CCPS
An AIChE Industry Technology Alliance

*P*rocess *S*afety *B*eacon

Messages for Manufacturing Personnel

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Reactive Chemistry:
Not always when or where you want it!

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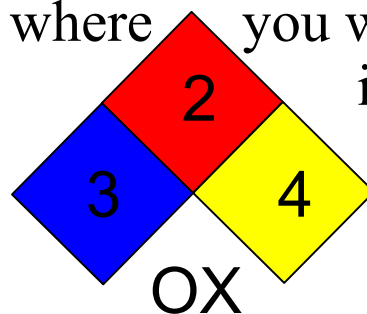
Here's What Happened:

A thermally unstable material (a peroxide -- but many chemicals have similar properties) was being fed from a weigh tank to a reactor. Normal practice is to empty the weigh tank, leaving the transfer piping empty. In this instance, a leak developed. A quick repair was expected so valves were closed leaving the pipe FULL of peroxide. The reactor temperature was well above the point at which the peroxide decomposes. Heat from the reactor slowly warmed the material in the piping as the repair effort continued past the expected completion time. The material finally reached its decomposition temperature. The result--overpressure that ruptured the piping. Luckily, there were no injuries, just a lot of surprised people.

> *Unstable materials need CONSTANT attention—especially during non-routine operations!*

How Do I Know If I Have "Unstable Materials"?

- You may already have the information in your own process safety information (PSI) files
- Check the MSDS—many have a Stability and/or Reactivity section
- Check the manufacturer's information—sometimes it's there
- NFPA or DOT hazard rating are often helpful
- ASK someone in technical or safety

What Can I Do?

This incident is a great example of how things can go wrong!

- You must be constantly aware of temperature when handling thermally sensitive materials
- Blocking in unstable materials often invites an incident
- Repairs can cause abnormal operations and new hazards
- If a material can be heated to its decomposition point, special procedures and precautions are needed
- Heat can come from almost anywhere, including connected equipment, the sun, heat tracing, mechanical energy, welding and…

Contact us at ccps@aiche.org or 212-591-7319.   http://www.aiche.org/ccps/safetybeacon.htm