

ART SAFETY



ART SAFETY

- Common misconception that Art is non-hazardous occupation
- Encounter same hazards as found in industry
- Mindset may place personnel at greater risk

PROGRAM OUTLINE

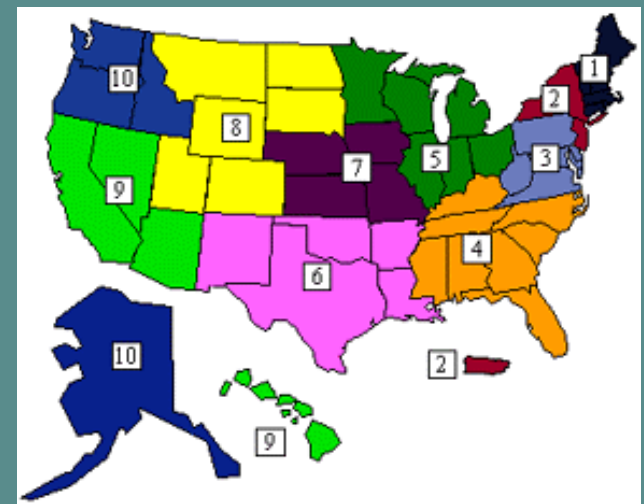
- Regulatory Review
- Types of Hazards
- Effects of Exposure
- Routes of Exposure
- Hazard Identification (MSDS & Labels)
- Hazardous Materials Storage
- Protection from Hazards
- Common Issues
- Questions

OSHA REGULATIONS AND EPA INITIATIVE

- Colleges and Universities are required to comply with all applicable safety and environmental requirements like industry
- OSHA standards deal primarily with employee safety (www.osha.gov)
- EPA regulations deal primarily with protection of the environment (www.epa.gov)
- Tort liability addresses non-employee safety

OSHA REGULATIONS AND EPA INTIATIVE

- Subject to inspection by both agencies
- Subject to federal and state agency inspection
- EPA has already stepped up enforcement actions in Regions 1, 2, 3 and 4
- University of Hawaii fined \$1.8 million
- Boston College and Stanford fined \$1 million
- Yale received a \$300,000 fine
- Common deficiencies
- Provisions for fine and imprisonment of individuals



ART SAFETY

- Know the hazards and how to protect yourself (Hazard Communication)
- Must be incorporated into all activities
- If activity cannot be done safely then it should not be done at all
- Must become part of the curriculum
- Preparation for the “REAL WORLD”
- Reflection on Institution and Faculty

TYPES OF HAZARDS

- **CHEMICAL** – paints, dyes, glazes, inks, solvents, clay, metals
- **PHYSICAL** - heat, lifting, machinery, tools, noise
- **ERGONOMIC** – work stations, tools
- **RADIATION** – lasers, welding, kilns
- **BIOLOGICAL** – plant products, animal skins, bone, hair, blood borne pathogens

EFFECTS OF EXPOSURE

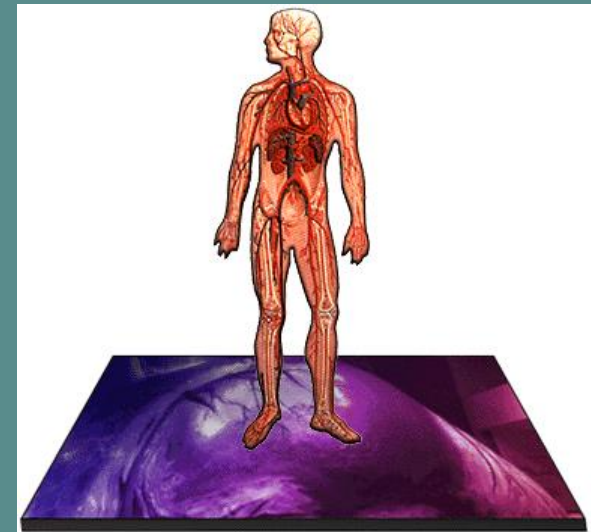
- **ACUTE** - direct threat that shows up almost immediately after exposure such as burns from contact with a corrosive chemical
- **CHRONIC** - usually result from repeated exposure that occurs over months or years and includes cancer and some allergic reactions

