

## Static Electricity – and the Safety Hazard When Refueling

The discharge of static electricity while dispensing fuel is a serious hazard that can potentially result in a catastrophic fire or explosion. To help you understand the need for bonding and grounding of fuel dispensing equipment, the following information is offered. It can help you identify conditions and situations that are hazardous and provide you with knowledge to make decisions that you can (literally) live with.

Much of the research on bonding requirements involves dispensing fuel from Marine Service Stations. All piping, tanks, valves and dispensing equipment must be bonded continuously so that all non-current-carrying metal parts have the same potential to ground. This is especially important at the dispensing hose and nozzle because fuel passing through a hose creates static electricity. The risk of static electricity discharge is greatest when the nozzle is being removed from the tank being filled.

All dispensing equipment including pumps, hoses and nozzles must be *Underwriters Laboratories* (UL) listed for the intended usage. This UL listing ensures that the hose and nozzle are designed to provide a continuous bond from shoreside equipment to the tank being filled, which allows static electricity to flow to ground. When the hose and nozzle are not bonded to shoreside equipment, static electricity dissipates slowly. Under these conditions, when the nozzle is removed, a spark is likely to occur.

To avoid static electricity discharge, all equipment must be bonded. If UL listed equipment is not used, it is necessary to attach a bonding wire from shoreside piping to both the nozzle and the tank being filled.

Pumping from a truck is a different situation, and requires that a bonding wire be attached anytime flammable liquids are discharged into a top fill tank. Trucks are insulated from ground by rubber tires, so when a bonding wire is attached to the tank being filled, a continuous path to ground is provided. But the length of time required for static electricity to dissipate varies. If the bonding wire is removed before static electricity is dissipated, a spark is likely to occur. Therefore, grounding the truck in addition to bonding to the tank being filled addresses this issue and is required by OSHA regulation. Grounding trucks during fuel dispensing is prescribed in National Fire Protection Association (NFPA) guidelines as well. Allowing a few minutes before removing nozzles when the pumping is complete also helps assure that static electricity has dissipated.

Many workers are aware of these requirements but for some reason do not take the time to follow them. Bonding while dispensing diesel fuel is also a commonly overlooked practice. Diesel fuel is considered a combustible liquid and because the flash point is above 100 degrees Fahrenheit, many of the safety codes exempt bonding requirements. The code does require bonding and grounding as discussed above, however, when diesel fuel is pumped into a container that has previously held a higher grade product.

Static electricity is "an *accumulation* of electric charge on an insulated body." *Don't set it free* to disperse and create havoc in the presence of flammable and combustible fuels.