

Focus on Safety: High Pressure Lines

High pressure lines, whether compressed air hoses, hydraulic lines or water spray operations for daily decontamination, need to be properly managed as they represent an array of hazards to the operator as well as persons within the immediate area. As hydraulic systems become more complex, and pressures and temperatures rise, the potential for an operator or bystander to be exposed to leaks and bursts increases. The Centers for Disease Control and Prevention (CDC) reports that people that use high-pressure hose systems are at an extremely high risk for developing severe injuries that can include serious infection, disability and amputation. According to the Consumer Product Safety Commission (CPSC), approximately 20 percent of high-pressure washer injuries were chemical burns, and another 15 percent were lacerations to the fingers and hands. High-pressure hoses are a great way to remove debris and dirt from different items. However, it is essential to follow specific safety precautions in order to lower your risk of accidents and injuries. Information published by CPSC (Document #5069) indicates 13 high-pressure washer fatalities have occurred due to electrical shocks.

OSHA has recognized four basic hazards from high pressure lines:

- Injection Injuries
- Dangerous properties of fluid (toxic)
- Contact with hot fluid
- Other material movement (explosion, whipping hose, etc.)

In the case of injection Injuries, pressurized fluids can puncture and penetrate the skin and body tissue. Injected substances can then pass rapidly thru the subcutaneous tissue and enter the tendons and deep spaces of hand/body. A pinhole leak in a hydraulic hose that's under pressure can release toxic fluid at a speed of 600+ feet per second (That's over 400 mph). That's like being close to the muzzle velocity of a gun. Injection injuries typically occurs when operator is trying to wipe clear a blocked nozzle or when the operator is attempting to steady the gun with a free hand during the testing or operation of equipment.

Avoiding injection injuries:

- Check a hose for leaks while pressurized, run a piece of cardboard or paper along the hose, wear gloves, long sleeves, and safety glasses
- Don't "crack" high pressure connectors or lines to "check" for pressure and/or flow
- Shut down all equipment when looking for leaks
- Relieve pressures in lines (also known as "bleeding the line")
- Check to ensure pressure relieved Lockout/tagout - deactivation to zero energy

Other important safety practices include

- **Never point the high-pressure spray wand at another person.**

- After turning a high-pressure washer off, pull the spray-wand trigger to release water pressure in the hose.
- Never repair a damaged high-pressure hose. Always replace it.

Before operating a high-pressure hose, check all hoses to ensure they are connected properly to the washer and inspect the electrical cords for frays or other defects. Do not use the machine if any of its parts do not meet the manual's safety requirements. When operating a high-pressure hose, it is important to wear safety gear at all times. Safety glasses or goggles, steel-toed boots and gloves can help protect you from chemical burns and the severity of injuries that can be caused from the stream of high-pressure water. Different chemicals and detergents are run through the high-pressure washer to help clean different surfaces. As a result, the eyes and skin are at a high risk for receiving burns when chemically treated water splashes up from surfaces. When operating the high-pressure hose, be cautious of people or objects around you. Do not point the stream of water toward any wiring or electrical outlets because this could cause a fire or a power failure. The high-pressure water destroys electrical wiring, which could cause a spark and create a fast-moving electrical fire. Always monitor the area where you are working and turn the high-pressure stream off if anyone approaches you. When using a high-pressure washer, it is important to keep a safe distance of 8 to 24 inches between the hose's nozzle and the surface being cleaned. This will lower the risk of any debris or chemicals coming in contact with your skin. The Consumer Product Safety Commission has recalled several high-pressure washers in the past due to a high risk of bone fracture and laceration hazards. The CPSC determined that some pressure washers and their air compressors contain plastic hubs that can burst and hit the user's body, causing severe injuries. It is important to check the CPSC website to ensure that your high-pressure washer has not been recalled.

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