

A little static can cause a big fire!

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There have been many incidents where a static electric discharge was the likely ignition source for a fire or explosion. In 2007, two incidents were investigated by the US Chemical Safety Board (CSB)¹. One was caused by poor grounding of an intermediate bulk container (portable tank) while filling with a flammable solvent (1), and the other by a poorly grounded level float in a storage tank which was being filled from a tank truck (2). Other incidents have been caused by poor grounding/bonding of tanks, portable containers, tank trucks, railroad tank cars, and static discharge from people.

¹ CSB Report numbers 2008-02-I-IA and 2007-06-I-KS, www.csb.gov.

Did you know?

- Static charge is generated by contact and separation of two different materials. Once generated, charge may remain on the materials until it finds a lower electrical potential, then it discharges. The spark can have enough energy to ignite flammable vapors, gases, or a combustible dust cloud.
- Static can be generated by fluids flowing through pipes, solids through ducts, and even by air flowing through ductwork or pneumatic conveyors.
- Mechanical conveying systems can generate static by rollers and belts contacting each other, especially if they slide over each other.
- Static sparks may be felt (a sharp “zap”), seen (small bluish arcs), or heard (a snapping sound).
- Non-conductive liquids such as benzene, toluene, and naphtha, generate static much more easily and dissipate charge more slowly compared to conductive fluids, such as water, alcohols, and acetone.
- Poorly grounded and bonded hoses are a frequent contributor to creating static.

What can you do?

- Always follow your plant grounding and bonding procedures before any material transfer operation.
- Make sure that grounding/bonding equipment in your plant is regularly inspected and tested.
- Inspect grounding/bonding equipment before each use to ensure it is in proper working order and that it attaches firmly (metal to metal) to the container. If it is frayed, or has a poor connection to ground, notify your supervisor.
- Inspect hoses prior to use. A damaged hose may have a broken grounding wire inside. Hoses should be regularly checked for electrical continuity.
- Non-metallic containers (for example, plastic or glass) are difficult to ground and bond. When using these containers, exercise additional caution and follow procedures. If there is no grounding specified, ask why not.
- If handling solids in plastic bags or with plastic liners in paper bags, ask an engineer for advice on proper procedures to prevent static sparks.

Managing static – a key part of reducing ignition sources!

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