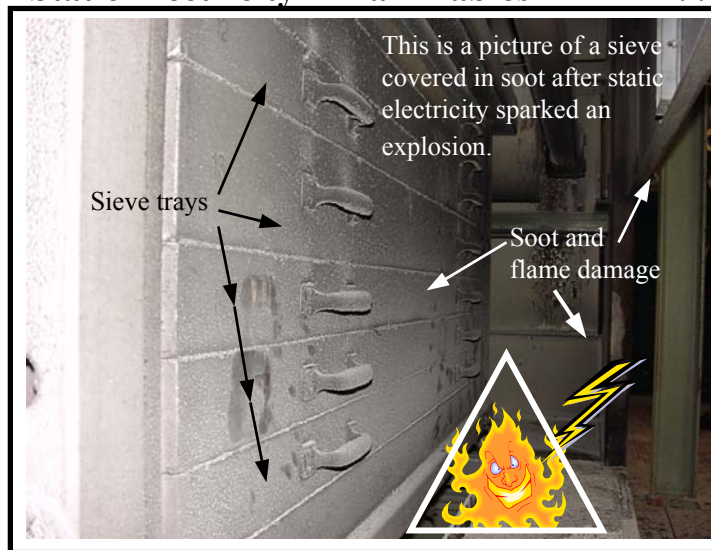


Static Electricity + Flammables + Air = ??

Here's What Happened:



By design, plastic beads fall by gravity through this sieve. The beads contain trace amounts of pentane, a flammable, volatile material which is liberated during processing. The sieve was designed with an air sweep to keep the pentane fume concentration below the flammable limit. One evening, when everything appeared to be operating as it should, the operators heard a loud **BANG!** They quickly investigated and saw flames coming out of the sieve. Quick action by the fire brigade controlled the fire and no one was injured, but the plant was down for repairs.

You Gussed it—Explosion & Fire !

How Could this have Happened?

- Plastic beads falling through air generate an electrical charge. When this charge is large enough, it discharges.

This is a static electrical spark!!

- These beads contained trace amounts of pentane, a volatile flammable material. As the beads fell, some of the pentane vaporized and made the atmosphere flammable.

- The air purge that was suppose to sweep the flammables out of the sieve was not working properly. This critical safety system failed—too little air flow allowed a flammable atmosphere to develop!

- The purge air flow system was not interlocked to the sieve operation so no alarm sounded at low air flow.

- And, as we all know—a spark in a flammable atmosphere = **KABOOM!!!**



PSID Members—check for “Static” in the free search area.

What Can You Do to Prevent Similar Problems?

- Regularly check **ALL** safe guards to be sure that they are still in place and working properly. This includes interlocks—are they there, are they working? Remember, air purges can be safeguards too.
- Be aware that static electricity may be anywhere. Good design and well maintained systems control it.
- Some equipment has grounding cables. If they are damaged, replace them quickly to remove the “spark” potential.
- Make sure that all three components of the fire triangle do not exist at one time and in one place.

Critical Safety Devices come in many forms. Know them and use them!