MBAA Safety Tool Box Talk

Brewpub Safety: Compressed Gas Storage and Usage

Brewpubs have a unique combination of kitchen, food service/bar, and beer production that requires different types of gas to be used. Every brewpub is unique but in general the brewery will have CO_2, oxygen, and perhaps nitrogen either in bulk or portable tanks. Bars' draft systems will have CO_2 and perhaps nitrogen gas. Propane might be used for forklifts, barbeques, or grills and maybe portable heaters in outdoor seating areas.

Compressed Gasses OSHA Standards

All compressed gasses must be properly labeled and stored and might require specific PPE when changing tanks. Please refer to the Tool Box Talk on this subject for more detailed information: Compressed Gasses and OSHA 1910.101.

CO_2 Use in Dispensing

CO_2 dispenses beverages by pressurizing a vessel and "pushing" the product to the point of dispense. Nitrogen might also be used to dispense and/or a combination of both in "alley gas."

CO_2 Use in Breweries

In addition to dispensing, CO_2 is also used in breweries to carbonate beer and to purge tanks, bottles, kegs, and/or cans before being filled with beer. Active beer fermentations produce CO_2 and in brewpub settings this excess CO_2 is usually venting from the tanks in the cellar into a bucket of sanitizer. If the cellar (or wherever fermentation vessels are located) does not have adequate ventilation there is a risk of CO_2 build up.

Carbon Dioxide Hazards

CO_2 poses several hazards in brewpub settings. It can overpressurize a vessel, causing it to rupture. CO_2 also has a risk of asphyxiation. CO_2 is colorless, odorless, and tasteless but can be detected when in high concentrations as it will sting your eyes and throat. When inhaled, carbon dioxide will quickly make you dizzy and cause headaches and could cause you to black out and eventually suffocate. CO_2 is denser than oxygen so if you pass out in a high-CO_2 environment you have an increased risk of suffocation. If you sense that you are in a high-CO_2 environment, get out immediately. If you see someone on the ground, going to help them puts you at risk; leave the area and seek professional assistance.

Nitrogen also poses the same risks of overpressurizing vessels and possible asphyxiation though is usually used in smaller quantities than CO_2 in brewpubs.

CO_2 Leaks

CO_2 leaks can be detected in hoses and fittings using soapy water or commercial detecting liquid, bubbles will form showing where the leak is. In the case of a walk-in cooler, CO_2 detectors and alarms can be put in place to warn employees that there is a risk of CO_2 exposure. Also small wearable CO_2 detectors can be worn by employees in areas where high CO_2 could occur.

Pressure Release Valves

Kegs, serving tanks, fermenters, bright beer tanks, and other vessels should have an ASME determined pressure limit that should not be exceeded. When using compressed gas to pressurize a vessel (keg, tank, etc.) or to dispense product it is important to know what the pressure limit of the vessel is and to ensure to not exceed it by limiting the gas pressure with a regulator. Gas regulators should be kept in good working order. Pressure release valves (PRVs) are made to release excess pressure to prevent over-pressurizing a vessel, every vessel from keg to fermenter that is under pressure should have one. Make sure that PRVs are made to release pressure before the vessel exceeds its ASME pressure limit. Pressure gauges and PRVs should be checked every time the vessel is cleaned, broken ones should be replaced immediately.

Proper Tank Storage

Bulk tanks should be properly installed by a professional. Portable gas tanks such as CO_2, nitrogen, and oxygen should be properly chained up in a cool, dry, ventilated area with their valves closed if not in use.

Propane tanks should be stored outside at least 6' from any building openings. Please refer to Compressed Gasses for more detailed information.

LINKS

- Compressed Gasses Tool Box Talk
- OSHA Compressed Gas Regulations

FOR MORE INFORMATION ON BREWERY SAFETY PROGRAMS, PLEASE VISIT THE MBAA SAFETY WEBSITE AT
www. mbaa.com/brewresources