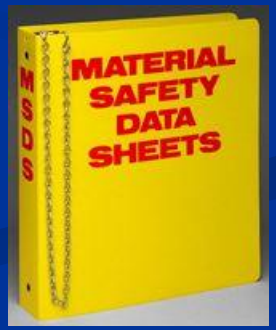
Chemical Hygiene Plan Training

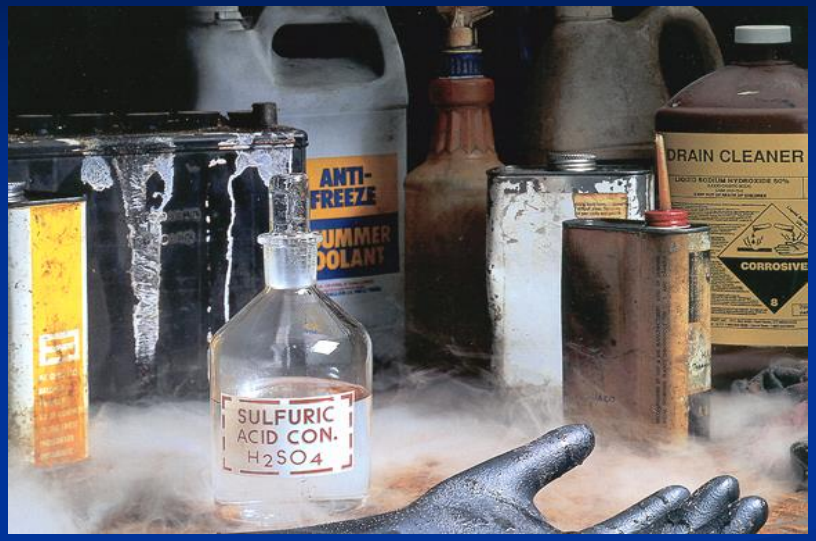
VA Ann Arbor Healthcare System (VAAAHS) Research Service



Chemical Hygiene Plan

- This training will cover OSHA's regulation, Occupational Exposure to Hazardous Chemicals in Laboratories, 29 CFR 191.1450, along with the VAAAHS Research & Development Chemical Hygiene Plan, which is required under this regulation.

Chemical Hygiene Plan



Occupational Safety & Health Administration
Subpart Z 1910.1450
Occupational Exposure to Hazardous Chemicals in Laboratories

Chemical Hygiene Plan

OSHA's 1910.1450 regulation includes the following sections:

- a) Scope and Application
- b) Definitions
- c) Permissible Exposure Limits
- d) Employee Exposure Determination
- e) Chemical Hygiene Plan
- f) Employee Info & Training
- g) Medical Consultation & Evaluation
- h) Hazard Identification
- i) Use of respirators
- j) Recordkeeping

Chemical Hygiene Plan

- Starting with Paragraph A, Scope and Application, this standard applies to all employers engaged in laboratory use of hazardous chemicals.

Chemical Hygiene Plan

- Paragraph B, Definitions, clarifies the intent of terminology used in OSHA's 1910.1450 standard, such as the following:
  - *Employee* means an individual employed in a laboratory workplace who may be exposed to hazardous chemicals in the course of his/her assignments.
  - *Hazardous Chemical* means a chemical for which there is statistically significant evidence based on at least one study that acute or chronic health effects may occur in exposed employees.

Chemical Hygiene Plan

- Paragraph C, Permissible exposure limits, requires the employer to ensure that laboratory employee exposures to chemicals do not exceed the permissible exposure limits specified in 29 CFR part 1910, subpart Z.

Chemical Hygiene Plan

- Paragraph D, Employee exposure determination, requires the employer to measure the employee's exposure to any substance regulated by an OSHA standard if there is reason to believe that exposure levels for that substance routinely exceed the action level (or Permissible Exposure Limit in the absence of an action level).

