

5056 TO THE POINT ABOUT RESPIRATORY PROTECTION FACT SHEET

LENGTH: 13 MINUTES

PROGRAM SYNOPSIS:

Our workplace is full of hazards, hazards that can hurt us or kill us. Controlling these hazards and preventing injuries is the point of our safety and health program. One such hazard is presented by airborne contaminants that can cause lung damage, cancer and other serious conditions. The proper use of respiratory protection to defend against these hazards can prevent illnesses and save lives. That is the point of our facility's Respiratory Protection program and that is the point of this program. So, pay close attention as we get to the point about Respiratory Protection.

Topics include fit testing, assigned protection factors (APFs), particulate filter respirators, chemical cartridge respirators, powered-air purifying respirators, the three classes of atmosphere-supplying respirators, user seal checks, basic respirator safety precautions and proper cleaning and storage procedures.

PROGRAM OBJECTIVES:

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

- How medical evaluations and fit tests for respirators are conducted;
- What levels of protection assigned protection factors (APFs) indicate;
- What the most common types of respirators are and the hazards they protect against;
- How conduct a positive or negative user seal check;
- How to clean and store a respirator properly.

INSTRUCTIONAL CONTENT:

BACKGROUND

- Using the appropriate protection, usually in the form of a respirator, allows us to work safely around airborne contaminants as long as we wear our protective devices properly and wear them in all situations where they are required.
- Our organization has implemented a written Respiratory Protection Program that is designed to reduce employee exposure to airborne hazards through the use of engineering and work practice controls.
- When these controls, such as the use of ventilation systems or enclosing processes that produce dangerous fumes, cannot reduce the level of respiratory hazards to acceptable concentrations, respiratory protection is required.

MEDICAL EVALUATION & FIT TESTING

- If you are assigned to wear a respirator, you must be evaluated to determine if you can wear it safely.
- The evaluation will consist of a questionnaire or survey along with possible X-rays or pulmonary function tests to determine if you have any respiratory or cardiovascular problems that may adversely affect your ability to wear respiratory protection.
- You must also undergo a fit test before being authorized to wear a respirator. This test must be performed at least once a year while you are in the respiratory program to ensure your device maintains a proper fit.
- During the fit test, you will be asked to perform various exercises while donning the specific respirator you will wear on your job.
- The exercises will simulate body movements required for your job and will vary according to the type of test being conducted.
- While in most situations our organization will determine the appropriate device for your job task, you must understand which type of protection is appropriate for a specific work environment and always wear it when required.

ASSIGNED PROTECTION FACTORS

- Be aware that common types of respirators have Assigned Protection Factors, or APFs, that indicate the device's capability to reduce the user's exposure level compared to the level of ambient air.
- The level of protection increases as the APF increases. A half-mask air purifying respirator only has an APF of 10. A full-face respirator has an APF of 50, while a full-face self-contained breathing apparatus in pressure demand mode has an APF of 10,000.
- Keep in mind that wearing a respirator with a lower APF than one you have been assigned may not provide adequate protection for the contaminants present in your work area.

DUST MASKS

- Dust masks provide minimal protection and are only effective against dusts, not gases, vapors, spray paint, lead or asbestos.
- Single-strap masks are okay for lawn work and similar tasks, but NIOSH approved N-95 masks with the NIOSH label and two straps should be used when grinding, bagging, sanding, sweeping and performing other dusty operations.
- No matter which mask you choose, it should be replaced if it becomes clogged or damaged.

PARTICULATE FILTER RESPIRATORS

- The next level of protection is the half- or full-face mask that uses replaceable filters. These masks form a complete seal to better prevent dusts from entering nose and mouth.
- Particulate filter respirators feature filters that have efficiency ratings of 95, 99 or 100 percent, with 95 providing the lowest protection and 100 the highest.
- There are three classes of filters based on the types of particles they are designated to remove.
- N-Series are not oil-resistant and protect only against non-oil based substances such as dust byproducts from coal, metal, wood and flour processing.
- R-series filters protect against solid and liquid particulates that may contain oil and must be replaced after use during one shift or eight hours.
- P-series filters also protect against solid and liquid particulates that may contain oil but have a service life of 40 hours or one month, whichever comes first.

CHEMICAL CARTRIDGE RESPIRATORS

- There are also filter respirators that use cartridges to provide protection from hazardous gases and vapors by filtering them from the air the user breathes.
- Be aware that each cartridge is unique in its protection properties. Some protect against only one substance while others are effective for several different chemicals, but there is no single cartridge that provides protection against all chemicals that may be present in the workplace.
- Make it a point to always check the cartridge label before use to make sure it provides adequate protection for all gases and vapors you may encounter in a specific work environment.
- Also, always follow our organization's schedule for replacing cartridges, which are designed to ensure they are replaced before their service life ends or "breakthrough" occurs.
- Breakthrough occurs when the carbon and other sorbent materials in a cartridge have reached their capacity, allowing gases or vapors to seep through the cartridge and reach the user.

POWERED-AIR PURIFYING RESPIRATORS (PAPRs)

- Another type of cartridge respirator that has become immensely popular is the powered-air purifying respirator, or PAPR. These devices incorporate a motor blower that draws air through the filter into the user's breathing zone.
- The use of PAPRs has become prevalent among workers with mustaches and beards because the respirator can be equipped with a loose-fitting hood that helps keep facial hair from restricting the seal of the headgear.
- Since PAPRs reduce breathing resistance, they may also be a viable alternative for those workers who have been deemed ineligible to wear a respirator during their medical evaluation.

