

Means of Respiratory Protection

Personal protective equipment is divided into two main groups according to the source of air – air purifying or air supplying.

Air purifying – negative pressure systems

Disposable particulate (dust) respirators

Disposable particulate respirators are designed for protection against low concentrations of dust, mists, pollen, animal dust etc.

Advantages: Lightweight, disposable, relatively comfortable, and inexpensive.

Limitations: Minimal protection due to poor sealing properties. They cannot be used by personnel with facial hair which comes between the respirator and the skin.




Re-usable half mask



Air purifying half masks have a rubber face sealing part which fits over the nose and under the chin. Exchangeable cartridges and filters are designed to provide protection against different types of air contaminants.

Advantages: Relatively lightweight and offer good protection against many contaminants. Limitations: Use is limited by the type and capacity of the filters – neither can be used in areas with high concentrations of contaminants or in oxygen-deficient atmospheres. Breathing may become more difficult because of additional effort is needed to breath through the filters. Eye protection is not provided. Although the proper and tight fitting is essential, many factors may affect mask tightness.

Re-usable full face mask

Air purifying full face masks work on the same principle as the half-mask respirators described above. The facepiece extends protection around the entire face, covering the eyes, nose, chin and mouth.

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Advantages: Full face respirators are used where a higher level of respiratory protection is needed or where eye and face protection is required.

Limitations: Full face masks are heavier than half-masks and often less comfortable for the wearer. Cannot be used for all types of air contaminants and are limited by the type and capacity of the filters and cartridges used. They cannot be used in oxygen-deficient atmospheres. Breathing may become more difficult because of additional effort is needed to breath through the filters.

Air purifying – positive pressure system

PAPR – powered air purifying respirators

The most advanced group of personal protective equipment provides high level of protection even for long lasting applications. Battery powered portable fan unit which drives the air through a particulate or chemical filter and blows it to the headtop. Full and half mask are available as well as wide variety of hoods and helmets.

Advantages: Major advantages are derived from the positive pressure provided by the fan forcing air into the headtop – hood or helmet. This eliminates difficulty in breathing provided by the negative pressure respirators and reduces the importance of a precise facial fit.




Limitations: Higher purchase price and maintenance. Use is limited by the life time of the battery and fan. Can not be used in oxygen deficiency environments



Air supplying systems

Airline systems

These respirators provide clean, fresh air to the user from a stationary source such as a compressor or compressed air cylinder. Full face mask and half mask are available as well as wide variety of hoods and helmets.

Advantages: Airline respirators may be used for long periods and provide a high degree of protection from a variety of air contaminants. They provide minimal breathing resistance and discomfort, are light weight and are available at moderate initial cost and low operating costs.

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Limitations: Unexpected loss of the air source terminates all protection to the user. Air must be delivered to the mask or hood through a hose which can be difficult to handle and may easily tangle or crimp.

These respirators can be used for protection from the most of all air contaminants.

SCBA – Self contained breathing apparatus

SCBAs provide the user with clean air from a high pressure cylinder carried on the wearer's back. They are equipped with a full face piece and are operated in the pressure demand mode. SCBAs provide the maximum degree of protection available from airborne contaminants.

Advantages: Users carry their air supply with them allowing comparatively free movement over an unlimited area.

Limitations: SCBA units are expensive to purchase and maintain; require the wearer to carry heavy equipment on his back, and provide no more than 40 minutes of continuous use. Personnel with facial hair which comes between the respirator sealing surface and the wearer's face cannot use SCBA equipment.