Chemical Hygiene Plan

- Paragraph E, Chemical Hygiene Plan, requires the employer to develop and carry out the provisions of a written chemical hygiene plan which is:
  - Capable of protecting employees from health hazards associated with hazardous chemicals
  - Capable of keeping exposures below the limits specified in paragraph C of the standard

Chemical Hygiene Plan

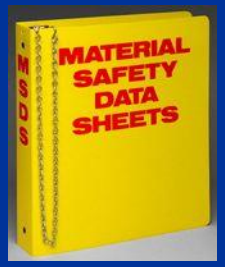
- Paragraph F, Employee information and training, the employer shall provide employees with information and training to ensure they are apprised of the hazards of chemical present in their work area.
- When should training occur? At the time of employee's initial assignment and prior to assignments involving new exposure situations.

Chemical Hygiene Plan

- Paragraph G, Medical consultation and medical evaluations, requires the employer to provide all employees who work with hazardous chemicals an opportunity to receive medical attention. All medical exams and consultations shall be performed by or under the direct supervision of a licensed physician and without cost to the employee.

Chemical Hygiene Plan

- Paragraph H, Hazard Identification:
  - Employers must ensure that labels on incoming containers of hazardous chemicals are not removed or defaced.
  - Employers must maintain a Safety Data Sheet received with incoming shipments of hazardous chemicals, *and* ensure they are readily accessible to laboratory employees.



Chemical Hygiene Plan

- Section I, Use of Respirators, applies when respirators are needed to maintain exposure below permissible exposure limits. The employer must provide the proper respiratory equipment at no cost to the employee and follow the requirements on OSHA's respiratory regulation, 29 CFR 1910.134.

Chemical Hygiene Plan

- Section J, Recordkeeping, requires the employer to establish and maintain an accurate record for each employee of any measurements taken to monitor employees exposures and any medical exams including tests or written opinions required by this standard.

Chemical Hygiene Plan

- The VAAAHS' Chemical Hygiene Plan Informs Laboratory Employees Of:
  - Potential Health & Safety Hazards
  - Precautions and Preventative Measures to Protect Employees from a Workplace Injury or Illness
  - Required Safety Rules and Procedures established to meet OSHA Regulations

Policy Memo #S-2, Hazardous Material Management Plan

- Defines the use and safe handling of chemicals used at the VAAAHS
- Adherence to it is mandatory
- Laboratory Supervisor/PI of each lab is responsible to review it with employees and assure PPE and procedures are in place

Chemical Hygiene Plan (Policy Memo #S-2, Attach. L)

- General Safety Guidelines
  - Know the hazards of materials you are working with ahead of time
  - Review SDS for special handling information
  - For a Hazardous Chemical Emergency
    - Be Prepared, know what to do ahead of time
  - Know the location of the nearest:
    - Emergency shower, eye wash, fire extinguisher, chemical spill kit

Chemical Hygiene Plan

- General Safety Guidelines
  - When working with chemicals
    - Do Not Work Alone
    - Limit access to the area where chemicals are used and stored
    - Use chemicals only as directed and for their intended purpose.
    - Avoid direct contact with chemicals
    - Do Not Smoke in labs

Chemical Hygiene Plan

- General Safety Guidelines
  - Do not eat or drink in the laboratory

Chemical Hygiene Plan

- General Safety Guidelines
  - Keep the work area clean and uncluttered with chemicals and equipment.
  - Clean up on completion of an operation or at the end of a work day.

Chemical Hygiene Plan

- General Safety Guidelines
  - Keep chemical waste in proper labeled container. Label must have the words: *Hazardous Waste.* Date when filled.
  - For questions regarding chemical handling, contact your supervisor or GEMS Program Manager.

Chemical Hygiene Plan

- Engineering Controls
  - Are used to eliminate or reduce your exposure to chemicals:
    - Examples include: Chemical Fume Hood or other local exhaust.
  - Be sure to use engineering controls when:
    - Using substances with an inhalation hazard
    - Indicated on SDS

Chemical Hygiene Plan

- Chemical Fume Hoods:
  - Before using a hood verify the exhaust system is working. Use the hood only if it has been certified in the last year.
  - Too much clutter can affect the hood's air flow. You should place only those materials necessary for the procedure.
  - Keep apparatus at least **6 inches** behind the face and from the rear of hood.

Chemical Hygiene Plan

- Chemical Fume Hood:
  - Adjust the sash to its lowest practical position.
  - Keep head out of hood.
  - Do not place chemical waste in hood for evaporation!

