

Ignition Sources – Once More

December 2016

Some ignition sources are fairly obvious. A glowing cigarette, an active oxyacetylene torch, or a cascade of sparks and burning metal from a grinder is hard to miss. Hot work may also leave behind glowing particles, hot slag, or a smoldering fire in hidden places. A raging fire may follow many hours after the work is finished.

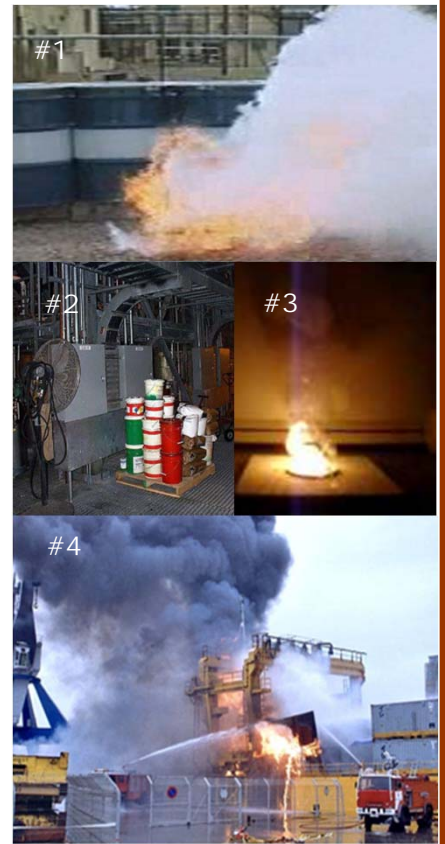
Ignition sources from unintended chemical reactions may be “invisible” too. Here are some examples:

Unstable chemicals: For example, a peroxide stored above its decomposition temperature (#1), or chemicals with a specified shelf life stored too long (January 2006 *Beacon*).

Incompatible chemicals stored together and accidentally mixed (#2, July 2006 *Beacon*).

Enhanced oxidation by increased surface area: For example, activated carbon plus organic vapors (April 2003/February 2014 *Beacons*), oily rags (May 2005 *Beacon*), or combustible liquids leaked into insulation.

Pyrophoric materials: Self-igniting materials (#3) are regularly reported as fire starters. For example, sodium hydrosulfite, a strong reducing agent, becomes pyrophoric when moist (August 2014 *Beacon*). A fire on board a container ship in Barcelona harbor in 1996 (#4) also was initiated in a container of sodium hydrosulfite. Pyrophoric materials such as iron sulfide can also be formed in petrochemical installations from reaction of oxidized iron (rust) and hydrogen sulfide present in crude oil and derivatives.



What can you do?

- Understand your plant's work permit procedures for hot work and ensure that sparks do not hide and 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 the high flash point. When they have been absorbed on porous material, they might ignite spontaneously. Collect combustible material spills in closed metal containers.
- Cleanliness may not be all you need to prevent fires in your plant, but it is a good start!
- Look for signs of leaking (for example, discoloration) of organic liquids or heat transfer fluids into insulation as you go about your job. Report problems and make sure they are fixed.
- Know your chemicals! What do the Safety Data Sheets state about stability, storage conditions, hazardous reactions, and incompatible substances (see July 2016 *Beacon*)?
- Follow your plant procedures for storage and mixed material storage.
- If new materials are introduced into your plant, check if the procedures are adapted to include them and that a management of change review (MOC) has been done. If not, ask your supervisor to update procedures and consider an MOC.

There's more than one way to start a fire – control them all!