



# Loss Control Insight

## STATIC ELECTRICITY

### Static Electricity Can Set Off Fatal Explosions

Most of the time, the worst harm that can come from static electricity is an electrical shock when we touch a doorknob.

But in some settings, static electricity can cause terrible explosions and fires. A spark from static electricity can be all that is needed to set off explosions of flammable liquid vapors, certain gases and dusts.

If you work around any of these substances, you need to learn the correct procedures for preventing static electric sparks. These procedures require careful, thorough and specific training, and this safety talk is just a brief introduction to the subject. In many cases, reduction of hazards requires specially engineered designs.



How Ben Franklin got famous and brother Eli got electrocuted.

Static electricity is generated in many substances and processes. It can build up in moving materials such as products which are being blended or conveyor belts moving over rollers. Even flowing water actually generates static electricity.

If the static electricity builds up and can not find its way to ground it discharges as a spark. Such a spark goes unnoticed in most situations. But it can set off an explosion in the presence of some substances and certain atmospheres. Examples are flammable liquid vapors such as gasoline, explosive gases such as carbon monoxide and propane, or even dusts such as flour or metal powders.

There are a number of procedures designed to prevent the build-up and discharge of static electricity. Some of these include the following:

- **Grounding:** This permits static electricity to find its way to the ground. An example of grounding is running a wire to a rod which goes deep into the ground. Grounding apparatus may be either portable or permanent.
- **Bonding:** This allows the static electricity to move from one object to another, equalizing the charge and preventing a spark. An example is the bonding clamp and wire apparatus which connects a flammable liquid drum and a safety container.
- **Humidifying:** In some instances, the atmosphere is humidified to reduce friction and static accumulation.
- **Inerting:** In other situations, the atmosphere of a confined space is filled with an inert gas which displaces the flammable vapors or gases. An example is displacing a flammable gas with an inert gas such as nitrogen. (Note: This, of course, creates other critical hazards such as a lack of oxygen.)

- Using materials, equipment and clothing which are less likely to generate and discharge static electricity: For example, cotton clothing rather than synthetic fabrics may be recommended for working in situations where static electricity is a hazard. You might be required to wear special footwear which allows static electricity to be conducted to the ground. There would also likely be rules about taking loose objects from your pockets before entering a hazardous area.

As part of your safety procedures in areas where static electricity is a hazard, you should make sure that grounding and bonding wires and clamps are in place and are also in good condition. As part of your routine, you would look for defective or misplaced clamps, worn clamp points, and dirty grounding or bonding surfaces. These defects can make the apparatus ineffective and allow dangerous static electricity to build up and discharge as a spark.

If you work in or even occasionally visit any area where static electricity is a hazard, take these precautions very seriously. Workers are killed, and workplaces are devastated every year in explosions caused by static electricity.

As always ~ be safe!