Training Solutions, Delivered!

HIGH-IMPACT WELDING SAFETY

Leader's Guide, Fact Sheet & Quiz

Item Number: 1721

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation.

PREPARING FOR THE MEETING

Here are a few suggestions for using this program:

a) Review the contents of the Fact Sheet that immediately follows this page to familiarize yourself with the program topic and the training points discussed in the program. The Fact Sheet also includes a list of Program Objectives that details the information that participants should learn from watching the program.

b) If required by your organization, make an attendance record to be signed by each participant to document the training to be conducted.

c) Prepare the area and equipment to be used for the training. Make sure the watching environment is comfortable and free from outside distractions. Also, ensure that participants can see and hear the TV screen or computer monitor without obstructions.

d) Make copies of the Review Quiz included at the end of this Leader's Guide to be completed by participants at the conclusion of the presentation. Be aware that the page containing the answers to the quiz comes *before* the quiz itself, which is on the final page.

CONDUCTING THE PRESENTATION

a) Begin the meeting by welcoming the participants. Introduce yourself and give each person an opportunity to become acquainted if there are new people joining the training session.

b) Introduce the program by its title and explain to participants what they are expected to learn as stated in the Program Objectives of the Fact Sheet.

c) Play the program without interruption. Upon completion, lead discussions about your organization's specific policies regarding the subject matter. Make sure to note any unique hazards associated with the program's topic that participants may encounter while performing their job duties at your facility.

d) Hand out copies of the review quiz to all of the participants and make sure each one completes it before concluding the training session.

1721 HIGH-IMPACT WELDING SAFETY
FACT SHEET

LENGTH: 19 MINUTES

PROGRAM SYNOPSIS:
Welding and cutting operations demand an unyielding commitment to personal safety on behalf of the worker who performs these tasks. Not only do the hazards of welding processes endanger the safety of those welding, but they also threaten the overall well being of the entire facility. When welding accidents occur, the consequences can be disastrous.

By understanding the dangers involved with welding and taking the necessary measures to protect against them, employees can prevent the pain and suffering that results from these accidents.

This powerful program uses 6 accident re-creations to remind viewers that welding and cutting operations are inherently dangerous and that workers who weld must follow all safety rules to protect themselves from serious injury or death. The video also illustrates positive welding and cutting safety points on a variety of topics, including gas welding, arc welding, fire prevention, handling/storage of gas cylinders, confined space work and personal protective equipment.

PROGRAM OBJECTIVES:
After watching the video, the viewer will be able to identify the following:
- Possible causes of the accidents and how they could have been prevented;
- Safe use of gas and arc welding equipment;
- Respiratory protection, PPE and clothing necessary for welding;
- Procedures for handling and storing gas cylinders safely;
- Safe welding work practices concerning fire prevention and confined spaces.

INSTRUCTIONAL CONTENT:

BACKGROUND
- All welding operations are potentially dangerous; you must be trained and authorized to attempt this type of work.
- There are two basic types of welding (gas and arc) and many combinations of materials designed to get the job done, but all welding processes have the same basic hazards.

PREVENTING FIRES CAUSED BY WELDING
- A 35-foot safe zone in all directions from the welding area must be maintained by covering all combustibles with non-combustible material or removing them.
- Don't weld on pipes or other conductive materials that pass through walls, partitions, ceilings or roofs.
- Workers who serve as fire watches must be trained in the use of fire extinguishers and know how to sound alarms.
- Fire watches must be stationed nearby when anything more than a minor fire could develop or when substantial amounts of combustible material are located within the 35-foot zone.
- If sparks from a welding operation fall to lower levels of a structure, a fire watch must be placed at every level where hazards exist.

RESPIRATORY PROTECTION
- The fumes and gases from welding processes must be controlled in order to protect against long and short-term respiratory illnesses.
- Metal fume fever is a common illness associated with welding zinc alloys. This can produce a metallic taste in your mouth, fatigue and other influenza-like symptoms.
- Many shops have welding exhaust systems built in that remove the fumes from the immediate area.
- Some welding operations require the use of an approved air-supplied or cartridge type respirator.

PERSONAL PROTECTIVE EQUIPMENT

- Most welding hoods are designed for interchangeable lenses; check the welding materials container for the manufacturer's lens recommendation.
- It is imperative that you wear regular safety glasses under your welding hood. They will protect your eyes from flying particles when you remove the hood.
- Leather gloves with a long gauntlet and a welting that protect any sewn threads from sparks are the best choice for welding.
- Leggings and spats are available for foot protection and to prevent shoelaces from becoming ignited by sparks.
- Leather aprons and sleeves are other forms of protection. Sleeves should be worn whenever sparks, slag or molten metal are hazardous or if you are welding overhead.

PROTECTIVE CLOTHING

- Clothing plays a major role in welding safety because ultraviolet and infrared radiation can burn the skin.
- While cotton is a popular fabric in the workplace, it is highly flammable and welding sparks can ignite shirts and pants (especially if they are frayed).
- Wool is less flammable than cotton, but may not be as comfortable in some environments.
- Try to avoid synthetic clothing. Sparks can produce holes and when the fabric becomes ignited, it will melt into your skin.
- Regardless of the fabric, be aware that pockets on your clothing can catch sparks.

