
Firefighter Personal Protective Equipment Module 2

Chapter 6



LEARNING OBJECTIVES

Identify
respiratory
hazards.

Describe the
limitations of
respiratory
protection
equipment.

Identify types of
respiratory
protection
equipment.

Explain methods
for storing
respiratory
protection
equipment.



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APPROPRIATE PROTECTION IS THE MOST EFFECTIVE RESPIRATORY PROTECTION.



Structural
or
wildland
fire



Repair
work



Medical
responses



Confined
spaces



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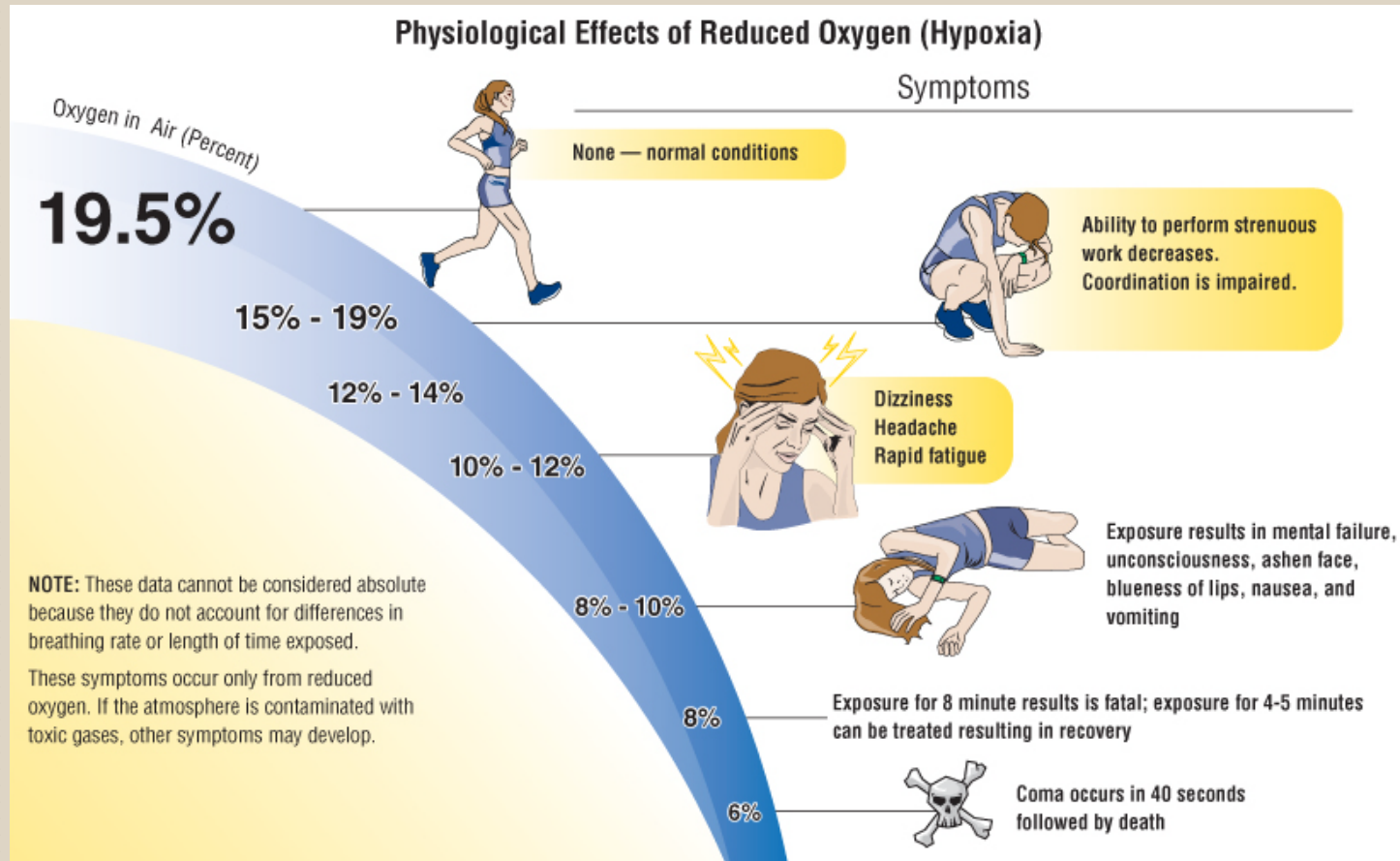
RESPIRATORY HAZARDS OFTEN OCCUR IN SITUATIONS IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).

