

MBAA Safety Toolbox Talk



Hot Work Safety

Overview

Hot Work programs are written procedures intended to prevent the outbreak of fires, fire alarm activations, and smoke/odor migration involving open flames caused by work producing heat or sparks. This includes but is not limited to brazing, cutting, grinding, torch soldering, thawing pipes, and torches applied to roofing and welding.

The prevention and protection against fires and other hazards associated with Hot Work can be addressed by general requirements as specified by OSHA standard 29CFR 1910.252 and NFPA 51B.

Fire Prevention and Protection for Welding and Cutting

Flames and sparks are the main causes of fire or explosions during welding and cutting. Sparks can travel up to 35 feet in a work area. Sparks can also pass through wall/ceiling/floor openings or be lodged within cracks during the welding and cutting process. Combustibles such as wood, paper, rags, dust and flammable liquids can also increase the risk of fire and explosion.

Mitigating Hot Work Risk

The best way to mitigate the risk of Hot Work is to move the task to a designated welding/maintenance shop area that is made safe for Hot Work. Welding and cutting operations shall ideally be conducted in a separate, well ventilated room with a fire-retardant work surfaces and floor. When work cannot be moved (i.e. welding on large pieces of equipment such as a tank), a Hot Work permit is required before the task is performed.

Hot Work Roles and Training

Even before the permitting process begins, roles and responsibilities must

be defined by the written Hot Work program, and each employee trained in the roles as described in NFPA 51B. Typical roles include:

- **Hot Work Operator** - a qualified person authorized by management to perform Hot Work such as welding, brazing, soldering, and other associated work tasks.
- **Permit Authorizing Individual:** An employee who is trained and is authorized to issue a Hot Work permit by management.
- **Fire Watch:** An employee who is trained in Hot Work safety and who monitors the Hot Work area for changing conditions, detects fires and extinguishes them if possible.

Hot Work Permit

If welding, cutting or brazing operations cannot be conducted in an area/shop designed to facilitate safe Hot Work operations, then these activities require a Hot Work permit (as defined by your company's Hot Work program). These precautions help mitigate the risk of fire or explosion.

Minimum precautions include:

1. Ensure that the building fire sprinkler system is operational at the Hot Work location (if applicable). (If the sprinkler system/fire detection system (HAD's, smoke detectors, etc) must be disabled, inform the fire department and your property insurance company, and define alternate precautions to be taken during the outage and duration of outage.
2. All combustible materials within 35 feet of the Hot Work shall be moved to a safe location. If combustible materials cannot be moved, they must be protected by fire retardant covers or shielding.

3. Appropriate PPE is provided to employees performing Hot Work based upon a hazard assessment.
4. A fire watch is initiated during and for 30 minutes after all Hot Work has stopped, and the Hot Work approver has inspected the Hot Work area before resuming normal operations. See link below for an OSHA example of a Hot Work permit.

Health Protection, Ventilation and PPE Considerations

Under the OSHA Welding and Cutting standard, OSHA requires three factors to be used to consider ventilation requirements: dimensions of space in which the welding is to be done, the number of welders, and the possible evolution of hazardous fumes, gases, or dusts according to the metals involved.

OSHA also requires under the same standard proper PPE selection such as welding helmets, welding goggles, face shields, and proper shade number for lenses (found in a table in the standard).

Specialized Precautions

In some cases, additional safety precautions are required. Areas to consider include but are not limited to:

- **Piping** - Prior to cutting or welding on pipes, the operator must ensure the pipes are purged and empty. Proper ventilation is required in order to prevent inhalation of fumes such as hexavalent chrome.
- **Containers** - Must be cleaned to ensure no flammable materials or vapors are present.
- **Confined Spaces** - Atmospheric testing must be performed as well as other precautions outlined in the facility's Confined Space Program.
- **Atmospheric changes** – Oxygen levels could be higher than normal in certain operations (i.e. if a leak occurs when oxygen is used for

Wort Aeration). Higher levels of oxygen could lead to an explosion; atmosphere testing may need to be conducted to ensure oxygen levels are not above 20.8% (see Compliance Assistance Guidelines) prior to starting work.

In 2013, a contract welder died while sealing a crack in a fermentation tank at a US craft brewery. The space was oversaturated with oxygen. He lit his torch, and a flash-fire erupted. His hair and clothes disintegrated instantly. The welder died 75 days later. Conducting Hot Work needs to be pre-planned and taken seriously.

LINKS

- [OSHA Example of Hot Work Permit](#)
- [OSHA Standard for Welding, Cutting and Brazing](#)
- [OSHA Fact Sheet - Controlling Hazardous Fume and Gases During Welding](#)
- [Compliance Assistance Guidelines](#)

FOR MORE INFORMATION ON BREWERY SAFETY, PLEASE VISIT THE MBAA BREWERY SAFETY WEBSITE AT:
<http://www.mbaa.com/brewresources/brewsafety>