

Reactive chemistry incidents can happen anywhere!

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Reference: "Cleaning accident kills Buffalo Wild Wings Employee,"
Chemical and Engineering News, November 18, 2019, p.6.



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Do you think that you do not have to worry about potential reactive chemistry incidents because your workplace has no intentional chemical reactions? Don't be fooled – reactive chemistry incidents can happen almost anywhere. Here are two examples.

On November 7, 2019, in Burlington, Massachusetts, USA, a restaurant employee accidentally spilled a cleaner called "Scale Kleen" on the floor. Later, another employee began to clean the floor using a different cleaner, called "Super 8." These materials react to release toxic chlorine gas. The restaurant was evacuated. Unfortunately, the restaurant manager was overcome by the fumes and died in the hospital. According to the material safety data sheets, Super 8 contains nearly 10% sodium hypochlorite (bleach), more concentrated than the usual household bleach. Scale Kleen contains both nitric and phosphoric acids, at a total concentration of nearly 40%.

A few days later (Nov. 19), at a restaurant in nearby Woburn Massachusetts, two cleaning solutions were mixed, and toxic fumes were released. The restaurant was evacuated, and three people were hospitalized as a precaution.

Did You Know?

- Many materials used in cleaning and maintenance operations are potentially reactive with other substances. This includes cleaning products; their reactivity may be one of the reasons they make good cleaning agents.
- The reactivity of bleach with other materials, such as acids, is a known hazard. The June 2016 Beacon discusses the reaction of sodium hypochlorite bleach with ammonia to generate toxic chloramines.
- Potentially reactive cleaning materials may contact your process chemicals if they are not completely removed from the equipment following cleaning operations.

What Can You Do?

- Read the safety data sheets for all materials used in your workplace., including those used for cleaning, maintenance, lubrication, water treatment, and utilities such as heating or cooling fluids.
- Recognize that safety data sheets cannot describe all potential reaction hazards of a material. Ask a chemist or other technical expert about potential reactivity hazards among the specific materials in your plant.
- Consider all potential reactivity hazards whenever you bring a new material into your plant.
- Follow cleaning procedures rigorously, especially make sure all cleaning agents have been completely removed before returning equipment to service.
- Never mix materials without understanding potential reaction hazards and necessary safeguards.
- Read the June 2016 Beacon (available at <https://www.aiche.org/ccps/resources/process-safety-beacon/archives>) for more information about bleach reactivity hazards.
- Share this Beacon with family and friends – this type of incident can happen anywhere, including your home!

Never mix materials unless you know it is safe!