Common respiratory hazards

- Oxygen deficiency
- Elevated temperatures
- Particulate contaminants
- Gases and vapors
- Airborne pathogens



OXYGEN DEFICIENCY OCCURS MOST OFTEN (BUT NOT ONLY) IN AREAS OF COMBUSTION.



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ELEVATED TEMPERATURES CAN LEAD TO
SUPERHEATED AIR.

Health hazards

Decrease in
blood
pressure

Circulatory
system
failure

Pulmonary
edema

Asphyxiation



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PARTICULATE CONTAMINANTS COME FROM MANY SOURCES AND POSE SERIOUS HEALTH RISKS.



APR unit



PAPR unit



GASES AND VAPOR ENTER THE BODY IN SEVERAL WAYS AND ARE VERY DANGEROUS.



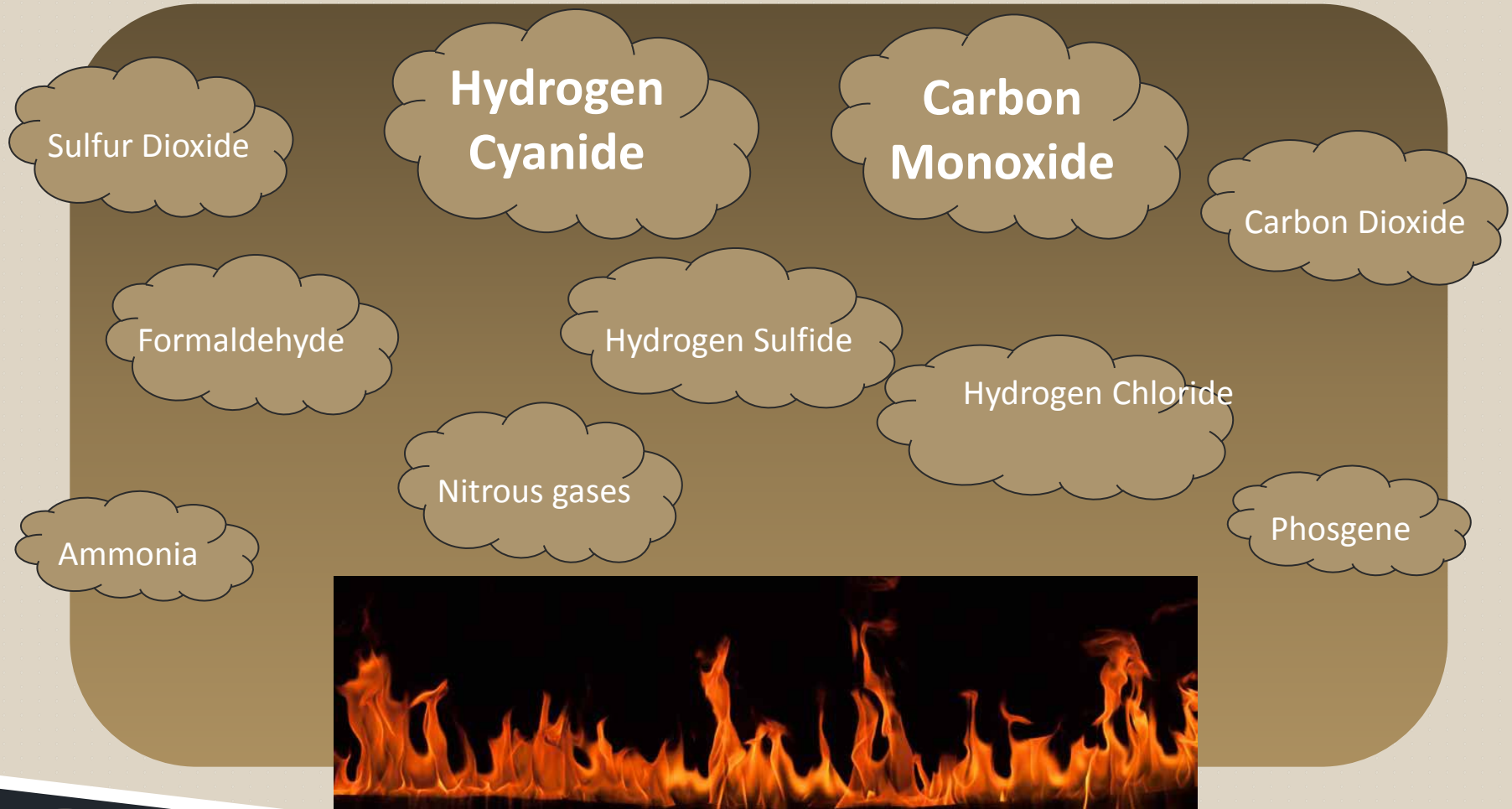
Gases



Vapors



A VARIETY OF HARMFUL GASES AND VAPORS CAN BE FORMED BY COMBUSTION.



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NONFIRE INCIDENTS CAN ALSO PRODUCE DANGEROUS GASES AND VAPORS.



Keep distance



Wear SCBA



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AIRBORNE PATHOGENS ARE DISEASE-CAUSING MICROORGANISMS SUSPENDED IN AIR.



HEPA filters



Medical masks



RESPIRATORY PROTECTION EQUIPMENT IS DIVIDED INTO TWO MAIN CATEGORIES.

Atmosphere-
supplying
respirators
(ASRs)

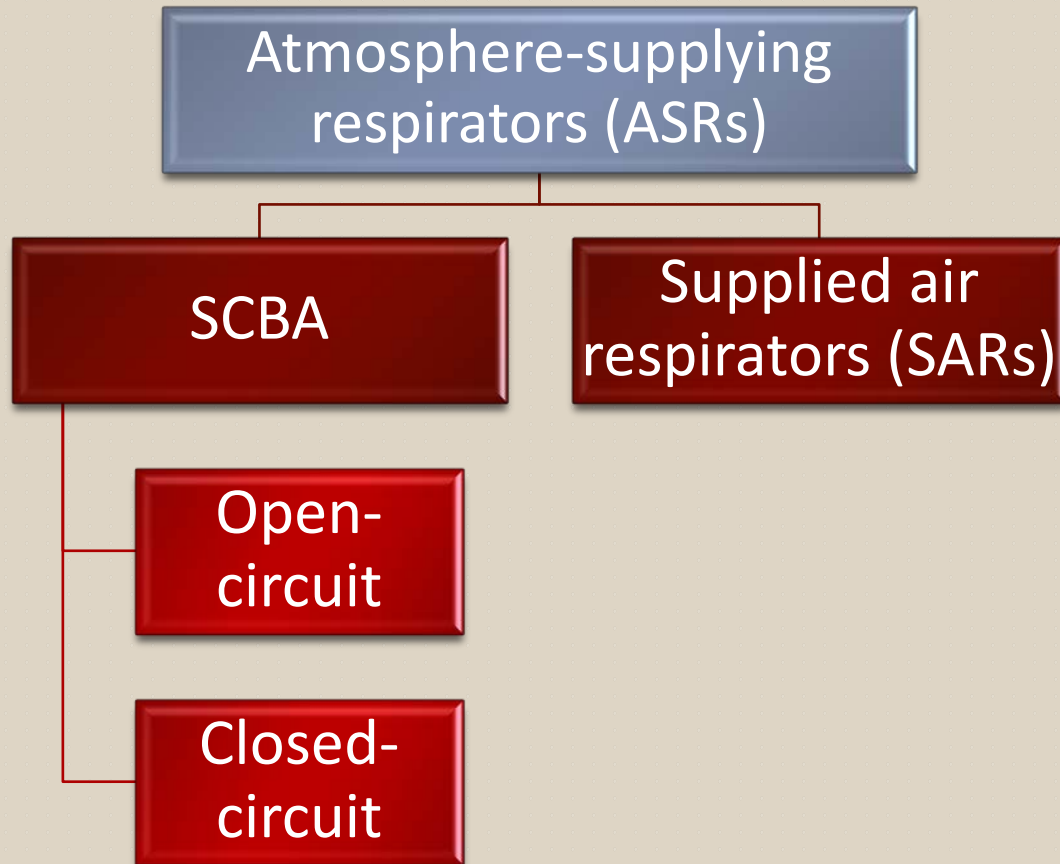
Air-purifying
respirators
(APRs)