RISK FACTORS

- Toxicity
- Level, Duration and Frequency of Exposure (minimize exposures)
- High Risk Groups (pregnant women, children, smokers)
- Personal Susceptibility

ROUTES OF EXPOSURE

- INHALATION
- ABSORPTION
- INGESTION
- INJECTION



ROUTES OF EXPOSURE

INHALATION

- Primary Route of Entry
- Airborne contaminants such as gases, vapors and particulate matter that enter directly into lungs
- Absorption in the lungs, passage through the bloodstream, and reaction with brain and other sensitive organs occurs very quickly

ROUTES OF EXPOSURE

ABSORPTION

- Can occur very quickly through cut or abraded skin
- Many compounds can be absorbed through intact skin
- Absorption through eyes are of great concern due to their sensitivity and the many splash hazards found in labs

ROUTES OF EXPOSURE

INGESTION

- Material is absorbed from the gastrointestinal tract into the bloodstream
- Indirect ingestion when employees get material on their hands and then eat, drink or smoke without first washing their hands

ROUTES OF EXPOSURE

INJECTION

- Places contaminants in direct contact with the blood stream. These cuts are difficult to clean.
- Needle sticks
- Deep cuts involving contaminated glass or plastic shards or similar sharp items.

HAZARD IDENTIFICATION

- INVENTORY
- SDS's
- LABELS

The image shows a blank form titled "Safety Meeting Report" and "MSDS". It has a header section with fields for "Date", "Time", and "Location". Below the header, there are several sections with horizontal lines for text entry, including "Hazardous Materials", "Exposure", "Symptoms", "First Aid", "Spill Response", and "MSDS Reference".

The image shows a detailed hazard identification label for Acetone. The label is titled "ACETONE" in large, bold, black letters. Below the title, it says "(DIMETHYLKETONE, 2-PROPANONE)" and "DANGER". The label includes several sections with safety information, such as "Signal word (Poison, Danger, Warning, Caution)", "Identity of product", "Synonyms", "Target organs", "Statement of hazard", "Precautionary measures", "Symptoms of exposure", "Instructions in case of contact", and "Spill response procedures". The label also includes a "Write-on information" section and an "MSDS reference" section. The label is designed to be clear and easy to read, with a focus on providing essential safety information.

MATERIALS INVENTORY

- Identifies materials you have
- Identifies location and quantity of each
- Do you need all the materials you have on hand?
- Minimize inventory

HAZARD IDENTIFICATION SDS's

- Chemical information sheets that include chemical ID, physical characteristics, hazardous ingredients, health hazards, handling precautions, first aid, reactivity data and control procedures.
- Must have a sheet for every hazardous chemical on site and must be accessible to every employee during the hours the employee is allowed to work.

HAZARD IDENTIFICATION LABELS

- All containers must be properly labeled
- Labels on containers must include the identity of the material, appropriate hazard warnings and manufacturer information
- Identity of material must be the complete name as it appears on the original label or SDS
- Abbreviations and/or chemical formulas must not be used as primary identification

HAZARD IDENTIFICATION LABELS

- Appropriate hazard warnings include DOT hazard classes, NFPA Hazard Diamond, and GHS pictograms or a descriptive statement of the hazards
- Whichever method is employed, it must be used consistently throughout the labs and all workers must be familiar with the method



Examples of DOT Hazard Labels

FLAMMABLE

- 4 Extremely flammable
- 3 Ignites at normal temperatures

- 2 Ignites when moderately heated
- 1 Must be preheated to burn
- 0 Will not burn

HEALTH

- 4 Too dangerous to enter vapor or Liquid
- 3 Extremely dangerous use full protective clothing
- 2 Hazardous - Use breathing apparatus
- 1 Slightly hazardous
- 0 Like ordinary material

REACTIVITY

- 4 May detonate - Vacate area if materials are exposed to fire
- 3 Strong shock or heat may detonate - Use monitors from behind explosive resistant barriers
- 2 Violent chemical change possible - Use hose streams from distance
- 1 Unstable if heated - Use normal precautions
- 0 Normally stable



