



COMPRESSED GAS ASSOCIATION, INC.

SAFETY BULLETIN

SB-28—2013

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SAFETY OF INSTRUMENT AIR SYSTEMS BACKED UP BY GASES OTHER THAN AIR

Nitrogen or other non-life supporting gases such as carbon dioxide often are used to back up instrument air to ensure a reliable supply. If the instrument air is used to supply breathing air for maintenance activities or if the instrument air is used for other purposes such as operating pneumatic tools in confined or poorly ventilated spaces, the individuals involved could be asphyxiated if the back-up system is activated and the non-life supporting gas replaces the air.

Instrument air is easily mistaken for breathing air and is considered innocuous because of its name. It is often referred to in conversations in plant surroundings as “instrument air” and it might be labeled as such. Similarly, the names “plant air,” “shop air,” “utility air,” and “compressed air” all suggest that the “air” contains the normal amount of oxygen found in the atmosphere. Contractors doing maintenance work can be particularly at risk for asphyxiation since they might not be familiar with the plant site or the source of the instrument gas.

Recommendations

To avoid asphyxiation caused by the accidental use of a non-life supporting gas in place of air, the following actions may be necessary:

- Labeling instrument air supplies so that they are not mistaken for breathable air. Instrument air supplies at utility stations could be labeled “Not For Breathing” (or other similar wording);
- Installing unique connections specifically for breathing air at utility stations;
- Using cylinders of compressed breathing air or portable breathing air compressors;
- Using only compressed air from cylinders or portable air compressors for operating pneumatic tools, cleaning, and other purposes when entering confined or poorly ventilated spaces;
- Using only a breathing air supply that is under the control of the individual(s) using the air. This recommendation applies especially to contractors;
- Locking out or blinding the back-up system while air is in use in confined or poorly ventilated spaces;
- Avoiding the use of nitrogen or other non-life supporting gases as a back up to an air supply system;
- Including in confined space entry procedures and/or work permits a reminder to confirm that air supplies are safe for breathing; or
- Training maintenance mechanics on the potential for asphyxiation from air supplies that are or could be backed up by nitrogen or other non-life supporting gases.

Employers and contractors are advised to consider these actions to prevent an accidental asphyxiation and ensure that breathing air systems meet the requirements contained in Title 29 of the U.S. *Code of Federal Regulations* (29 CFR) Part 1910.134 and 29 CFR Part 1926.103 or equivalent Canadian regulations [1].

References

Unless otherwise specified, the latest edition shall apply.

[1] *Code of Federal Regulations*, Title 29 (Labor), Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. www.gpo.gov

Additional references

Occupational Safety and Health Administration (OSHA) Fatal Facts Accident Report No. 36.
<http://www.msds hazcom.com/FATALFACTS/INDEX.HTM>

Occupational Safety and Health Administration (OSHA) Fatal Facts Accident Report No. 67.
<http://www.msds hazcom.com/FATALFACTS/INDEX.HTM>

CSA Z1006, Management of Work in Confined Spaces, Canadian Standards Association, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6. www.csa.ca

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