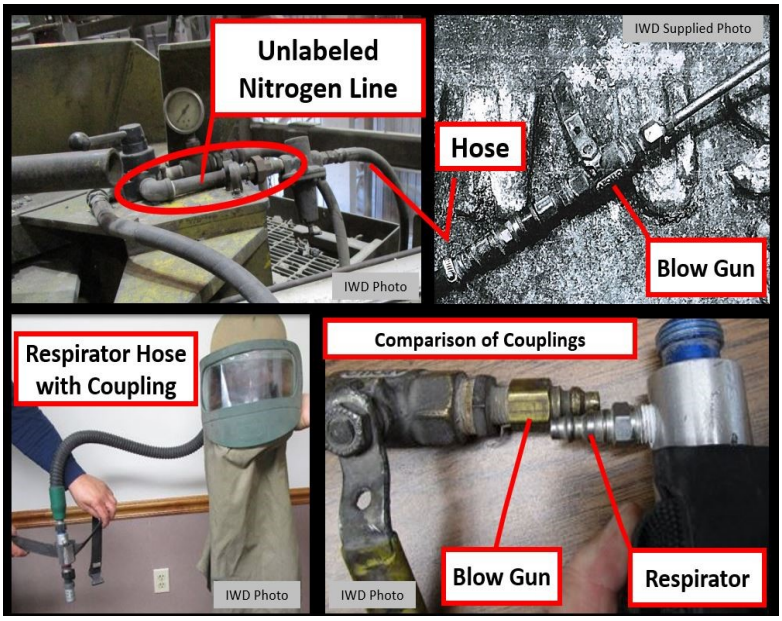
USW HEALTH & SAFETY

HAZARD ALERT

Abrasive Blasting Respirator Connected to a Nitrogen Line Leads to a Fatality

A crew of three contractors was brought in to perform abrasive blasting on a machine component at a USW-represented workplace. In the process of setting up, an unlabeled nitrogen line that was believed to be compressed air was connected to an air-supplied respirator. The unlabeled nitrogen line attached to the machine was also equipped with a hose, quick coupler and blowgun. (The blowgun was used to clean equipment.) The victim donned the air-supplied respirator, connected the respirator's air-supply line to the unlabeled nitrogen line and was asphyxiated.

An investigation found that although the couplers were not meant to fit together, their design allowed them to be connected. This allowed nitrogen to flow to the workers air-supplied respirator. The facility's nitrogen supply line had been marked approximately 42-feet from the machine, but the machine's valve, nitrogen line and hose to the blow gun were not labeled.



Unfortunately, USW workplaces have experienced similar fatalities where workers have connected respiratory protection to nitrogen lines believed to be breathable air.

Recommendations:

- Eliminate the use of nitrogen where possible and replace soft hoses with hard piping.
- Breathing air couplings must have a design that would make them incompatible and would make it impossible to force a connection with other gas systems to prevent inadvertent servicing of airline respirators with non-respirable gases or oxygen.
- Use and maintain compressed Grade D (or higher air quality) breathing filtration equipment in accordance with manufacturer's guidelines and ensure there is backup equipment in the event the primary system is not available or is out-of-service. Use stop work authority when needed.
- Qualified persons must use calibrated gas detectors for oxygen and other atmospheric hazards.
- Labeling must comply with ASME A13.1 Scheme for the Identification of Piping Systems. Pipe legends must be applied close to valves or flanges and adjacent to changes in direction, branches, and where pipes pass through walls or floors; and at intervals on shaft pipe runs sufficient for identification.
- Workers must be trained on nitrogen Safety Data Sheets. Nitrogen is colorless, tasteless, odorless and gives no warning. Nitrogen is sometimes called the 'silent killer' as humans in nitrogen enriched atmospheres and low in oxygen lose consciousness before realizing they are in danger.
- Employers must provide training on the use of all PPE, what and when it's required, including limitations in accordance with manufacturer's guidelines as last line of defense. As well as how to conduct a PPE Hazard Assessment and Job Safety Analysis (including pre-job) safety inspections by an agreed upon process between the employer and the union.
- Host and contractor employers (when needed) must have and exchange written safety programs (including respiratory protection), including training about the workplace. A manager of the host employer must work closely with the contractor to ensure compliance with the safety programs.
- For additional information on nitrogen, visit the CSB's video and safety bulletin on the hazards of nitrogen asphyxiation

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This hazard alert is based on an actual incident, and reflects our best understanding of the incident at the time it was written. However, many incidents have multiple causes; this alert may not cover all of them. The purpose of the alert is to illustrate workplace hazards; it is not intended to be a comprehensive report on the incident.