

The Importance of Grounding

Volatile liquids, like fuel, can cause enough static electricity as they move through piping, hoses, or between containers to give off a spark. With the right air-to-fuel mix and humidity level that spark can ignite flammable vapors causing a fire or explosion. There are numerous instances of property damage, injuries, and even fatalities as a result of ignited fuel vapors. One way to prevent the buildup of static is to properly ground the vessels in which volatile fluids are being transferred. Grounding dissipates the static charges as they are being formed, which prevents them from sparking. The charge is harmlessly directed into the ground and dispersed.

Creating a Ground Connection

When grounding a container such as a metal drum or a pipe there are several things to keep in mind.

- Use a conductive wire, like copper, to create the ground connection.
- Make a solid connection to the ground by using something like a metal grounding rod driven several feet into the earth.
- Check that the grounding wire connects cleanly metal to metal to the container/pipe and the grounding source. If present, remove any paint where the grounding wire is connected.
- Check that transfer hoses and nozzles are free of rust, dirt, or other foreign materials as these can cause friction.
- Inspect bonding and grounding wires frequently for broken or loose connections. Use of a bare-braided copper wire is recommended by several organizations because it makes it easier to spot broken wires.
- Have a safety professional test the bonding and grounding to make sure the connection is secure

and properly grounded. This is especially important in flammable liquid dispensing areas.

Other Sources of Static Electricity

Beware of other potential sources of static electricity in areas around flammable liquids. Anything that creates friction can generate a static charge. This includes agitators, conveyor belts, steam lines, fans etc. If these or other potential sources of static electricity are in areas where flammable liquids are stored or dispensed, they also need to be grounded. Pouring liquids from a storage container to a portable container, such as a 5-gallon gas can, can also pose a static electricity risk. Make sure that the spout of the supply container is in constant contact with the lip of portable container. If you cannot permanently ground the containers, place the container being filled on a concrete or earthen floor. This helps reduce the electrical potential and is the reason that gas stations post signs stating that portable fuel containers must be filled on the ground.

What This Means for Counties

Working with flammable or volatile liquids requires numerous safety precautions. The risk of fire or an explosion caused by static electricity can be greatly reduced by properly grounding storage containers, hoses, pipelines, and any other source of friction in the area. For more information on the importance of grounding or for additional safety information on working with flammable or volatile liquids, contact CTSI Loss Prevention at 303-861-0507. [ctsi](http://www.ctsi.org)