

Training Guidelines for the Fire Debris Analyst

Lesson Plan (Module) 5

Date: December 2004

Instructor: Qualified Instructor

Subject: Health and Safety Risks

Total Time: 3 hours

Learning Objectives

- Demonstrate a basic understanding of the health and safety risks involved in analyzing fire debris
 - Describe the difference between chemical, biological and physical risks
 - Demonstrate a knowledge of the available Personal Protective Equipment the lab
 - Demonstrate a knowledge of hazard communication sources, e.g. Materials Safety Data Sheet (MSDS)
 - Describe the process of labeling, storage and disposal of laboratory chemicals
 - Demonstrate a basic understanding of gas cylinder hazards, fire extinguisher information, and general first aid
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Suggested Reading

1. NFPA 704: Standard System for the Identification of Fire Hazardous Materials, National Fire Protection Association, Quincy MA, current edition
 2. National Research Council: Prudent Practices in the Laboratory: Handling and Disposal of Chemicals, National Academy Press, Wash. D.C, 1995, ISBN: 0-30-905229-7
 3. Material and Safety Data Sheets for Carbon Disulfide, Pentane and other solvents used in the analysis of fire debris.
 4. Regional safety rules, regulations and requirements
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Introduction

This lesson will cover the health and safety risks associated with the analysis of fire debris materials. In addition, we will review the resources available to provide awareness of the dangers and discuss the appropriate responses to these hazards.

Outline

1. Hazard Communication
 - a. Right to know standards
 - b. Material and safety data sheets
 - c. OSHA requirements
 - d. Labeling and marking systems
 - e. HMLS, NFPA, DOT

2. Bloodborne Pathogens and Other Risks
 - a. Modes of transmission
 - b. Chemical and physical risks
 - c. Personal protective equipment
 - d. Work practice controls
 - e. Emergency procedures

3. Laboratory Chemicals
 - a. Storage
 - b. Flammability and explosive hazards
 - c. Health hazards (CS2)
 - d. Proper handling procedures
 - e. Chemical spill cleanup
 - f. Disposal
 - g. Personal protective equipment

4. Special Topics
 - a. Gas cylinder safety
 - b. Fire extinguishers
 - c. First aid protocols
 - d. Evacuation routes

Teaching Aids

Handout
PowerPoint presentation
Videos (various ones available)
Safety Training Modules, OK State University
Sample MSDS

Summary

Understanding the proper safety procedures when working around hazards is essential to everyone in close contact with these hazards. Similarly, understanding the associated risks and the appropriate responses is critical to those working in a laboratory setting. Protective measures are crucial to providing a safe work environment.

Test Questions

1. Compressed gas Cylinders may be safely secured by:
 - a. duct tape
 - b. **chains**
 - c. bracing the cylinder on two sides by non-moveable objects
 - d. all of the above

2. Bloodborne pathogens may enter your system through:
 - a. open cuts
 - b. skin abrasions
 - c. dermatitis
 - d. mucous membranes
 - e. **all of the above**

3. A fire fueled by a flammable liquid will be extinguished if:
 - a. water is added
 - b. **an element of the fire tetrahedron is removed**
 - c. oxygen is transmitted
 - d. a cool source is applied

4. In the Hazardous Materials Labeling System and the NFPA diamond, the colors blue, red, yellow, and white represent (in order):
 - a. **health hazard, flammability, chemical reactivity, special warning**
 - b. explosive, flammability, biohazard, carcinogen
 - c. instability, flammability, health hazard, specific hazard
 - d. biohazard, explosive, special restrictions, flammability

5. Personal Protective Equipment may include gloves and goggles. **True** or False

6. Which of the following may be found on a MSDS:
 - a. spill and leak procedures
 - b. health hazard information
 - c. special protection information
 - d. **all of the above**