NFPA Hazard Diamond

GHS PICTOGRAMS



CAUTION



COMPRESSED GAS



CORROSIVE



ENVIRONMENTAL
HAZARD



TOXIC



EXPLOSIVE



FLAMMABLE



HEALTH HAZARD



OXIDIZER

HAZARDOUS MATERIALS STORAGE

- All hazardous materials must be stored according to compatibility so that accidental mixing does not occur (applies to gas cylinders as well)
- Use only appropriate, compatible containers (NO MILK JUGS)
- Minimize chemical inventories
- Flammable storage cabinets

HAZARDOUS MATERIALS STORAGE

- Containers should be inspected periodically and at least annually to assure container and label integrity
- Keep all containers closed except when in use
- Secondary containment can prevent serious spills and subsequent reactions
- Prior to the end of each semester or upon the departure of personnel, all remaining hazardous materials should be properly identified with disposition to storage or waste disposal

WHAT IS HAZARDOUS WASTE?

- Waste Chemical listed by the Environmental Protection Agency as a Hazardous Waste
- A compound or solution that is:
 - Corrosive
 - Toxic
 - Reactive
 - Flammable

DARKROOM WASTES

- When ever possible you should use an alternative to generating darkroom wastes such as digital photography
- Used fixer solution is to be poured into the silver recovery unit located in the Wilson Hall Art darkroom studio
- Insure that all containers are labeled properly

STUDIO WASTES

- All liquid wastes are to be segregated in the waste accumulation area for pick-up by OEHS
- Rags containing wastes are to be placed in Rag Cans
- Paint or ink cans are to be emptied first, the lids removed and placed in trash receptacle
- Paint or ink cans containing product for disposal should be turned in to OEHS as chemical waste

CHEMICAL WASTE CONTAINERS

- Collect in clean chemical containers, compatible with collected material
- Containers must have a tight fitting screw on cap that will not leak if tipped
- Keep container exterior free of damage or contamination
- Do not mix incompatible wastes

