

# PPE – Respiratory Quiz



## QUESTION

What are respiratory hazards'

## ANSWER

Respiratory hazards are:

- Invisible
- Can be a particulate, gas or vapor, and include airborne contaminants, biological contaminants, dusts, mists, fumes, and gases, or oxygen-deficient atmospheres.

## WHY IS IT RIGHT

### RESPIRATORY PROTECTIVE EQUIPMENT (RPE) ' WHAT IS IT'

Respiratory Protective Equipment (RPE) is a particular type of Personal Protective Equipment (PPE), used to protect the individual wearer against the inhalation of hazardous substances in the workplace air.

Employers are required to firstly attempt to eliminate the hazard at source. RPE should only be used after all other reasonably practicable control measures have been taken. PPE is considered a last resort because it only protects individual workers, is prone to failure or misuse, such as wearing the wrong RPE for the job, and employees wearing RPE may get a false sense of security when using RPE.

### RESPIRATORY ROLLOUT

There are specific elements that must be dealt with in the use of Respiratory Equipment.

These are encapsulated in Respiratory Programs. These elements are:

1. A written plan detailing how the program is managed.
2. A complete assessment and knowledge of respiratory hazards that will be encountered in the workplace.
3. Procedures and equipment to control respiratory hazards, including the use of engineering controls and work practices designed to limit or reduce employee exposures to such hazards.
4. Guidelines for the proper selection of appropriate respiratory protective

equipment.

5. An employee training program covering hazard recognition, the dangers associated with respiratory hazards, and proper care and use of respiratory protective equipment.
6. Inspection, maintenance, and repair of respiratory protective equipment.
7. Medical surveillance of employees, where necessary.

## **PRECONDITION REQUIREMENT**

**A respirator only becomes an option if the preceding control methods are infeasible or if they fail to reduce exposures to acceptable levels. Respirators also could be used in the interim while the other control measures are being implemented.**

## **Respiratory Prevention Program**

After a safety manager has done his/her due diligence in working through the hierarchy of controls, and it's determined that Respiratory Protection is going to be part of their exposure control plan, the employer will need to implement a Respiratory Protection Program as defined by OSHA in 29 CFR 1910.134(A). The Respiratory Protection Program is a written collection of work-site specific procedures and policies that cover all the requirements of OSHA's respiratory protection standard. It's essentially a blueprint for ensuring the health and safety of all employees using respiratory protection.

## **Administrator**

One requirement of the respiratory protection program is that the employer designates an administrator to run the program and evaluate its effectiveness. 'An individual is qualified to be a program administrator if he or she has appropriate training or experience in accord with the program's level of complexity,' according to OSHA's Small Entity Compliance Guide for the Respiratory Protection Standard.

## **Training**

The employer must determine, based upon the hazards present and the type of respiratory protection equipment being used, the knowledge and potential training requirements for their program's administrator.

## **Program Procedures**

In addition to requiring a written document and having an assigned administrator, a respiratory protection program must be specific to the workplace and include procedures on the following:

- Selecting respirators.
- Medical evaluations of employees required to wear respirators.
- Fit testing.
- Routine and emergency respirator use.
- Schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding and maintaining respirators.
- Ensuring adequate air quality for supplied-air respirators.
- Training in respiratory hazards.
- Training in proper use and maintenance of respirators.

- Program evaluation.
- Ensuring that employees who voluntarily wear respirators (excluding filtering facepieces, which OSHA defines as a negative pressure, particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium. Sometimes referred to as a dust mask. Comply with the medical evaluation and cleaning, storing and maintenance requirements of the standard.
- Updating the written program as necessary to account for changes in the workplace affecting respirator use.
- Providing equipment, training and medical evaluations at no cost to employees.

## **Application and Contaminants**

Along with a foundational knowledge of what OSHA requires for respirator use in the workplace, employers and safety professionals must add an understanding of both the application being performed and the contaminant(s) present to the pre-selection equation. Consideration of the application or task where the respirator protection is needed is important because certain applications will limit the respiratory protection options available.

## **Functionability**

Respirators work in one of two ways.

1. The first and most commonly used form of respirator uses activated carbon and or mechanical filters to remove the contaminant(s) present from the worker's breathing air. This style of respirator commonly is referred to as an air- purifying respirator (APR).
2. The second style protects by supplying clean, respirable air to the worker from another source. This category of respirators is known as supplied air respirators (SARs).

