Safety Meetings are important!
They: get your employees actively involved
encourage safety awareness
help identify problems before they become accidents
motivate employees to follow proper safety procedures
We are happy to provide you with a monthly topic for your agenda.

ROUTE TO:

- ☐ General Manager
- ☐ Safety Coordinator
- ☐ Supervisor Dept. _____
- ☐ Other _____
- ☐ Date of Meeting _____

September 2023

Carbon Monoxide Safety Lockout/Tagout

Carbon Monoxide Safety

(Carbon Monoxide Poisoning, courtesy of Aliem.com)

Cold weather will soon be upon us and we need to remember to take necessary precautions to protect our employees from the serious effects of Carbon Monoxide. Carbon monoxide is a colorless, odorless, and tasteless flammable gas that is slightly less dense than air. It is toxic to animals that use hemoglobin as an oxygen carrier when encountered in concentrations above about 35 ppm.

Every year, workers die from carbon monoxide poisoning, usually while using fuel-burning equipment, like forklifts. However small gasoline-powered engines and tools also present a serious health hazard. They produce high concentrations of carbon monoxide (CO) which is a poisonous gas that can cause illness, permanent neurological damage, and death. Because it is colorless, odorless, and non-irritating, CO can overcome exposed persons without warning.

This can be especially true during the winter months when employees use equipment in indoor spaces that have been sealed to block out cold temperatures and wind. Symptoms of carbon monoxide exposure can include everything from headaches, dizziness and drowsiness to nausea, vomiting or tightness across the chest. Severe carbon monoxide poisoning can cause neurological damage, coma and death. Because it is colorless, odorless, and non irritating, CO can overcome exposed persons without warning.

Employers can reduce the chances of CO poisoning in the workplace by doing the following:

- Install an effective ventilation system that will remove CO from work areas.
- Maintain equipment and appliances, such as water heaters, space heaters, and cooking ranges that can produce CO in good working order to reduce CO formation.
- Consider switching from gasoline-powered equipment to equipment powered by electricity, batteries, or compressed air if it can be done safely.
- Prohibit the use of gasoline-powered engines or tools in poorly ventilated areas.
- Provide personal CO monitors with audible alarms if potential exposure to CO exists.
- Test air regularly in areas where CO may be present, including confined spaces.
- Install CO monitors with audible alarms.
- Educate workers about the sources and conditions that may result in CO poisoning as well as the symptoms and control of CO exposure.

In addition, if your employees are working in confined spaces where the presence of CO is suspected, you must ensure that workers test for oxygen sufficiency before entering.

Here are some guidelines you can train your workers to use to prevent CO poisoning:

- As a rule, gasoline-powered engines or tools should not be used inside buildings or in partially closed areas unless gasoline engines can be located outside and away from air intakes.
- Report any situations that might cause CO to accumulate.
- Be alert to ventilation problems-especially in enclosed areas where gases of burning fuels may be released.
- Always substitute less hazardous equipment if possible.
- Use equipment that allows for the placement of gasoline-powered engines outdoors at a safe distance from air entering the building.
- Avoid overexertion if you suspect CO poisoning and leave the contaminated area.
- Report any complaints of dizziness, drowsiness, or nausea promptly.
- Tell your doctor that you may have been exposed to CO if you get sick.

Types of Energy, Hazards and Lock-out

Lock-out/Tag-out is formally called *Control of Hazardous Energy*; it is the process to prevent the release of uncontrolled energy during equipment maintenance. The process involves more than just turning off the machine - the equipment must be fully disengaged. For example, if you turn off the breaker to a cryogenic pump, that doesn't remove the cryogenic conditions in the pump or the pressure built from the vaporizing cryogenic liquid.

OSHA reports that 10% of all work-related injuries are because lockout procedures were not followed or did not exist. These injuries may be prevented by establishing an effective lockout/tagout program; which includes:

1. Inspection of equipment by someone who is familiar with the equipment, its operation, hazards and other operations affected by the operation of the specific piece of machinery.
2. Energy control procedures - the procedures used to isolate energy sources, purchase and identification of lockout devices (locks, tags and blocks).
3. Training program for Authorized and Affected employees.

Type of Energy	Example	Potential Hazard	Lock-out
Electrical	Electricity running to Oxygen pump	Electrocution	Close breaker on electrical box. Lock out box. Isolates electrical energy supply.
Pneumatic	Gas pressure in line	Uncontrolled release and injury	Close tank valve, Drain liquid oxygen from line and vent residual gas, lock-out ,valve. Isolates/ removes compressed gas in the line.
Chemical	Ammonia leak	Abrasion of respiratory tract, burns to the eye.	Isolate area. None recommended, unless the company has a trained and properly equipped Emergency Response Team.
Thermal	Oxidizing liquid/gas	Cryogenic burn. Fire/Explosion	Use oxygen clean tools and Drain liquid oxygen from line and vent residual gas.
Hydraulic Line	Hydraulic liftgate pump	Sudden release of pressure and lift gate jumps/falls.	Locate Electrical Disconnect that powers a hydraulic pump. Isolates hydraulic pump motor.
Hydraulic Line	Hydraulic lines for lift gate	Sudden release of pressure and lift gate jumps/falls.	Locate Ball Valve. Stops flow/backflow in hydraulic oil circuits.
Steam	Steam boiler/furnace	Burns	Locate Ball Valve, Gate Valve, Butterfly Valve. Stops supply/return of steam.

Note: There is an exception for minor servicing activities that take place during normal operations, provided other safeguards are in place.

The OSHA website has several state Lockout/Tagout programs to follow; and if you have questions about the regulations, please contact me.

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