ATMOSPHERE-SUPPLYING RESPIRATORS

- The final type of respirator to discuss in this program are those that supply clean, respirable air to the user instead of purifying it like the devices previously discussed.
- Known as atmosphere-supplying respirators, these respirators are divided into three classifications.
- The basic supplied-air respirator, or SAR, is comprised of a respirator face piece, either a tight-fitting half-mask or full-face mask, or a loose-fitting hood or helmet assembly connected via an air supply hose to a source of breathing air.
- The air supply could be either a low-pressure or high-pressure source.
- Combination atmosphere-supplying respirators incorporate an integrated bottle of breathing air that can be accessed by the user if the primary supply of air becomes interrupted.
- The duration of this auxiliary supply of air is between five and 10 minutes, enabling the worker to safely escape from a hazardous environment. This provides more protection than the basic SAR.
- Self-contained breathing apparatuses, or SCBAs, consist of a high-pressure tank carried on the user's back connected to a pressure regulator and a mouthpiece or face mask. The tanks are available in 30, 45 and 60-minute capacities.
- These units provide the highest level of respiratory protection and allow the user much more mobility than SARs or combination atmosphere-supplying respirators.
- Be aware that there are some environments that are so dangerous that their atmospheres have been deemed IDLH. In these atmospheres, an SCBA or an approved combination atmosphere supplying respirator is required.

USER SEAL CHECKS

- Keep in mind that a user seal check must be performed each time you don a respirator to ensure you have put on the respirator properly and an appropriate seal has been established.
- There are two types of seal checks, a positive pressure test or a negative pressure test.
- To perform a positive pressure test, place the palm of your hand over the exhalation valve of the respirator and lightly breathe out into the face mask.
- If you can detect a buildup of pressure beneath the mask and notice the side of the face piece bulge out, you have a good fit.
- A negative pressure test involves putting both hands over the inhalation valves and slowly breathing in. The face piece should collapse slightly against your nose. Then hold your breath for 10 seconds. If the mask remains collapsed, you have a proper fit.
- Notify your supervisor if you have any problems obtaining a proper seal.

BASIC RESPIRATOR SAFETY PRECAUTIONS

- Here are some basic safety precautions you should follow every time you are wearing a respirator.
- First and foremost, make it a point to always follow your organization's recommendations for respirator use. Respirators don't provide adequate protection if they aren't used correctly.
- Also, make sure you have reached a safe area before removing your respirator for any reason.
- Some hazardous gases and vapors are odorless and cannot be smelled, while others can overwhelm you almost instantly, so it is better to be safe than sorry.
- If you can detect the odor of a hazardous chemical or have difficulty breathing while wearing a filter respirator, exit the area immediately and replace the cartridges.
- Never attempt to rescue anyone who has been overcome by hazardous fumes or vapors unless you are wearing the proper protection. Instead, activate our company's emergency action plan so emergency personnel can respond as soon as possible.

PROPER CLEANING & STORAGE OF RESPIRATORS

- Your respirator should be cleaned, disinfected and stored properly at the end of your shift or as often as necessary to keep it sanitary.
- Remove any filters or cartridges and inspect all components of the respirator.
- Have any defective parts replaced by the proper authority within our organization.
- Wash all parts of the respirator with warm water and a cleanser recommended in the user instructions.
- After carefully rinsing and draining the parts, disinfect them in a sanitizing solution for two minutes.
- Then rinse and drain the parts before allowing them to air dry or wiping with a lint-free cloth.
- When the parts are dry, reassemble the respirator and store it in an approved location.

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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. A fit test must be performed _____ while you are in the respiratory program to ensure your respirator maintains a proper fit.
 - a. Every 6 months
 - b. Every year
 - c. Every two years
2. A _____ has an assigned protection factor (APF) of 10.
 - a. Half-mask respirator
 - b. Full-face respirator
 - c. Self-contained breathing apparatus
3. Dust masks do NOT provide against gases, vapors, spray paint, lead or asbestos.
 - a. True
 - b. False
4. _____ protect against solid and liquid particulates that may contain oil and must be replaced after use during one shift or eight hours.
 - a. N-series filters
 - b. R-series filters
 - c. P-series filters
5. All chemical cartridges used in chemical cartridge respirators provide protection against only one substance.
 - a. True
 - b. False
6. _____ occurs when the carbon and other sorbent materials in a cartridge have reached their capacity, allowing gases or vapors to seep through the cartridge and reach the user.
 - a. Blow through
 - b. Bleed through
 - c. Break through
7. _____ provide the highest level of respiratory protection and allow the user much more mobility than other atmosphere-supplying respirators.
 - a. Supplied-air respirators
 - b. Combinations atmosphere-supplying respirators
 - c. Self-contained breathing apparatuses
8. To perform a _____ user seal check, place the palm of your hand over the exhalation valve of the respirator and lightly breathe out into the face mask.
 - a. Positive pressure
 - b. Negative pressure
9. Some hazardous gases and vapors are odorless and cannot be smelled.
 - a. True
 - b. False

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ANSWERS TO THE REVIEW QUIZ

1. b

2. a

3. a

4. b

5. b

6. c

7. c

8. a

9. a