Provides
breathable air

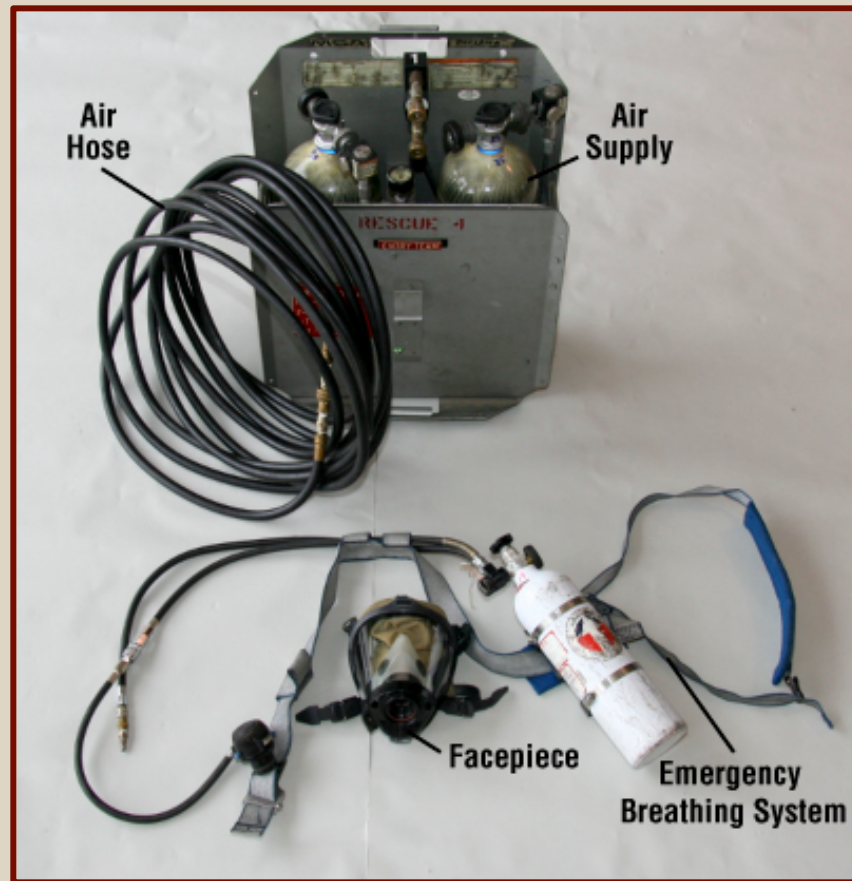
Filters
particulates
only



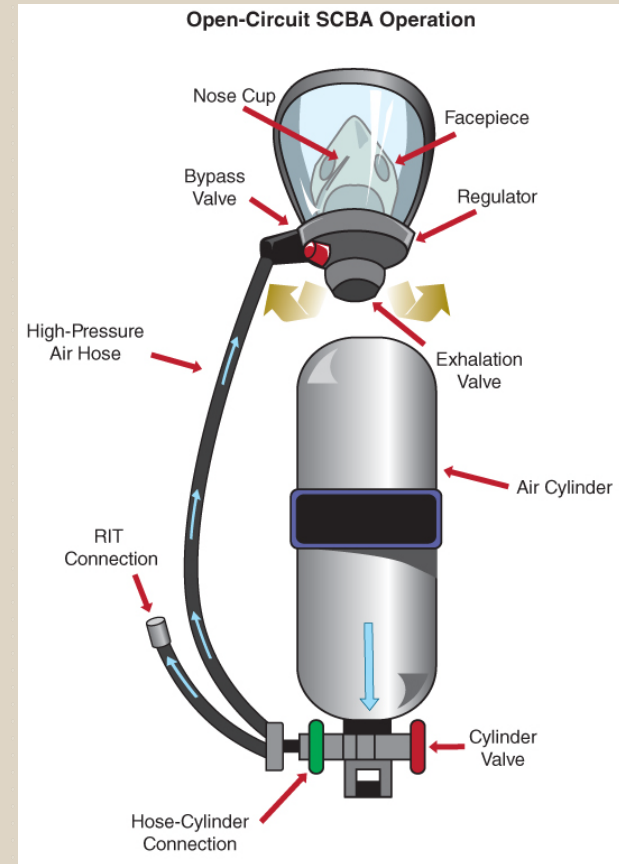
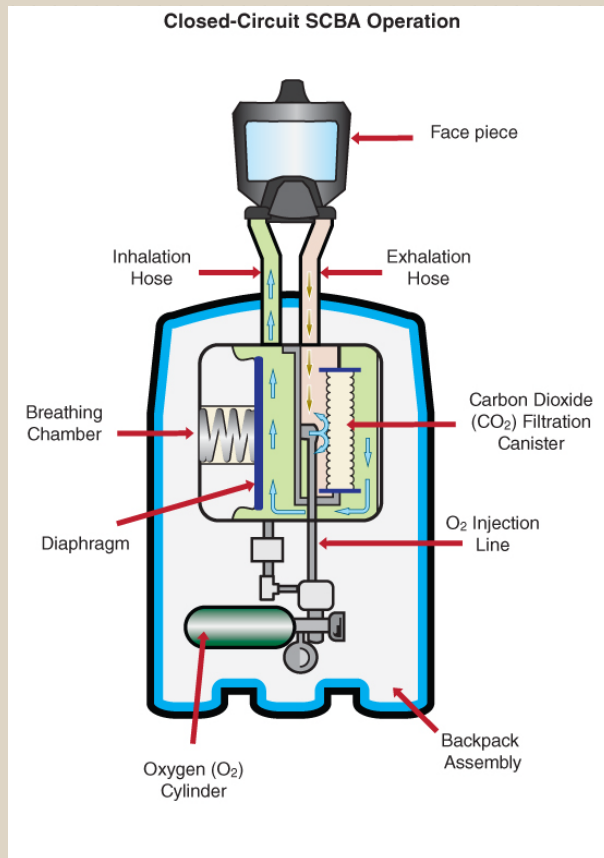
ASRS ARE DIVIDED INTO FURTHER CATEGORIES.



SUPPLIED AIR RESPIRATORS (SARS) ARE USED ONLY IN SPECIFIC CONDITIONS.



OPEN-CIRCUIT SCBAS ARE FAR MORE COMMON THAN CLOSED-CIRCUIT SCBA.



OPEN-CIRCUIT SCBA CONSISTS OF FOUR BASIC COMPONENTS.



1. Backplate and harness assembly



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OPEN-CIRCUIT SCBA CONSISTS OF FOUR BASIC COMPONENTS.



2. Air cylinder assembly



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OPEN-CIRCUIT SCBA CONSISTS OF FOUR BASIC COMPONENTS.



3. Regulator assembly



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OPEN-CIRCUIT SCBA CONSISTS OF FOUR BASIC COMPONENTS.



4. Facepiece assembly

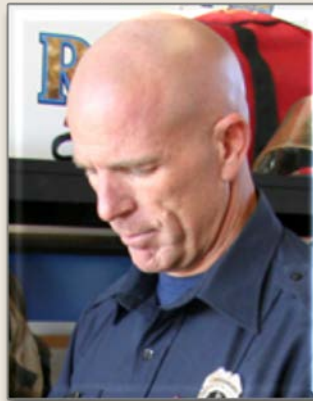


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FIT TESTING AND OTHER REGULATIONS APPLY TO FACEPIECE ASSEMBLIES.