WELDING IN CONFINED SPACES

- To weld in confined spaces, you must have authorization and training in lockout/tagout and confined space procedures and have an understanding of hot work and open flame permits.
- The air is constantly monitored during confined space work. Adequate ventilation is a necessity.
- When you stop work for any length of time in one of these areas, all welding electrodes and gas hoses must be removed and the valves closed off at the supply.
- Don't take welding machines or cylinders inside a confined space.

OXYGEN AND FUEL CYLINDERS

- Always store oxygen and fuel cylinders in well-ventilated areas that are away from sources of heat.
- Oxygen and fuel cylinders must be separated by at least 20 feet of space or by a five-foot wall.
- Keep stored materials away from all highly combustible materials as well as oil and grease.
- When storing cylinders, make sure they are secured and that the valves are in the closed position.
- When moving cylinders, make sure they are secured. Never drag them.
- If a valve is protected by a cap, be sure to put the cap back in place.
- When returning empty cylinders, make sure to indicate their condition with the appropriate markings (such as "Empty") and store them separately from full cylinders.
- Because cylinders will always contain some residual material and pressure and are never completely empty, they should be considered as full and handled accordingly.

SAFE USE OF GAS WELDING EQUIPMENT

- Before lighting the torch, make sure you understand the color designation for each hose and the proper sequence for opening and closing the oxygen and gas valves.
- Be sure to use the proper wrench to open and close valves. Leave the wrench on the fuel cylinder valve while it is open so you can close it quickly in an emergency.
- When lighting any torch by hand, always use a proper igniter.
- Maintain a regular check for leaking hoses by spraying them or submerging them in soapy water to determine the location of any leaks.

ELECTRICAL ARC WELDING

- Electrical shock is a primary problem with arc welding, especially if water is present.
- Before using the welding machine, inspect the holder for cracks and other deterioration.
- Make sure the first ten feet of your welding cable is free of cuts, abrasions and splices.

• When using the welding machine, keep yourself insulated from both the work and the metal electrode with holder. Make sure the frame of the welding unit, whether portable or stationary, is grounded.
• Don't allow the exposed metal part of a electrode or holder to touch wet hands or clothing; never change electrodes with your bare hands or when wearing wet gloves.

OTHER SAFETY TIPS

• Be aware that infrared and ultraviolet rays from welding can burn the skin and produce an eye irritation called "arc eye", which is sometimes known as flash burn.
• When working around the plant, use safety cones, barricades and signs to warn others to keep their distance. Use welding screens to provide protection from harmful light rays.
• Before welding on any vessel such as a drum, make sure that the vessel has been properly cleaned and prepared for welding and be sure that you aren't violating company policy.

SEVEN POINTS TO REMEMBER WHEN WELDING

You can protect yourself and everyone else at your facility if you keep these seven points in mind:

❶ Understand the fire and safety requirements for welding and cutting under the conditions in which you intend to work.
❷ Make sure you have adequate ventilation at all times and use a respirator when required.
❸ Check Material Safety Data Sheets for hazards information.
❹ Understand the correct Personal Protective Equipment for the job.
❺ Know and understand how to handle and store cylinders.
❻ Inspect all equipment for safe operating condition
❼ Make sure you have the proper authorization for the type of welding you intend to perform.

ANSWERS TO THE REVIEW QUIZ

1. c
2. e
3. b
4. c
5. d
6. a
7. d
8. b
9. b

HIGH-IMPACT WELDING SAFETY

REVIEW QUIZ

The following questions are provided to determine how well you understand the information presented in this program.

Name_____Date_____

1. A ____ foot safe zone in all directions from the welding area must be maintained by removing or covering all combustibles.

a. 15
b. 25
c. 35
d. 50

2. What is required of workers who serve as fire watches?

a. Must be trained in fire extinguisher use
b. Must be trained and authorized to weld
c. Must know how to sound fire alarms
d. Must be an employee of the local fire department
e. Both a and c

3. Where should you look to find out what type of lens is recommended for welding with a certain type of rod?

a. On a label inside your welding hood
b. On the welding rod container
c. On your hot work permit
d. None of the above

4. To work in a confined space, you must have training and authorization in confined space entry and _____.

a. Bloodborne pathogens
b. Heat stress
c. Lockout/tagout
d. Industrial ergonomics

5. Oxygen and fuel cylinders must be separated _____.

a. And stored in two different buildings
b. By 20 feet or more of space
c. By a five-foot wall
d. Either b or c
e. None of the above

6. Why should you leave the wrench on an open fuel cylinder valve?

a. So you can close it quickly in an emergency
b. So you will not misplace the wrench while working
c. To prevent you from accidentally using the wrong wrench
d. To differentiate the fuel tank from the oxygen tank

7. Before arc welding, check the first _____ of the welding cable for cuts, splices and abrasions.

a. 10 inches
b. 3 feet
c. 5 feet
d. 10 feet

8. When using a welding machine, it is optional to ground the frame of a portable unit while stationary units must always be grounded.

a. True
b. False

9. The worker in the video who contracted flu-like symptoms because he didn't turn on his ventilator suffered from ___.

a. Flash burn
b. Metal fume fever
c. Arc eye
d. Scarlet fever