

## **Static Electricity – It can be a shocker!**

Remember when you dragged your feet across the rug and then touched your brother or sister's ear! That got their attention! We have also seen the effects of "static cling," when our clothes cling together in the dryer.

Static electricity, as a source of ignition for flammable vapors, gases, and dusts, is a hazard common to a wide variety of industries. A static spark can occur when an electrical charge accumulates on the surfaces of two materials that have been brought together and then separated (between two solids, between a solid and a liquid, or between two immiscible liquids, i.e., incapable of mixing). One surface becomes charged positively and the other surface becomes charged negatively. If the materials are not bonded or grounded, they eventually will accumulate a sufficient electrical charge capable of producing a static spark that could ignite flammable vapors, gases, and dusts. Some common processes capable of producing a static ignition are as follows:

- The flow of liquids (petroleum or mixtures of petroleum and water) through pipes or fine filters.
- The settling of a solid or an immiscible liquid through a liquid (e.g., rust or water through petroleum).
- The ejection of particles or droplets from a nozzle (e.g. water washing operations or the initial stages of filling a tank with oil).
- The vigorous rubbing together and subsequent separation of certain synthetic polymers (e.g. the sliding of a polypropylene rope through PVC gloved hands).

Preventing static electricity as an ignition source can be accomplished through bonding, grounding, or possibly substitution. Bonding is the process of connecting two or more conductive objects together by means of a conductor.

Grounding is the process of connecting one or more conductive objects to the ground. If grounding or bonding is not possible, substituting may be an alternative. For example: some absorbent pads used in shops can produce a static spark when separated. If the conditions are right, a static spark could be a source of ignition for flammable vapors. By substituting a non-conductive pad as an alternative, the risk of static spark can be eliminated.

As we live in a dry climate, be aware that static electricity is a constant safety hazard.