

Uncover Hidden Ignition Sources

Some ignition sources are obvious. A glowing cigarette, an active oxyacetylene torch, and a cascade of sparks and burning metal from a grinder are hard to miss. Others ignition sources may be hidden, such as glowing particles from past hot work, hot slag, a smoldering fire, or even unintended chemical reactions. Some causes of unintended chemical reactions include:

- Unstable chemicals — for example, a peroxide stored above its decomposition temperature or chemicals stored beyond their specified shelf life (Photo 1). For more information on chemical shelf life, see the Jan. 2006 Beacon.

- Incompatible chemicals stored together (Photo 2) may be accidentally mixed (July 2006 Beacon).

- Pyrophoric materials are self-igniting and are often the source of fires. Pyrophoric materials such as iron sulfide can form in petrochemical facilities if oxidized iron (rust) reacts with hydrogen sulfide contained in crude oil and its derivatives. Sodium hydrosulfite is a strong reducing agent that becomes pyrophoric when exposed to water (Aug. 2014 Beacon). A fire on a container ship in Barcelona harbor in 1996 (Photo 3) started in a container of sodium hydrosulfite.



What can you do?

- Understand your plant's work permit procedures for hot work and check for hidden sparks that could create a smoldering fire. Use up-to-date hazardous area classification drawings and ensure that you use tools and procedures appropriate for hazardous areas.

- Do not ignore combustible liquids because of their high flashpoint as sources of ignition. When these liquids are absorbed by porous materials, they might ignite spontaneously. Collect combustible material spills in closed metal containers.

- Follow good housekeeping practices. Cleanliness may not prevent all fires, but it is a good start.

- Look for signs of leaking organic liquids or heat-transfer fluids into insulation (*e.g.*, discoloration). Report problems and make sure that they are resolved.

- Understand your chemicals. What do the safety data sheets state about stability, storage conditions, hazardous reactions, and incompatible substances (July 2016 Beacon)?

- Follow your plant's procedures for material storage, especially for mixed material storage.

- If your plant starts using a new material, make sure procedures are revised to include these materials and that a management of change (MOC) review has been performed.

There's more than one way to start a fire!

©AIChE 2016. All rights reserved. Reproduction for non-commercial, educational purposes is encouraged. However, reproduction for any commercial purpose without express written consent of AIChE is strictly prohibited. Contact us at ccps_beacon@aiche.org or 646-495-1371.