CHEMICAL WASTE COLLECTION



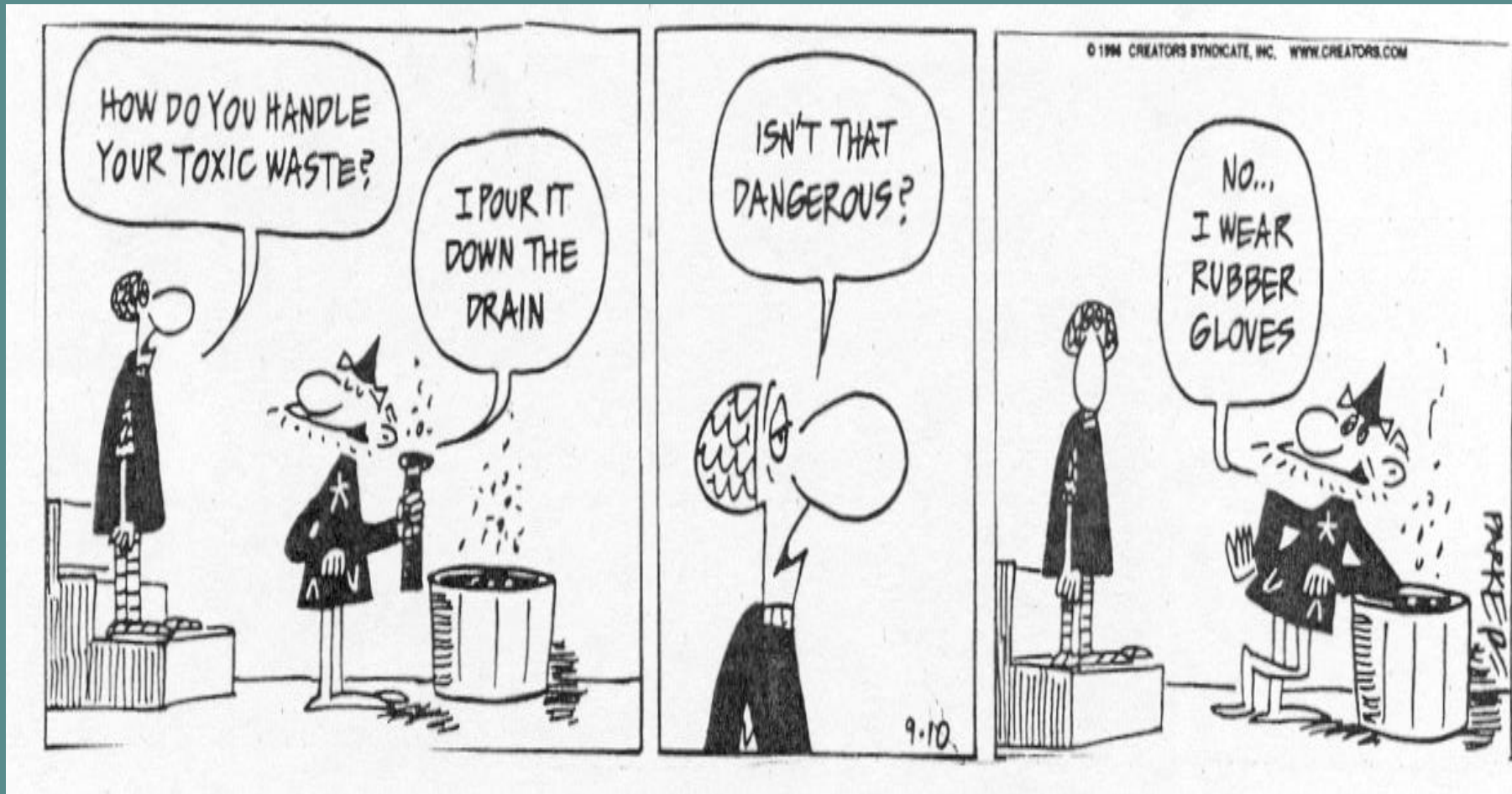
- Maintain 1-1 1/2 inches of air space at the top of the container
- Transfer material inside fume hood
- Clorox bottles and milk jugs are not acceptable containers

SATELLITE ACCUMULATION

- If you accumulate waste, you are required by the EPA to adhere to the regulations
- Noncompliance with any hazardous waste regulation may result in substantial fines and penalties for the University and individual investigators

SATELLITE ACCUMULATION

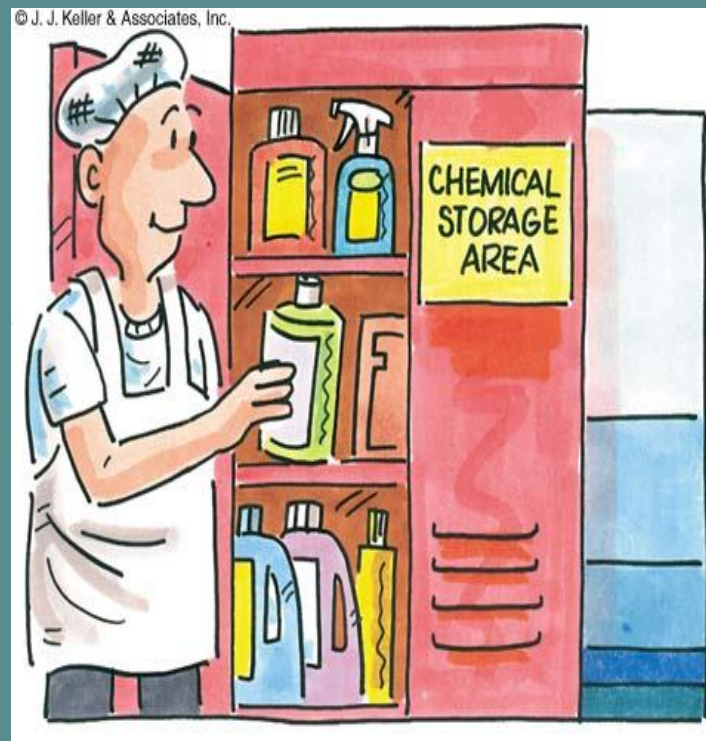
- Waste must be properly segregated and stored according to compatibility
- Wastes must be stored with a tight fitting screw on cap or lid and be free from leaks, damage or outside contaminants
- Kept in designated area, called a Satellite Accumulation Area— preferably with secondary containment
- Every container must remain closed except when adding waste
- Must be marked with the accumulation start date (day the first drop went into the container)



