

FREQUENTLY ASKED QUESTIONS REGARDING PAPRS

Q. What is a PAPR?

- A. Powered air-purifying respirator (PAPR) means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Q. What are the different types of PAPRs?

- A. PAPRs come in a variety of configurations. They can be belt-mounted or face-mounted; they can be equipped with tight-fitting, negative pressure respirators as well as loose-fitting hoods or helmets.

Q. When should I use a PAPR?

- A. The following conditions apply for PAPR use:
- If the physician or other licensed health care professional (PLHCP) finds a medical condition that may place the worker's health at increased risk if a negative pressure respirator is used.
 - When a higher level of eye and face protection may be required due to potential sprays or splashes.
 - If, for medical or cultural reasons, a gentleman cannot shave, a loose-fitting hood or helmet may be used.
 - When the airborne concentration of a contaminant requires a higher level of protection (maximum use concentration – MUC).

Q. What are the limitations of the PAPR?

- A. A PAPR cannot be used in an:
- oxygen-deficient atmosphere (less than 19.5%) such as a confined space
 - immediately dangerous to life and health (IDLH) atmosphere
 - atmosphere in which contaminants are unknown.

Q. What are the advantages of a PAPR?

- A. If using a loose-fitting hood or helmet, the annual fit test is not required. Also, gentlemen may have facial hair. Depending upon the cartridge, a PAPR can provide chemical as well as particulate protection. It may be more advantageous to use a PAPR over long periods of time vs. a tight-fitting air purifying respirator.

Q. What are the disadvantages of a PAPR?

- A. PAPRs have battery discharge time limitation; thus, time allowed in the contaminated area may be limited. PAPRs are generally more expensive than tight-fitting, negative pressure respirators, and generally require more care and maintenance than tight-fitting, negative pressure respirators.

Q. What is the minimum airflow of the PAPR?

- A. Tight-fitting respirators must have a minimum of 4 cubic feet per minute (cfm); loose-fitting hoods or helmets must have 6 cfm of air.

Q. What are some types of batteries that are used with the PAPR?

- A. Four basic types of batteries are used with PAPRs:
- Nickel Cadmium (NiCd)
 - Nickel Metal Hydride (NiMH)
 - Lithium Ion
 - Lithium

Q. What are some of the conditions and limitations on the various types of batteries used?

- NiCd, NiMH, and lithium ion batteries are rechargeable. Lithium batteries are typically used in emergency response activities and are non-rechargeable, one-time use batteries.
- Lithium ion batteries typically have a higher cell voltage (3.6 volts) and a higher energy density than other rechargeable batteries. Lithium is a lightweight metal and the batteries have a very low self-discharge rate and no

memory effect. However, there may be stricter regulations on shipping methods for lithium ion batteries than for other battery types.

- NiMH batteries have a higher energy density than NiCd batteries but generally the same voltage (1.2 volts).
- NiMH batteries have a flat discharge characteristic compared to NiCd batteries, but a rapid fall off at the end of the discharge cycle. They generally have a higher self-discharge rate and deteriorate over long storage time. There is also a potential for gas generation with NiMH batteries.
- The major drawback for NiCd batteries is their susceptibility to memory effect. NiCd batteries have a limited cycle life of approximately 500 discharge/recharge cycles. Cadmium is a hazardous material, therefore an out-of-service NiCd battery may be considered a hazardous waste and should be recycled.

Q. What does it mean if my batteries are labeled intrinsically safe?

- A.** A device, instrument or component that will not produce any spark or thermal effects under any conditions that are normal or abnormal that will ignite a specified gas mixture is considered intrinsically safe. Some batteries are rated as intrinsically safe, while others are not.

Q. What is the best way to clean and disinfect the PAPR?

- A.** PAPRs should be cleaned according to the manufacturer's specifications.

General Instructions:

Wipe the outside surfaces of the PAPR system with a mild solution of warm water and mild detergent using a cloth dampened with clean, warm water. If necessary, wipe with a cloth dampened with a hypochlorite solution (1 oz. [30ml] of household bleach in 2 gallons [7.5 ml] of water).

Do not clean with organic solvents.

Do not soak the blower unit or battery in cleaning solutions.

Q. How often should cartridges or filters be changed?

- A.** Service life determination for particulate filters is not required by OSHA – only for gases and vapors. Particulate filters should be changed out when they become damaged, soiled, or air flow is decreased.

Regarding OSHA Requirements

OSHA requires that a change-out schedule be established that identifies how long a chemical cartridge can be used in a particular workplace before being replaced. OSHA's change-out schedule requirement does not apply to certain chemicals such as benzene and formaldehyde. The change-out schedule from the specific standard must be followed.