

## Hazard Alert: Closed-Circuit, Positive-Pressure, Self-Contained Breathing Apparatus (SCBA)

Improper selection, use, inspection, maintenance, and care of your closed-circuit, positive-pressure, SCBA can result in injury or death, even if you're a member of an experienced mine rescue team.

### Background

On October 17, 2002, a 49-year-old mine rescue team trainer with 26 years mining experience and a 38-year-old co-trainer with 2 years mining experience were fatally injured at an abandoned underground gold mine. Both were participating under oxygen in an exercise to evaluate conditions in this mine. As the team was walking up the steep decline to return to the surface, the victims experienced breathing difficulties and collapsed. The first victim was pronounced dead at the scene. The second victim was transported to a medical facility where he succumbed to his injuries on October 23, 2002.

Two of the most common closed-circuit, positive-pressure SCBA systems ("re-breathers") used in underground mines are: Biomarine, Inc.'s Biopak Model 240S\* and Draeger Safety, Inc.'s Model BG-4AP\*. Breathing air is continually recycled in a closed-circuit "breathing loop", with exhaled carbon dioxide captured by an absorbent media, supplemented with oxygen from the oxygen cylinder. The recycled breathing air in these SCBA systems requires cooling by ice or frozen gel tube to meet NIOSH/MSHA certification requirements.

### Best Practices



Carefully evaluate training environments that may pose extreme temperature or toxic contaminants. Identify safety and health hazards and take appropriate protective measures prior to beginning any mine rescue activity.

Install the properly frozen gel tube or ice in the coolant canister before each use to ensure the breathing air temperature is continually cooled (90 degree F range) throughout the duration (4-hour limit) of use. High temperature environments and high metabolic work activities reduce the duration of use of the SCBA.

Proper facepiece fit is critical to the proper functioning of positive pressure SCBA. To protect yourself from hazardous atmospheres, check the facepiece-to-face seal each time you wear your SCBA. Facial hair, head bands, bandannas or other objects that interfere with the seal must be removed prior to donning the apparatus.



Ensure the manufacturers' Users Guide and Maintenance Manual are followed. Never substitute, modify, add, or omit any parts. Use only exact replacement parts in the configuration as specified by the manufacturer. Always inspect your SCBA for leaks before each use, especially gauges, valves, and hoses.

If you have any questions about this Hazard Alert, or any other occupational health matter, please feel free to contact us. Our job is to assist in improving the health and safety of America's miners.

#### Contact:

Mine Safety and Health Administration  
1100 Wilson Boulevard, 24<sup>th</sup> Floor  
Arlington, Virginia 22209-3939

#### Phone:

Metal and Nonmetal Health Division (202) 693-9630  
Coal Health Division (202) 693-9510

\* Mention of specific brands is for descriptive purposes only and does not imply endorsement by MSHA.