- NO chemicals are to be discharged into the sewer system or thrown in the trash without OEHS approval

SATELLITE ACCUMULATION

- Wastes can only be accumulated for up to one year
- Once a chemical is designated a “waste” or when the first drop of waste has been put into the container, a “hazardous waste” tag must be completed and placed on that container
- OEHS must be notified when containers are $\frac{3}{4}$ full
- The outside of the container cannot show evidence of leaks or spills. Must be clean!



HAZARDOUS WASTE LABELING

- All Hazardous Waste containers must be properly labeled with OEHS tags
- DO NOT use chemical formulas or abbreviations
- Tags must be completed and signed by the generator
- Attach the tag to the container with string, wire or rubber band
- Inspect label integrity and replace if damaged

Laboratory Waste		
Lab Supervisor/Generator#		Building & Room#
Department#		Start Date# End date#
Phone No#		Physical State(circle) Solid Liquid
Chemical Constituents (no abbreviations)		%
1		
2		
3		
4		
5		
6		

HAZARDOUS WASTE DISPOSAL

- Ensure that wastes are in appropriate containers and labeled
- Email (greenm@uah.edu) your waste chemical inventory or call 824-6053
- Provide your name, phone number, location, identity, and amounts of waste

PROTECTION FROM HAZARDS

- Hazard Assessments/Safety Plans
- Substitution
- Work Practices
- Engineering Controls
- PPE
- Personal Hygiene
- Emergency Procedures

ENGINEERING CONTROLS

- General Ventilation (comfort)
- Dilution Ventilation
- Local Ventilation
- Design, Operation and Maintenance

PERSONAL PROTECTIVE EQUIPMENT

- Proper selection (compatibility, fit, comfort)
- Proper use (training)
- Storage
- Maintenance

EMERGENCY RESPONSE

- Know how to respond to an emergency before the emergency occurs
- Keep the Emergency Procedures near the phone and know what to do and who to contact
- Plans in place for fire, spills, severe weather, ventilation system failure, etc.

COMMON ISSUES

- Lack of Written Program/Policy
- Lack of available Chemical Inventory/SDS's
- Poor Inventory Security / Control (students)
- Inappropriate Chemical Containers/Labeling
- Inappropriate Waste Management
- Eating, Drinking, and Smoking in work or chemical storage areas



