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**THE RESPIRATORY
PROTECTION
PROGRAM:
*Employer Responsibilities
(Concise)***

**Leader's Guide, Fact Sheet
& Quiz**

Item Number: 1655
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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.

**1655 THE RESPIRATORY PROTECTION PROGRAM:
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FACT SHEET**

LENGTH: 20 MINUTES

PROGRAM SYNOPSIS:

To protect employees from respiratory hazards and environments that are oxygen deficient, employers may require the use of respiratory protection. When respiratory protection is used, employers must follow the regulations laid out in OSHA's Respiratory Protection Standard, 1910.134. This video provides an overview of the employer's responsibilities and discusses key components of a proper Respiratory Protection Program.

Topics include various types of respirators, filters and cartridges, exposure limits, Assignment Protection Factors and Maximum Use Concentrations and medical surveillance.

PROGRAM OBJECTIVES:

After watching the program, the participant will be able to explain the following:

- How air-purifying respirators are properly selected and used;
- How Assignment Protection Factors and Maximum Use Concentrations are calculated;
- How fit tests and seal checks are properly conducted;

INSTRUCTIONAL CONTENT:

- There are a variety of dangerous chemicals found in industrial, manufacturing and chemical processing environments. These chemicals can be found in the form of dusts, fumes, mists, gases and vapors, which can be hazardous to the respiratory system.
- Exposure to such contaminants can cause lung damage, cancer and other serious ailments to vital organs and the central nervous system. To protect employees from these adverse health effects and from environments that are oxygen deficient, employers may employ the use of respiratory protection.
- When respiratory protection is used, employers must follow the regulations laid out in the Occupational Safety and Health Administration's Respiratory Protection Standard, 1910.134. This program will provide an overview of the employer's responsibilities as well as discussing key components of a proper Respiratory Protection Program.

OXYGEN-DEFICIENT & IDLH ATMOSPHERES

- It's important to understand that some atmospheric hazards are caused by a lack of oxygen, while other atmospheric hazards are due to the presence of harmful chemicals.
- This is a key point because an air-purifying respirator only filters the air and has no ability to add oxygen to the air; each year workers are killed by mistakenly wearing air-purifying respirators into oxygen deficient atmospheres.
- Atmospheres deficient in oxygen are often referred to as IDLH atmospheres. IDLH stands for Immediately Dangerous to Life and Health. IDLH atmospheres can also be caused by high chemical concentrations.
- These types of atmospheres require a self-contained breathing apparatus (SCBA) or a supplied-air respirator (SAR) with an auxiliary self-contained air supply to be used.

AIR-PURIFYING RESPIRATORS

- As long as IDLH conditions do not exist and the hazards are due to dusts, fumes, mists, gases or vapors, an air purifying respirator may be used. Air-purifying respirators are designed to remove airborne contaminants through filters; the type of contaminant determines what type of filter material is needed.
- There are two general types of filters or cartridges used with an air-purifying respirator. The first is a chemical cartridge, which protects against certain gases and all but the most toxic organic vapors.
- The second is a mechanical filter, which protects against particulates such as dusts, mists, or fumes. All filters and cartridges are certified by the National Institute of Occupational Safety and Health (NIOSH) and rated for use against specific chemical hazards or contaminants.

- To select the correct respirator and cartridges, as applicable, for the job, the identity and concentrations of the chemicals in the air should be known from the hazard assessment and air sampling.

EXPOSURE LIMITS

- Next, the occupational exposure limits for those contaminants should be consulted. OSHA regulates chemical exposures for a number of workplace chemicals. A list of these chemicals can be found in the “Z-Tables” under 29 CFR, Subpart Z.
- The Z-Tables list substances alphabetically along with their permissible exposure limits (PEL). The permissible exposure limit is the maximum amount of a contaminant to which an employee is permitted to be exposed.
- Work areas with concentrations below the OSHA permissible exposure limit (PEL) do not require respirators be worn, while work areas with concentrations above the PEL require a respirator that will reduce an employee’s exposure to levels below the PEL.