Must be fit-tested



Facial hair should not prevent seal



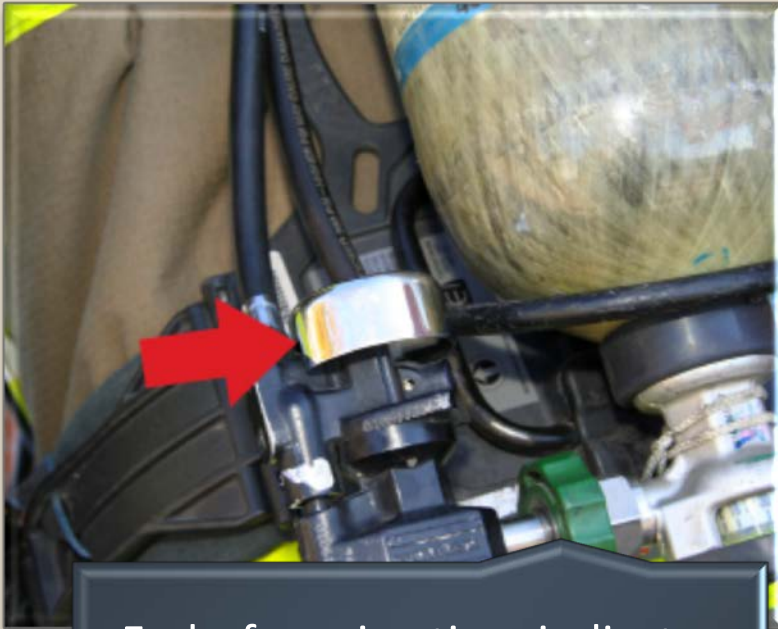
Approved glasses and contact lenses only



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ADDITIONAL COMPONENTS OF SCBA PROVIDE SAFETY FEATURES.



End-of-service-time indicator (ESTI)



Rapid intervention crew universal air coupling (RIC UAC) and remote pressure gauge

Courtesy of Kenneth Baum



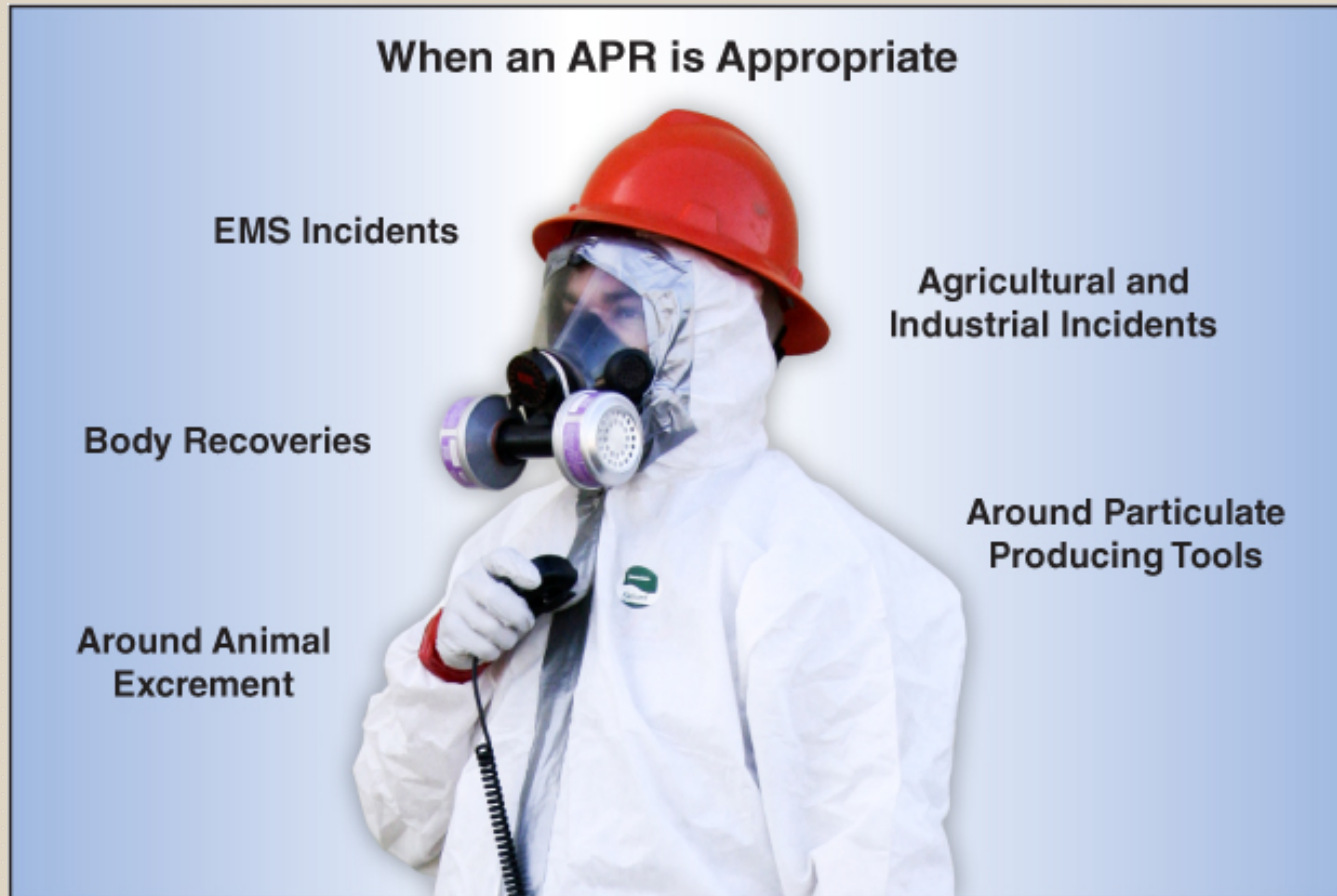
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AIR-PURIFYING RESPIRATORS (APRS) CONTAIN SINGLE USE FILTERS FOR AIRBORNE PARTICULATES.