Chemical Hygiene Plan

- Administrative Controls are used to reduce your exposure to chemicals:
  - Limit time periods for working with hazardous chemicals
  - Following Standard Operating Procedures for lab work
  - No mouth pipetting of any hazardous liquids 
  - Add acid to water, never water to acid.

Chemical Hygiene Plan

- Personal Protective Equipment, is specialized equipment or clothing that aids in protecting exposure.
  - Wear chemical goggles and face shields to protect your eyes and face
  - Wear gloves to protect your hands and skin
  - Wearing of Lab coats is recommended – however they Are Not PPE

Chemical Hygiene Plan

- Personal Protective Equipment
  - Wearing a respirator can protect you from breathing in air contaminants such as chemical vapors.
    - Before using a respirator certain requirements must be done
      - The proper Respirator must be selected
      - Employees must be trained before using them
      - Employees must undergo a medical evaluation
      - Employees must undergo a respirator fit test
    - Contact IH before using a respirator

Chemical Hygiene Plan

- Laboratory Clothing
  - Clothing shall be worn to minimize exposed skin surfaces from direct contact with chemicals through splashing.
  - Wear long sleeve/long legged clothing, closed toed footwear. Shoes with any type of holes in them are not allowed.
  - Avoid wearing short sleeved shirts, shorts or skirts when working with concentrated chemicals or those with a skin designation.

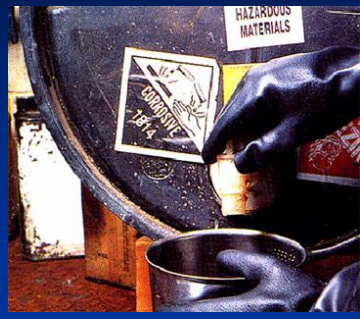
Chemical Hygiene Plan

- Classes of chemicals used in VAAAHS Research Laboratories may include:
  - Flammables/Combustibles
  - Corrosives
  - Compressed Gases
  - Cryogenic Gases
  - Oxidizers

Chemical Classes

- Proper Storage of Flammable/Combustible Liquids is important.
  - Keep flammables or combustibles in containers designed for them.
  - Keep containers of flammables or combustibles closed.
  - Keep away from ignition sources.
  - Store them in approved cabinets.
  - Do not store flammables in a standard refrigerator.

Chemical Hygiene Plan



- Proper Storage of Corrosives is important.
  - Label and keep corrosives bulk storage rooms designed to hold them.
  - Small quantities of corrosives

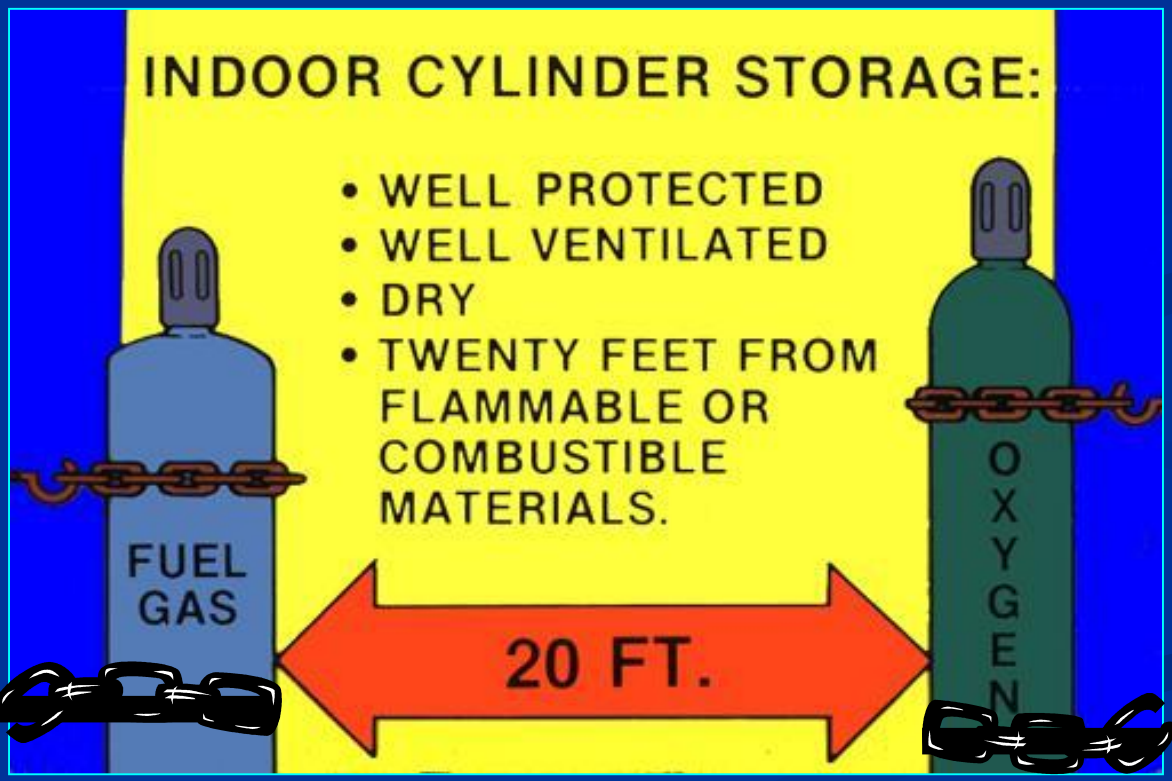
  (<1 gallon) can be placed stored in a well ventilated lab.
  - Acids and bases must be separated by distance or barrier.