## **Applicability / Contaminates**

For respirator applications in which the worker could be exposed to unknown contaminants or unknown concentrations of contaminants, APRs are not an option. APRs also are not an option in applications where the worker could encounter oxygen deficient. OSHA defines this as oxygen levels of less than 19.5 percent. For these, employers must use either a self-contained breathing apparatus (SCBA) or a pressure-demand SAR with an emergency egress (escape) supply of auxiliary breathing air.

Also, certain applications like abrasive blasting negate the use of APRs. For abrasive blasting, OSHA requires the use of a

SAR. Specifically, a SAR that's appropriate for entry into and escape from atmospheres not immediately dangerous to life or health (IDLH) with appropriate protection for the wearer's head and neck.<sup>4</sup>

When APRs are an option, a thorough understanding of the application equally is as important. If a task requiring particulate protection includes exposure to oil aerosols, then an oil-resistant (R-series) or oil-proof (P-series) mechanical filtering element will be needed, rather than a non-oil-resistant (N-series) filter.

For contaminants that allow the use of APRs, employers must know the airborne concentration of the contaminant to which the worker will be exposed in order to validate whether an APR will offer a sufficient level of protection. APRs have established maximum use limitations. If an APR is an option, when qualitatively fit tested, it can only be used up to 10 times OSHA's permissible exposure limit (PEL) but is never to exceed the established IDLH concentration for the contaminant.

Just as there are applications that will prevent the use of APRs, there are specific contaminants that do the same. Contaminants such as ethylene oxide and methylene chloride, in concentrations above OSHA's established exposure limits, require SARs for OSHA compliance. Other contaminants like methyl alcohol and carbon monoxide require SARs when exposure limits are exceeded due to the ineffectiveness of APR filter media.

### **Exposure and Monitoring ' Failure**

Failure to conduct exposure monitoring will prevent the determination of airborne levels of a contaminant.

### **How is this applicable to the discussion'**

Specifically for vapors and gases, this can be done in most instances using passive dosimeter badges that are worn for a work shift and then sent to a laboratory for analysis. Measuring for particulate contaminants is a bit more complicated. Employers will need to attach properly-calibrated, continuous-flow sampling pumps with appropriate filter media to workers in the area of exposure. Again, this filter media is sent off to a laboratory for analysis.

## **WHY IS EVERYTHING ELSE WRONG**

### **RESPIRATORY HAZARDS**

Respiratory hazards are invisible and can have severe impact on the health and safety of a worker. A respiratory hazard can be a particulate, gas or vapor, and include airborne contaminants, biological contaminants, dusts, mists, fumes, and gases, or oxygen-deficient atmospheres.

### **RESPIRATORY EQUIPMENT**

Personal Protective Equipment (PPE), such as respirators, are equipment worn by workers to minimize exposure to the occupational hazards of chemical, biological and other airborne substances. **A hazard cannot be eliminated by the PPE, but the risk of injury can be reduced.**

### **NECESSITY OF RESPIRATORY PROTECTION**

#### **Respiratory Protection is Necessary When:**

- Engineering or administrative controls are not always possible:
- Confinement of infectious agent may be difficult or impossible
- Improved ventilation may not be practical or feasible
- Employees may be exposed to a wide variety of air contaminants
- infectious agents

- chemical agents
- Environmental controls may not be feasible

#### **CIRCUMSTANCES THAT MANDATE USE OF RESPIRATORY EQUIPMENT**

##### **Employees must wear respirators in the following circumstances:**

- Employees entering areas where patients with suspected or confirmed airborne infectious disease are being isolated.
- Employees who are present when cough-inducing or aerosol-generating procedures are performed on such patients.
- When employees perform high hazard procedures on persons who have suspected or confirmed airborne infectious disease.
- When emergency response employees or others must transport in a closed vehicle, a patient with suspected or confirmed airborne infectious disease.
- Employees in other settings where administrative and environmental controls are not likely to protect them from inhaling infectious airborne droplets.

#### **EMPLOYER'S RESPONSIBILITY**

- The employer is responsible to establish and maintain the respiratory protection program.
- The employer must provide respiratory equipment when it is necessary to protect health and safety of employees.
- The employer must provide respiratory equipment that is applicable and suitable for the purpose intended.