



Respirators



What do respirators do?

Respirators are designed to protect the respiratory system from inhalation of atmospheric hazards by either: (29 CFR 1910.134 – Respiratory Protection)

- Removing contaminants from the air before they are inhaled (a.k.a. Air Purifying)
- Supplying an independent source of “clean” air (Not utilized on campus)

What are the different types of atmospheric hazards?

Potential atmospheric hazards (or contaminants) include:

- Gases
- Vapors
- Particles
 - Smoke
 - Mists
 - Fumes
 - Dust
 - Infectious agents

Does the type of atmospheric hazard matter?

Yes! The mechanism of protection is dependent on the type of atmospheric hazard.

- Gases and vapors are adsorbed using activated charcoal.
- Dusts, mists, fumes, are absorbed using a filtering material.

Are there different types of air purifying respirators?

There are three main types of respirators that purify the air:

- Particle removing
- Gas and vapor removing
- Combination of the two

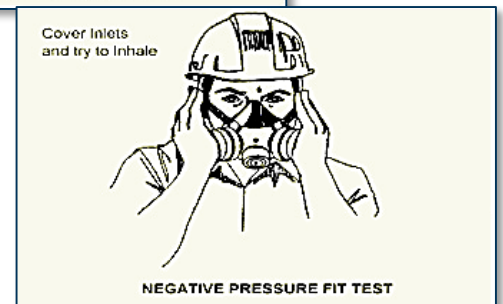
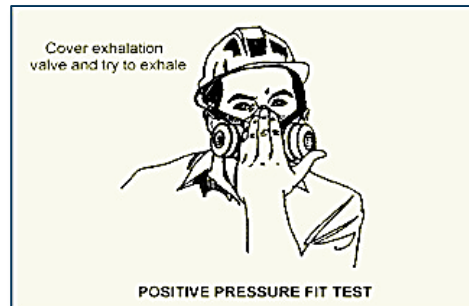
Half and Full Facepiece

Can be used for protection against gases, vapors, or particles. Cartridges contain a filter and/or activated charcoal that remove contaminants from the air.



Cartridges are designed, and labeled, for the specific chemical, or chemical type, for which they remove. Full-face respirators work the same as half-face respirators; however, additionally provide protection to the eyes and face. Be sure to check the expiration date on gas/vapor cartridges.

Field Check (Pressure Fit Check)



Powered Air Purifying Respirator (PAPR)

There are two types of PAPRs; loose fitting and tight fitting. Both PAPRs utilize a battery powered blower motor to pull air through a filter and/or activated charcoal, then blow the filtered air into the breathing zone. PAPRs are utilized when maximum comfort and communication is needed, or when a proper fit cannot be obtained with other respirators.



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Disposable Filtering Facepiece

Intended to protect against particles, although some models may contain an activated charcoal media to control odors or vapors; however, this type of respirator is not recommended if you have potential exposure to gases or vapors. Examples include N95, R97, P100, etc. The letter represents the oil resistance.



- “N” means the respirator is not oil resistant.
- “R” mean the respirator is somewhat oil resistant.
- “P” means that respirator is strongly oil resistant.

The number that follows the letter represents the respirators efficiency of filtering out 0.3µm particles.

- “95” filters out 95% of 0.3µm particles
- “99” filters out 99% of 0.3µm particles
- “100” filters out 99.97% of 0.3µm particles, also known as High Efficiency Particle Air (HEPA) filters.

What are some the limitations of air purifying respirators?

- The contaminant must be known. There is no single air purifying respirator/cartridge that can remove all hazards.
- These respirators do no supply oxygen to the user, they only filter out the contaminant.
- If the contaminant has poor odor warning properties, then the environment should not be entered as a leak, or an improper seal, may not be detectable.
- Possible eye irritation could occur using half-face, and similar, respirators. In these situations, a full face respirator should be used.

Medical Evaluation

Medical evaluations are performed by Employee Health and Wellness. The medical evaluation consists of a medical questionnaire and/or a medical examination.

Fit Testing

Fit testing is performed by Employee Health and Wellness annually, for any and all respirators that will be used. It is required for any individual who currently uses, or may use, respiratory protection. Fit testing is performed to ensure that a proper fit can be obtained. It is important that the individual complete the fit testing with the assigned respirator (Half Face, Full Face, and Tight Fitting PAPR).

Inspection

The facepiece should be checked before and after each use for:

- Excessive dirt
- Cracks, tears, holes, or distortion from improper storage
- Cracked or broken cartridge holder(s), badly worn threads, or missing gasket(s)

The head straps should be checked before and after each use for:

- Breaks or cuts
- Loss of elasticity
- Broken or malfunctioning buckles

The cartridge should be check before and after each use for:

- Incorrect cartridge or installation
- Loose connections, missing or worn gaskets
- Expiration date
- Cracks or dents outside the filter/cartridge
- Evidence of prior use of gas/vapor cartridge

Cleaning

Respirators should be washed with detergent in warm water with a brush, or specially designed cleaner/wipes. Avoid using rubbing alcohol, as this could degrade the rubber components of the facepiece. Once cleaning is completely, allow time for drying.

Storage

Storage of the respirator should be in a clean, dry place free of hazards/contaminants. It should be stored away from direct sunlight, extreme temperatures, and excessive moisture.

