

## Line Pressures?

**If you have 100 psi in a 12" line and 1,600 psi in a 3" line, which is more dangerous?**

*"High pressure is often considered dangerous, but low-pressure systems can be just as dangerous. Don't automatically think that low pressure systems are safe or can't hurt you"*

### Pressure defined:

Pressure is the continuous physical force exerted on or against an object by something in contact with it, or the force exerted per unit area. Therefore,  $\text{Pressure} = \text{Force} / \text{Unit of Surface Area}$ , and  $\text{Force} = \text{Pressure} \times \text{Surface Area}$ .

So, if you have 100 psi in a 12" line and 1,600 psi in a 3" line, which is more dangerous? Or, you can ask, what is the force by which a substance will leave a pipe? Doing the math tells us that 100 psi of fluid being forced through a 12" pipe would hit you with a Force of 11,300 pounds. Surprisingly, 1,600 psi exiting a 3" line would hit you with 11,269 pounds of force, virtually the same as the low-pressure example! Low pressure and high pressure can both be dangerous, or even deadly, so don't be complacent when working around low pressure!

### Line of Fire Defined:

Line of Fire is the area in which a release of energy has the potential to result in harm. Here's another way to describe it. Line of Fire is trajectory from the muzzle of a weapon in the direction of the axis of the bore, at the time of fire. This means that your pressurized equipment is similar to the discharge of a firearm if the energy gets away from you!

### There are lots of situations involving pressure and line of fire:

- Bull plugging a line
- Removing a gauge from a tree with pressure behind it
- A pinhole leak in a hydraulic hose
- Water running through a frac line, etc.
- Pigging operations
- Ice plugs

**When working with ANY hazard it is critical to analyze what could go wrong, so when working with Pressure ask yourself:**

- Do I have an adequate plan for interacting with the pressures at hand?
- What are the pressure hazards I'm going to be working with?
- Where should I be standing while doing this task, and am I in a line of fire if something gives?
- Have I checked and communicated valve positions before re-energizing the system?
- If there should be pressure but there isn't, STOP and identify where the pressure is trapped?