



HAZARD ALERT – Oxygen Safety

On Saturday, August 16, 2003, a 51-year-old mine rescue team benchman with 18 years of mine rescue experience, was seriously burned while filling SCBA cylinders with pure oxygen. The victim was preparing to fill the cylinders by opening a ball valve allowing oxygen from the supply tanks to enter a Haskel Oxygen Booster System designed for oxygen service. The oxygen in a filter and the piping supplying the pump ignited combustible material within these components. The resulting fire burned through the filter and piping, engulfing the victim.



Best Practices

- Follow all manufacturer's instructions in operating and maintaining oxygen pumps to fill SCBA bottles. Ensure that operators are trained and aware of safe handling procedures pertaining to oxygen systems.
- Ensure that re-filling stations and maintenance areas are in a locked, air-conditioned room that is clean and free of dirt, oils, and grease and that signs are posted stating- "OXYGEN, NO SMOKING, NO OPEN FLAMES".
- Filling operations should never be conducted alone. A second person and a portable fire extinguisher should be immediately available during the filling process.
- All oxygen valves should be opened slowly to prevent the oxygen from heating and the valves should be positioned away from the operator.
- The cleanliness of oxygen systems is critical for their safe operation. Small combustible particles and oils could provide a fuel source for a fire and explosion if they enter a compressed oxygen system. Reference Compressed Gas Association (CGA) pamphlet G-4.1 *Cleaning Equipment for Oxygen Service*.
- All components and materials used in the system must be suitable for oxygen service. Aluminum components should be avoided. If you are presently using high pressure oxygen regulators which contain any aluminum exposed to high-pressure oxygen, replace them with regulators made of brass. Reference CGA pamphlet G-4.4, *Industrial Practices for Gaseous Oxygen Transmission and Distribution piping Systems* and NASA Technical Memorandum 104823, *Guide for Oxygen Hazards Analyses on Components and Systems*, <http://ston.jsc.nasa.gov/collections/TRS/techrep/TM104823.pdf>.
- Designate special tools, clean them and store them for Use With Oxygen Equipment Only.
- Always wear gloves when working on oxygen hardware: It keeps the oil from your hands off the parts.
- Keep dust covers over any unused inlets and outlets to keep any foreign material from entering the system.