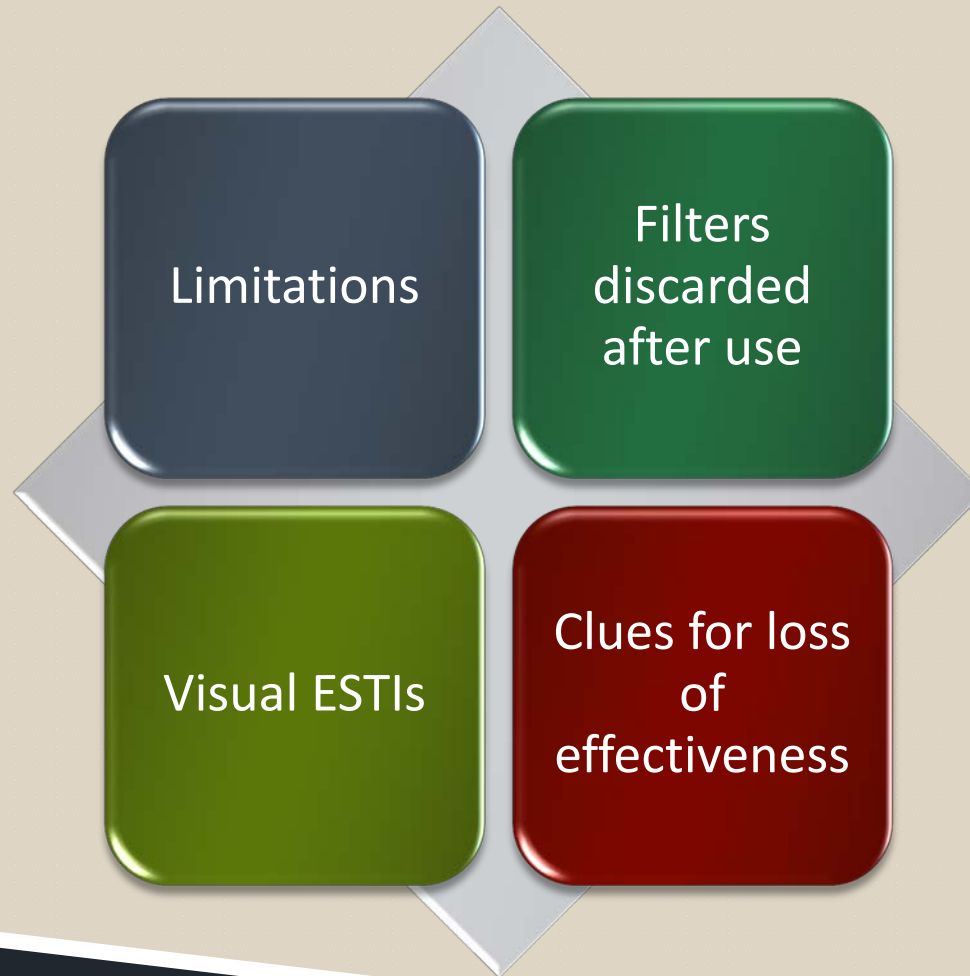
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APRS ARE USED ONLY IN SPECIFIC INSTANCES INVOLVING PARTICULATES.



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APRS HAVE LIMITATIONS AND MUST BE CLOSELY MONITORED.



