side
In the event of a fire...

- Always call 911 or activate a fire alarm.
- Close the door where the fire is burning to prevent it from spreading.
- If the fire alarm sounds in your building, EVACUATE THE BUILDING IMMEDIATELY! DO NOT USE THE ELEVATOR!
Tornado Safety

• Three Sirens on Campus
  – North Agricultural Farm
  – Engineering South
  – Arkansas Union

• Not designed to hear inside buildings

• Tested every Tuesday around noon

• Each building has a shelter marked in blue on the building evacuation plan, which is located near each building entrance.
Emergency Phone Numbers

Medical, Fire, Police Emergency - 911
Poison Control Center - 800-3-POISON
Chemical, Biological, or Radiological Spill -
During work hours - 575-5448
After work hours - 575-2222
Contact EH&S anytime...

with Safety Questions or Concerns

and remember:

Be Careful Out There!