**Beverage consumption in work area and use of
beverage containers for chemical storage**



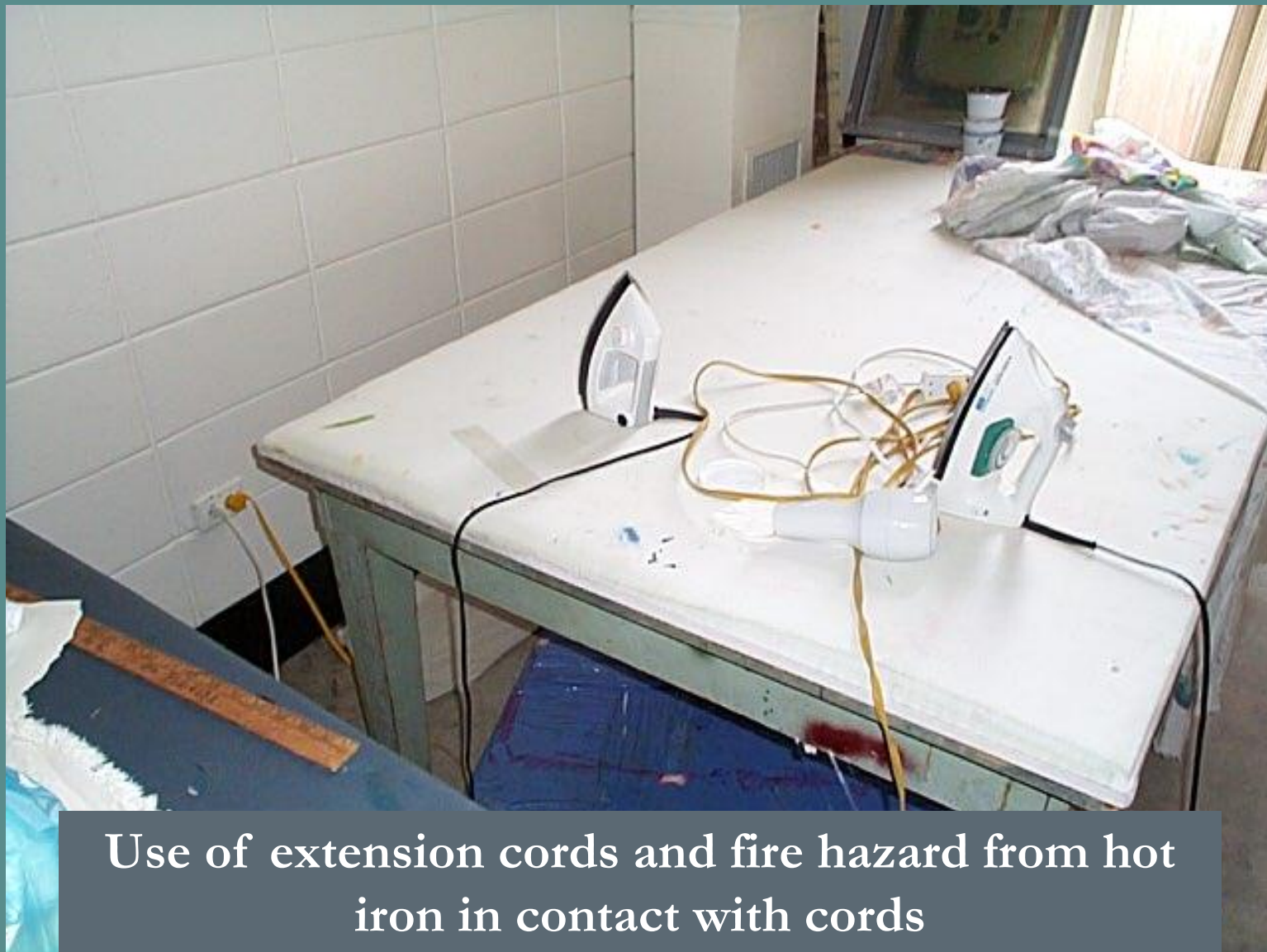
Food storage and consumption in the work area



Propped open fire doors

COMMON ISSUES

- PPE Selection and Use
- Attire
- Housekeeping
- New Operations (must have all equipment and control measures)
- Equipment Operations/Condition of Equipment
- Enforcement of Safety Practices



Use of extension cords and fire hazard from hot iron in contact with cords



Missing belt guard and damaged receptacle

WHAT PERSONNEL NEED TO KNOW

- What is the Hazard Communication Plan and where is it located?
- What are SDS's and where are they?
- What should be done if there is a spill, fire or other emergency?
- Where is the emergency eye wash/safety shower and how is it used?
- What are PEL's and where are they?

WHAT PERSONNEL NEED TO KNOW

- How can a release be recognized?
- What are the health hazards associated with the materials used in your work area?
- What are signs and symptoms of exposure?
- What measures (work practices, emergency procedures, PPE, etc.) can be taken to protect yourself from the hazards associated with the materials you use?

KEYS TO SUCCESS

- **INFORMATION** – Learn the hazards associated with your operation and share it with others (faculty, staff, students)
- **TRAINING** – Ensure that all know how to work safely with hazardous materials and equipment (test to verify)
- **LEADING BY EXAMPLE** – Model safe behavior
- **ENFORCEMENT** – Clearly communicate expectations and do not tolerate improper or unsafe behavior

QUESTIONS?

For additional information please contact:

Office of Environmental Health and Safety
301 Sparkman Dr. PPB
Huntsville, AL 35899
(256) 824-6053

Special Thanks to Eastern Carolina University for use of powerpoints.