Chemical Hygiene Plan

- Compressed Gases
  - Cylinders must be secured at all times
  - When the gas cylinder is not in use the protection cap must be secured over the valve
  - Wear safety glasses when attaching or detaching the regulator
  - Only individuals trained by SCMS can move them.

Chemical Hygiene Plan

- Oxygen cylinders must be stored 20 feet away from fuel gas cylinders when not in use. Mostly a problem in the trades.



Chemical Hygiene Plan

- Cryogenic Gases (Policy Memo #S-3, Attachment L)
  - Are extremely cold and can produce intense burns
  - Always wear gauntlet gloves to cover and protect your hands and arms
  - Always wear cryogenic apron to protect the front of your body.
  - Wear pants over shoes to prevent liquids from getting trapped inside your shoes
  - Always wear safety glasses and face shield

Chemical Hygiene Plan

- Oxidizers
  - Have the ability to act as an oxygen source, readily stimulates the combustion of organic material
  - Must be isolated from all flammables and combustibles.
  - Examples of oxidizers include peroxides, nitrates, nitrites, perchlorates, chlorates, chlorites, hypochlorite's, dichromate's, permanganates and persulfates

Chemical Hygiene Plan

- Storage of Hazardous Chemicals
  - Store quantities of flammable and combustibles following National Fire Protection Association (NFPA) and OSHA
  - Date Chemicals when received and opened (Best Laboratory Practice)
  - Don’t store peroxide formers in refrigerator.

Chemical Hygiene Plan

- Storage of Hazardous Chemicals
  - Don't allow picric acid to dry out.
  - Store perchloric acid in its original container, away from organics, flammables, combustibles, and strong dehydrating agents.
  - Store sodium azide in tightly closed container.
  - Store ether in flammable rated fridge. Label and date.

Chemical Hygiene Plan

- OSHA Permissible Exposure Limit (PEL) – Published and enforced by OSHA as a legal standard. May be an 8 hour Time Weighted Average (TWA), 15-minute Short Term Exposure Limit (STEL), or Ceiling
- Action Level (AL)– Typically it is one-half of the PEL for that substance. Exposure above the AL initiates required activities such as exposure monitoring and medical surveillance.

Chemical Hygiene Plan

- Air Monitoring
  - Employee exposure to any chemical substance regulated by an OSHA standard will be evaluated
  - For exposures at or above the action level or STEL, employees will be included in the exposure monitoring program.
  - For any concerns about possible over exposures call the IH (X55417).

