

OH-94-1 Supplied Breathing Air Systems Are Inadequately Maintained
OFFICE OF HEALTH

HEALTH HAZARD ALERT

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Supplied Breathing Air Systems Are Inadequately Maintained

Several workers have died as a result of using supplied breathing air systems (SBAS) that are not maintained adequately or designed properly.

The National Institute for Occupational Safety and Health (NIOSH) recently reviewed 11 related deaths that occurred nationwide from 1984 to 1988. These deaths were caused by the accidental connection of SBAS respirator air lines to inert gas supplies rather than to breathable air. When a respirator air line is connected to a gas source instead of a breathable air source, the user of the SBAS has little to no warning before losing consciousness, and possibly dying from suffocation.

All supplied breathing air respirators, whether set up for use with a suit, hood, or face piece must have a line (hose) with couplings (attachments) that are incompatible with couplings for unbreathable gas systems. NIOSH concluded that incompatible couplings would have prevented workers from connecting their air hoses to an unbreathable gas and dying. Four of the eleven deaths were caused when lines that normally carried breathable air were used for another purpose and not cleansed of unbreathable gas. Department of Energy (DOE) management and operating (M&O) facilities should institute a strict policy to prevent the use of any component of a supplied breathing air system for any other purpose.

DOE Order 5480.4 requires that DOE M&O facilities use couplings that are exclusive for breathing air, as mandated by Occupational Safety and Health Administration (OSHA) regulations and the American National Standards Institute (ANSI) Z88.2 Standard.

In 1990, OSHA investigated the death of a worker who suffocated as a result of breathing air from a cylinder marked "breathing air" that had not been properly reconstituted (air that is restored to a breathable condition from pure nitrogen and oxygen). The cylinder contained less than 1 percent oxygen. The new ANSI Standard Z88.2-1992 now requires that users and fillers of SBAS cylinders that contain reconstituted air or breathing air, test these cylinders for the proper oxygen concentration. ANSI Standard Z88.2-1992 requires that a supplied air respirator uses Type 1 Grade D breathable air, as defined in ANSI/Compressed Gases Association Specification G7.1-1989.

SBAS's equipment such as couplings, piping, reservoirs, cylinders, and compressors should only be used for breathing air. DOE facility supervisors must enforce:

- the incompatibility between supplied air respirator couplings and other gas couplings;
- testing of all breathing air cylinders, particularly those received from suppliers, for the proper oxygen concentration; and
- assurance that all breathing air systems comply with applicable standards.

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