2963
LABORATORY SAFETY SERIES: The OSHA Formaldehyde Standard
Leader’s Guide
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INTRODUCTION TO THE PROGRAM

Structure and Organization

Information in this program is presented in a definite order, so that employees will see the relationships between the various groups of information and can retain them more easily. The sections in this program include:

- Health hazards associated with formaldehyde.
- Testing for permissible exposure limits (PEL) and short-term exposure limits (STEL).
- Labeling and Material Safety Data Sheets.
- Hoods and other ventilating systems.
- Using personal protective equipment.
- Spill clean-up and decontamination procedures.
- First aid for formaldehyde-related accidents.
- Medical surveillance plans.

Each of the sections gives an overview of important information in one topic area, providing employees with the basis for understanding the OSHA Formaldehyde Standard and what they should do to work safely with formaldehyde.

Background

Many of the chemicals that laboratory workers come into contact with can be hazardous. Formaldehyde, which is commonly used in many laboratories, is no exception. Health problems from mishandling formaldehyde can be serious. They can range from the short-term discomfort associated with minor burns or skin irritation...to chronic effects from a lifetime of overexposure.

In 1992, the Occupational Safety and Health Administration (OSHA) issued an updated standard for working safely with materials that contain formaldehyde. Laboratory employees need to be aware of this standard and the rules and procedures that it establishes for working with formaldehyde.

Objectives

To help employees recognize the hazards in working with formaldehyde, and how to handle it safely, this education and training program is designed to prevent basic information about the OSHA Formaldehyde Standard and the procedures it sets up for working safely with formaldehyde. Upon completion of the program, employees should:

- Know the potential health hazards associated with overexposure to formaldehyde.
- Understand the concepts of "permissible exposure limits" (PELs) and "short-term exposure limits" (STELs).
- Know where to find information about formaldehyde content and exposure on a substance's container label and Material Safety Data Sheets.
- Understand the roles of ventilation systems and personal protective equipment in working safely with formaldehyde.
• Be able to follow proper spill clean-up and decontamination procedures in case of incidents involving formaldehyde.

• Know what basic first aid is appropriate for different types of formaldehyde overexposure.

• Be aware of the basic information regarding the "medical surveillance plan" in the Formaldehyde Standard.

**Reviewing the Program**

As with any educational program, the "presenter" should go through the entire program at least once to become familiar with the content and make sure the program is consistent with company policy and directives. An "Outline of Major Program Points" section is included in this Presenter's Guide to help with this task and for general reference.

As part of this review process, you should determine how you, as the presenter, will conduct your session. The use of materials such as handouts, charts, etc., that may be available to you needs to be well thought out and integrated into the overall program presentation.
PROGRAM OUTLINE

• Many of the chemicals we come into contact with can be hazardous.
  — Formaldehyde is no exception.

• Health problems that are caused by mishandling formaldehyde can be serious.
  — Short-term discomfort of minor burns/skin irritation.
  — Chronic effects from a lifetime of overexposure.

• In 1992, the Occupational Safety and Health Administration (OSHA) issued an updated standard for working with materials containing formaldehyde.
  — It includes a list of health problems associated with overexposure.

• External contact with formaldehyde can cause short-term irritation to:
  — Skin.
  — Eyes.
  — Mucous membranes.

• Inhalation of formaldehyde gas or vapors can induce:
  — Coughing.
  — Nausea.
  — Violent vomiting.
  — Diarrhea.
  — Laryngitis.

• Breathing in high concentrations of formaldehyde can even result in:
  — Convulsions.
  — Coma.
  — Death.

• There are also long-term exposure affects from high levels of formaldehyde exposure.
  — Symptoms may not appear immediately.
  — But exposure can cause serious problems over time.
  — Formaldehyde is a suspected carcinogen, mutagen and teratogen (cancer causers).
  — Formaldehyde is also a chronic toxin.

• If you feel you are developing symptoms of overexposure, contact your supervisor immediately.

• One way to protect workers from problems is to monitor formaldehyde exposure. Your company may:
  — Test the air in your immediate work area.
  — Do "individual" sampling.

• Test results are compared to OSHA's "permissible exposure limit" (PEL) for formaldehyde:
  — Set at 0.75 parts per million (ppm).
  — Calculated for an 8-hour "time-weighted average".

• To determine an area's exposure levels you:
  — Measure the amount of formaldehyde in the area (this establishes "concentration").
  — Multiply the level of concentration by the "sample duration" in minutes.
  — Divide the result by 480 minutes (8 hours).

• If the exposure levels exceed the PEL, you will need to take special precautions.

• OSHA has also set a short-term exposure limit (STEL) for formaldehyde. It:
  — Is based on an exposure of 15 minutes.
  — Can not exceed 2 ppm.
• It is important to pay attention to formaldehyde exposure limits for your safety.

• The Formaldehyde Standard also contains employee training requirements.
  — Employees exposed to formaldehyde levels of 0.1 ppm or higher must receive annual training.
  — The training must include information about where formaldehyde is used in the workplace.
  — It also must address how to limit exposure.

