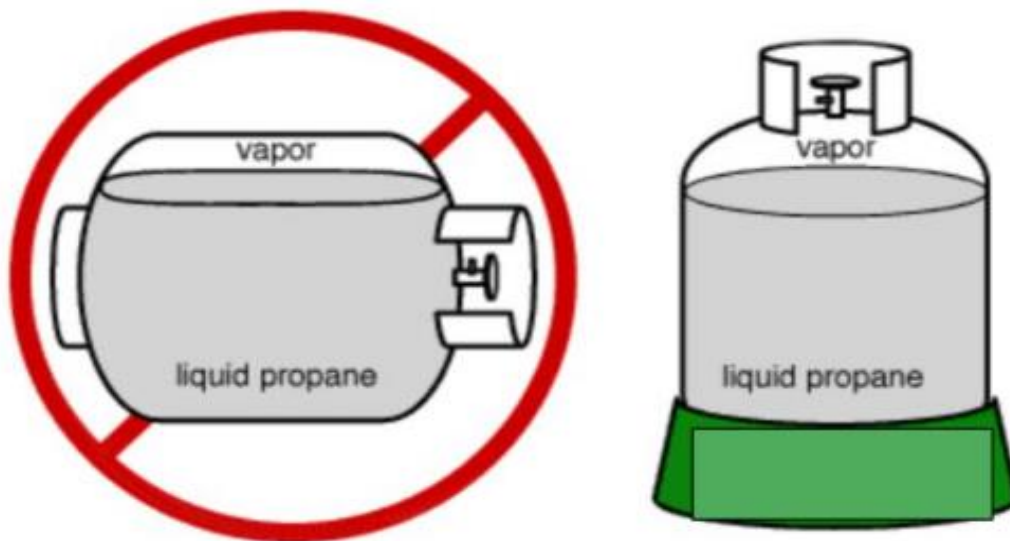


# Training Bulletin

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## Vapor Space



- A 20lb propane cylinder contains both liquid and vapor. The liquid at the bottom and the vapor in the upper part of the tank. Most boiling liquid explosive vapor explosion (BLEVE) failures of these cylinders originate in the metal of the vapor space.
- Propane cylinders are filled with liquid propane to the legal limit of 80% to allow for expansion with a temperature increase. The 20% vapor space above is the gas that feeds your BBQ etc. If vapor propane leaks out of the valve, it's not good. However, if the cylinder is laid down horizontally and it leaks, liquid propane would come out. The problem is that liquid propane expands 270 times to become vapor, resulting in a leak that is 270 times larger. This is extremely dangerous. Propane itself has a smell similar to rotten eggs, which is added to help detect leaks. **Upright tanks that are found on its side unless design to do so.**
- The most dangerous fire is one during which flame impinges on the upper portion of the cylinder or the vapor space. Heat from the flames increases the temperature inside the container and the increase in temperature causes the propane vapor to expand and weaken the metal shell of the cylinder. If the increase of the pressure inside the cylinder fails to open the pressure relief device and a continued rise in pressure occurs, the cylinder will eventually BLEVE.

**Quote:** How we view things, is how we do things. John Maxwell

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