Chemical Hygiene Plan

- Medical Consultation and Examination
  - Immediately notify your supervisor of all work-related injuries and illnesses
  - Occupational Health provides medical consultation for employees at no cost, at a reasonable time & place:
    - **For employees who develop signs and symptoms related to a chemical exposure**
    - **For a chemical spill, leak or explosion**
    - **Medical Surveillance: When exposure levels are above the action level for an OSHA regulated substance (i.e., Formaldehyde, Methylene Chloride, ETO etc.)**

Chemical Hygiene Plan

- Laboratory task approval must be obtained from the Subcommittee onf Research Safety when:
  - There is a change or substitution of a chemical, after protocol review and approval
  - Particularly Hazardous Substance or Select Agent (WMD) is planned for use
  - Lab staff become ill, suspect exposure, and/or smell chemicals

Chemical Hygiene Plan

- Safety Data Sheet is printed material about a hazardous chemical
- Who are Safety Data Sheets for?
  - Employees, Employers, Emergency Responders

Chemical Hygiene Plan

- Safety Data Sheets (SDS)
  - Laboratories must maintain an SDS for each chemical or mixture
  - Laboratories must maintain the most current SDS version
  - Employees must be notified of where SDSs are located within the laboratory
  - Additional SDSs are located in the Industrial Hygiene office – Building 3

Chemical Hygiene Plan

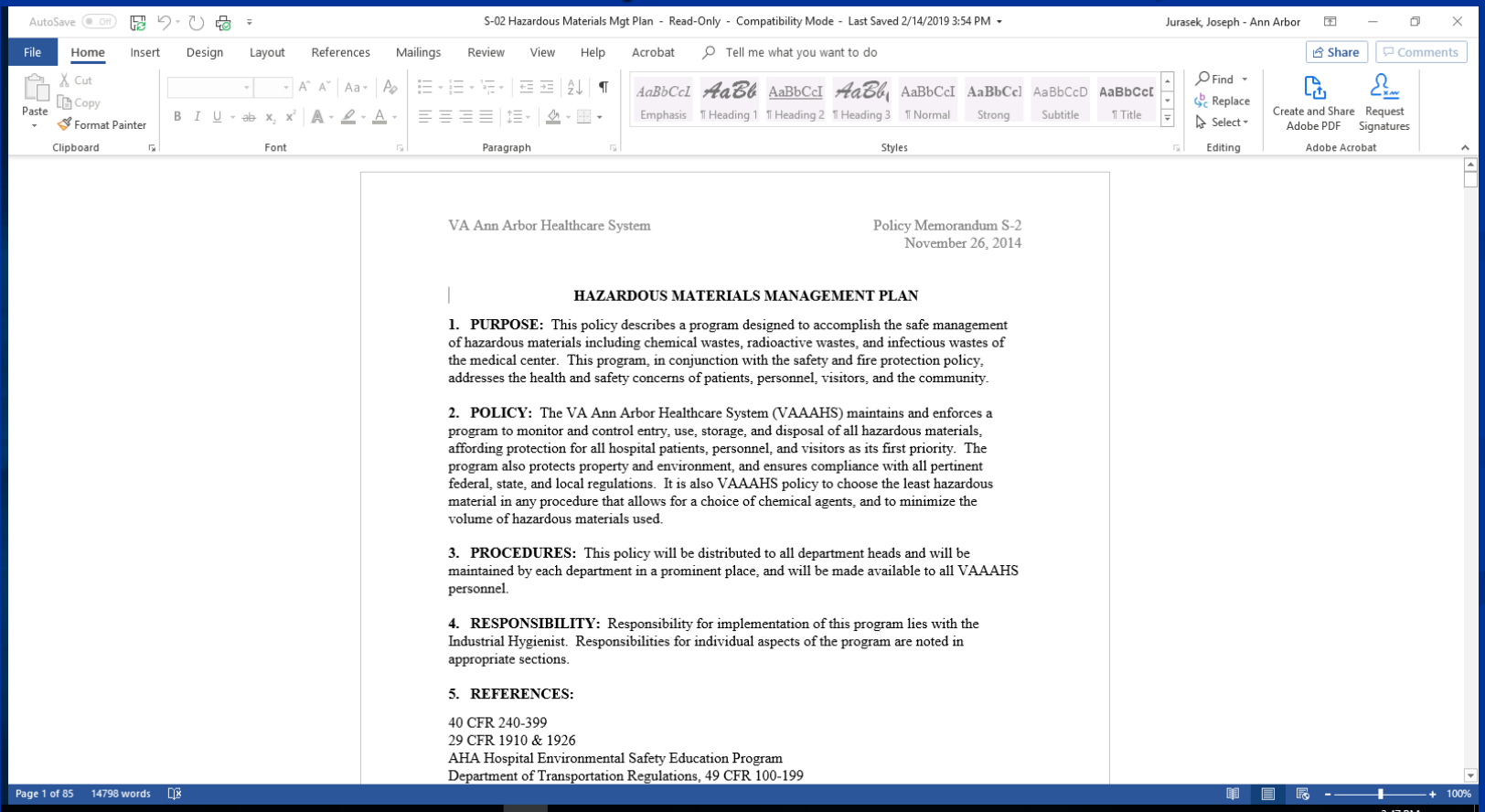
- Labeling of Hazardous Chemicals
  - Do not remove or deface labels until chemical container is empty and clean.
  - Replace labels that are no longer legible.
  - Secondary containers must be labeled to identify its contents.
    - Trade Name
    - Manufacturer
    - Key Hazard Terms

