



Process Safety Lessons From a Ship Fire

April 2022



▲ A fire occurred on a U.S. Navy ship, lasting a total of five days. Images courtesy of U.S. Navy.

On July 12, 2020, a fire broke out on the U.S. Navy ship *USS Bonhomme Richard* while docked in San Diego, CA. The fire burned for five days and spread to 11 of the 15 decks of the ship. Temperatures from the fire exceeded 1,400°F (760°C). The financial loss was more than three billion dollars, and the ship was decommissioned.

Following the fire, the U.S. Navy conducted a study of 15 fires that occurred on ships in the 12-year period before the *Bonhomme Richard* fire. This study identified multiple recurring causal factors, both in how the fires started and how they escalated. Several of the causal factors in the Navy ship fires are also potential causes for a fire to occur or escalate into a more severe incident in the chemical process industries (CPI).

Reference: U.S. Navy, "Major Fires Review Executive Summary, Commander, U.S. Fleet Forces Command, Commander, U.S. Pacific Fleet, July 15, 2021," <https://www.documentcloud.org/documents/21089015-for-release-major-fires-review-19-oct-21> (Oct. 19, 2021).

Did You Know?

Some findings from the U.S. Navy investigation that are relevant to process industry plants include:

- Unauthorized materials were brought onto the ship.
- Combustible and hazardous materials were handled and stored improperly.
- Procedures were not followed, and inspection programs were ineffective.
- Excessive amounts of combustible and hazardous materials were stored in portable containers with no recognition of the fire risk.
- There was no comprehensive review, approval, or oversight of hot work. In addition, no temporary fire protection or fire response plan was in place.
- Personnel were not proficient in the use of fire detection and suppression systems and emergency communications equipment.

What Can You Do?

- If your plant handles flammable, combustible, or other hazardous materials in portable containers, always store the containers in properly designated areas that are compliant with regulations and standards for storage of those materials.
- Return unused material in containers to designated storage areas immediately when you determine they are no longer needed in the production area.
- Rigorously follow your plant procedures for hot work and other work that requires a permit.
- Review other Beacons that discuss hot work (e.g., June 2018, May 2020, August 2020, August 2021, March 2022). Visit: www.aiche.org/ccps/process-safety-beacon.
- Participate in emergency drills and report any issues you observe during the drills so that emergency procedures can be improved.
- If your plant has not had an emergency drill recently, suggest that one be conducted.
- Skim through the referenced U.S. Navy report and look for other lessons relevant to your plant.

Look for process safety lessons in the news!