RESPIRATORY PROTECTION HAS BOTH WEARER AND EQUIPMENT LIMITATIONS.

Wearer limitations

Lack of physical condition

Lack of agility

Inadequate pulmonary capacity

Weakened cardiovascular ability

Psychological limitations

Unique facial features

Offset by training, medical exams and proper fit testing.



RESPIRATORY PROTECTION HAS BOTH WEARER AND EQUIPMENT LIMITATIONS.

Equipment limitations

Limited visibility

Decreased ability to communicate

Decreased endurance

Decreased mobility

Poor condition of apparatus

Low air cylinder pressure

Controlled by inspection, care, maintenance, training.



NFPA[®] SAFETY ALERT

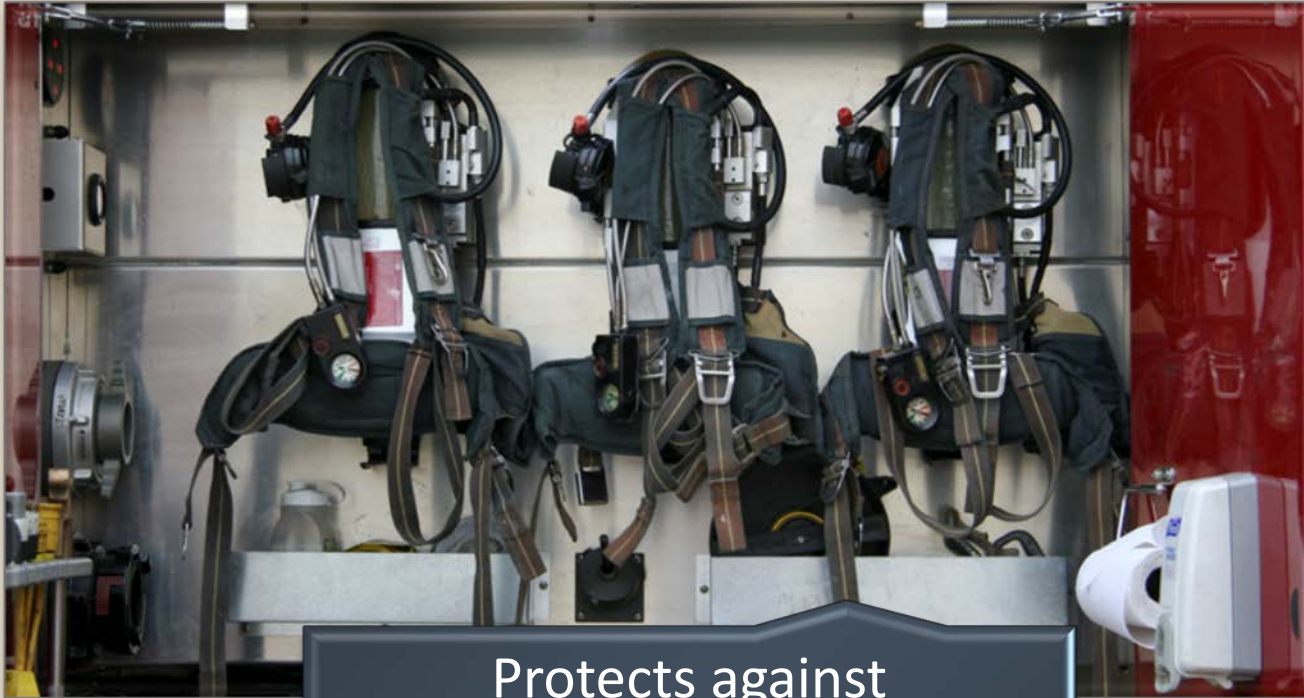
High temperature environments can result in thermal degradation or melting of SCBA facepiece lenses.

RESULTS:

- Elimination of protection meant for the user's respiratory system
- Exposure to products of combustion and superheated air



SCBA IS STORED ACCORDING TO LOCAL SOPS, BUT
SHOULD BE ABLE TO BE QUICKLY AND EASILY
DONNED.



Protects against
contamination, temperature
changes, and ultraviolet light



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SUMMARY

Respiratory equipment can protect you from toxic gases and vapors, particulates, and disease, but only if properly used, inspected, cleaned, and maintained.