• Container labels provide important information on formaldehyde hazards.
  — For mixtures/solutions with more than 0.1% formaldehyde the label must indicate that formaldehyde is "present."
  — Physical and health hazard information must be available or readers must be pointed to Material Safety Data Sheets.
  — Labeling guidelines also apply to materials capable of releasing formaldehyde at concentrations of 0.1 ppm or higher.

• Special warnings must be given on labels of mixtures/solutions with more than 0.5% formaldehyde, or that are capable of releasing 0.5 ppm. Warnings must state that the material has the potential to cause:
  — Sensitization of the skin and respiratory system.
  — Eye and throat irritation.
  — Acute toxicity.
  — Cancer.
  — If the information cannot fit on the label, readers must be directed to other resources, such as an MSDS.

• The most basic way to guard against hazardous levels of formaldehyde is by using personal protective equipment.

• Gloves are very important personal protective equipment.
  — They must be impervious to formaldehyde solutions of 1% or more.

• Eye and face protection is also important when working with formaldehyde.
  — Splash-resistant goggles must be used for solutions of more than 1% formaldehyde.
  — Face shields may also be required (but cannot be used as a substitute for goggles).

• Respiratory protection may also be necessary.
  — This usually means an air-purifying respirator.

• If you need a respirator your employer will put you through their respiratory protection program, which will include:
  — Proper respirator selection.
  — Training.
  — Fit testing.
  — Use of filter cartridges.

• Protective clothing is also important when you are working with formaldehyde.
  — It helps shield against liquid splashes.
  — It must be impervious to water (when working with formaldehyde solutions).
  — If your clothing becomes contaminated, you must dispose of it appropriately.

• Proper work practices are also key to working with formaldehyde safely.
  — Use personal protective equipment as required.
  — Follow your facility’s recommended procedures.

• Maintaining proper ventilation is one of the most important safe work practices.
  — Use lab hoods and other devices.
  — Keep formaldehyde out of your breathing zone.

• We also should be prepared in case accidents occur involving formaldehyde.
  — It is important to minimize the effects of any mishaps.
• **For small spills:**
  — Soak up formaldehyde with absorbent material.
  — Place waste in properly labeled and sealed containers.

• **Do not attempt to handle large formaldehyde spills.**
  — Formaldehyde is toxic and can cause unconsciousness.
  — Alert other personnel.
  — Vacate the laboratory immediately.
  — Call for assistance.

• **Quick action when coming into contact with formaldehyde is very important.**

• **For skin contact:**
  — Remove any contaminated clothing.
  — Wash the affected area with soap and large amounts of water (15 to 20 minutes).
  — Remove all clothing and use a safety shower if needed (also for 15 to 20 minutes).
  — Get medical attention.

• **If formaldehyde splashes into your eyes, flushing with water is the best treatment.**
  — Locate the closest eye wash station.
  — Wash your eyes with large amounts of water (for at least 15 minutes).
  — Get medical attention.

• **If formaldehyde is accidentally ingested, several approaches can be taken. You can:**
  — Help the body to absorb it by drinking water.
  — Dilute the formaldehyde with milk.
  — Deactivate it with "activated charcoal".

• **Always keep victims warm and calm.**
  — Get medical attention immediately.

• **If vomiting occurs after ingestion:**
  — Keep the victim's head lower than their hips (this facilitates breathing and guards against lung congestion).

• **If formaldehyde gas is inhaled:**
  — Remove the victim from the exposure area and get them fresh air.
  — Call for an ambulance.
  — Keep the victim warm and calm.

• **Be careful when responding to any formaldehyde-related accident.**
  — Don't enter areas with high concentrations of formaldehyde.
  — Wait for rescuers with appropriate respiratory protection.

• **Part of the Formaldehyde Standard sets up a "medical surveillance plan".**
  — It is designed to insure safety of employees who have contact with formaldehyde.
  — Workers adversely affected by formaldehyde are given temporary work assignments (with reduced potential exposure).
  — An evaluation is then performed as to whether the affected employee can return to their old position.
  — Other work assignment options may also be considered.

• **If you have questions about formaldehyde exposure be sure to see your supervisor.**
QUIZ

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Name: __________________________ Date: ______________

1. True or False... Formaldehyde can cause both short and long-term health problems?
   ___ True
   ___ False

2. Which of the following are potential health effects of inhaling formaldehyde gas?
   ___ Coughing.
   ___ Nausea.
   ___ Diarrhea.
   ___ All of the above.

3. Formaldehyde is classified as which of the following?
   ___ Suspected carcinogen.
   ___ Suspected mutagen.
   ___ Suspected teratogen.
   ___ All of the above.

4. True or False... A PEL is a substance's "permissible exposure limit"?
   ___ True
   ___ False

5. True or False... A material's container label will not have information concerning the presence of formaldehyde?
   ___ True
   ___ False

6. True or False... Labels for substances containing more than 0.5% of formaldehyde must specifically state that formaldehyde is a "potential cancer hazard"?
   ___ True
   ___ False

7. True or False... If someone swallows formaldehyde you should induce vomiting immediately?
   ___ True
   ___ False
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The OSHA Formaldehyde Standard

PRESENTERS COPY... WITH ANSWERS

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