ASSIGNED PROTECTION FACTORS (APF’S)

- To help simplify the selection of a respirator which will properly reduce exposure below the PEL, OSHA’s respirator standard and many manufacturers have assigned a “protection factor” to common respirator classes and styles.
- This “Assigned Protection Factor,” commonly called an APF, gives an indication of how much the respirator will reduce the user’s level of exposure compared to the level of contaminant in the ambient air.
- For example, the PEL of hexavalent chromium (chromium 6) is 5 micrograms per cubic meter ($5 \mu\text{g}/\text{m}^3$). Suppose an air sample taken from the workplace contains 80 micrograms of chromium 6 per cubic meter of air. If we divide the actual contaminant level ($80 \mu\text{g}/\text{m}^3$) by the permissible exposure limit of $5 \mu\text{g}/\text{m}^3$, we find that the air contains 16 times more chromium 6 than the permissible exposure limit.
- This ratio is also called the hazard ratio. This hazard ratio of 16 means that we need to reduce the employee’s exposure by a factor of 16 in order to be at or below the PEL for chromium 6. To accomplish this, a respirator with an assigned protection factor (APF) greater than 16 must be selected. Understanding how to use the APF rating of respirators is an important tool in selecting the proper respirator for the job.
- The most current OSHA respiratory standard includes definitions for the assigned protection factor (APF) of a respirator or class of respirators. In addition, many manufacturers publish APF’s for their products.

MAXIMUM USE CONCENTRATIONS (MUC’S)

- Another ratio that aids in respirator selection is the Maximum Use Concentration or MUC. This is the maximum atmospheric concentration in which a specific respirator is effective.
- Maximum Use Concentrations can be determined through a simple calculation. Multiplying the occupational exposure limit, such as the PEL, by the APF for a respirator gives the maximum workplace concentration in which that respirator can be used.
- For example, if the commonly accepted APF for a half-mask respirator is 10 and the PEL is $5 \mu\text{g}/\text{m}^3$, multiplying 5 times 10 yields $50 \mu\text{g}/\text{m}^3$. $50 \mu\text{g}/\text{m}^3$ is the highest workplace concentration in which a half-mask respirator with an APF of 10 can be used while limiting exposure to a PEL of $5 \mu\text{g}/\text{m}^3$.

MEDICAL SURVEILLANCE

- All respirators cause some type of discomfort, such as restricted breathing, limitations to vision and movement and heat related discomfort; therefore, before they begin using respirators, employees must undergo a medical evaluation to assess their capability to handle these stresses.
- The required medical information needed can be found in OSHA Standard 1910.134 Appendix C.

FIT TESTING RESPIRATORS TO EMPLOYEES

- When the employee has been cleared medically to use a respirator, the next step is fit testing the employee with the same, make, model, style and size of respirator they will be using.
- The trainer will show the employee how to put on the respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit.
- To help ensure a proper fit, OSHA requires employers to select NIOSH-certified respirators from a sufficient number of models and sizes so that the respirator is acceptable to and correctly fits the user.

MAINTENANCE & STORAGE OF RESPIRATORS

- In addition to a proper fit, respirators must be well maintained to be effective. Procedures for proper storage, cleaning, maintenance and replacement of respirators must also be part of the written respiratory protection program.
- The respirators that are provided to employees should be clean, sanitary and in good working order. Disposable respirators are simply discarded after use.
- Respirators worn by a single person need to be cleaned and disinfected once a day or as often as needed to keep it sanitary, while respirators shared among employees must be cleaned and disinfected after each individual's use.

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ANSWERS TO THE REVIEW QUIZ

1. b

2. a

3. c

4. b

5. a

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REVIEW QUIZ

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

Name _____ Date _____

1. Air-supplied respirators must be certified by NIOSH before they are used in IDLH environments.
 - a. True
 - b. False

2. All employees must undergo medical surveillance before they use respiratory protection to determine if they can handle the stresses related to respirator use.
 - a. True
 - b. False

3. What is the term that indicates how much a respirator will reduce a user's level of exposure compared to the level of contaminant in the ambient air?
 - a. Permissible Exposure Limit
 - b. Respiratory Hazard Number
 - c. Assigned Protection Factor

4. Dividing the actual contaminant level in an area by the permissible exposure limit of the contaminant gives you the _____ of that contaminant.
 - a. Maximum Use Concentration
 - b. Hazard Ratio
 - c. Ceiling Limit

5. OSHA requires employees to perform a seal check each time their respirator is worn.
 - a. True
 - b. False