Chemical Hygiene Plan

- Hazards of Chemicals
  - Physical Hazards:
    - Flammable
    - Corrosive
    - Reactivity
  - Health Hazards:
    - Irritant, causes burns to skin or eyes, causes damage to respiratory system, CNS, kidneys, liver
    - Carcinogen
    - Absorbed easily through skin

Location and Availability= Policy SharePoint Site

- The Chemical Hygiene Plan can be found in Policy Memo #S-2, Attach. L



S-02 Hazardous Materials Mgt Plan - Read-Only - Compatibility Mode - Last Saved 2/14/2019 3:54 PM

VA Ann Arbor Healthcare System

Policy Memorandum S-2
November 26, 2014

HAZARDOUS MATERIALS MANAGEMENT PLAN

1. PURPOSE: This policy describes a program designed to accomplish the safe management of hazardous materials including chemical wastes, radioactive wastes, and infectious wastes of the medical center. This program, in conjunction with the safety and fire protection policy, addresses the health and safety concerns of patients, personnel, visitors, and the community.

2. POLICY: The VA Ann Arbor Healthcare System (VAAAHS) maintains and enforces a program to monitor and control entry, use, storage, and disposal of all hazardous materials, affording protection for all hospital patients, personnel, and visitors as its first priority. The program also protects property and environment, and ensures compliance with all pertinent federal, state, and local regulations. It is also VAAAHS policy to choose the least hazardous material in any procedure that allows for a choice of chemical agents, and to minimize the volume of hazardous materials used.

3. PROCEDURES: This policy will be distributed to all department heads and will be maintained by each department in a prominent place, and will be made available to all VAAAHS personnel.

4. RESPONSIBILITY: Responsibility for implementation of this program lies with the Industrial Hygienist. Responsibilities for individual aspects of the program are noted in appropriate sections.

5. REFERENCES:

40 CFR 240-399
29 CFR 1910 & 1926
AHA Hospital Environmental Safety Education Program
Department of Transportation Regulations, 49 CFR 100-199

Chemical Hygiene Plan

- Laboratory Worker's Responsibility is to:
  - Become familiar with and follow standard operating procedures
  - Utilize available local exhaust ventilation to control exposure
  - Wear appropriate PPE
  - Report unsafe condition or use of hazardous chemicals to their supervisor.

Chemical Hygiene Plan

- Laboratory Worker's Responsibility is to:
  - Dispose of hazardous chemical waste in accordance with Policy Memorandum #S-2
    - Hazardous Materials Management Program
  - In case of emergency, act swiftly and follow procedures
  - Large chemical spill evacuate area and call X52911:
    - Provide location, name of chemical, extent of spill, and whether anyone needs immediate medical assistance.

Chemical Hygiene Plan

The End

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Certificate of Completion

Statement of Certification: I hereby certify that I have reviewed and completed the *Chemical Hygiene* training module on the date stated below.

Printed Name _____ Date:_____

Signature _____