

## Some short-cuts may cut lives short

October 2024



**Figure 1:** The fires after the explosions took 10 hours to be brought under control (ref 1)

Thirty-five years ago, 85,000 pounds (39 metric tons) of process gas, mostly ethylene, were released from a plastics plant in Pasadena, Texas. The cloud ignited two minutes later. Debris flew as far as 6 miles (10 km), luckily hitting no one. The following fire caused the explosion of a 20,000-gallon (75 m<sup>3</sup>) isobutane tank; other explosions followed. On the site, 23 employees and contractors were fatally injured. Another 314 workers were injured. Extensive damage to the site and business interruption caused financial losses of about \$1.5 billion US.

Workers were clearing a settling leg (pipe to collect polymer) on a polyethylene loop reactor. Company and industry safety standards required isolation by means of a double-block system or the use of a blind flange. However, the plant used a simpler procedure with a single isolation point. An effective permit-to-work system for employees and contractors was also not enforced by the company.

The accident investigation established that the single ball valve isolating the settling leg from the process was opened at the time of the release. The air hoses to the valve had been connected, which was against procedures, and cross-connected so that the air for closing the valve opened it. The investigation concluded that process gas was intended to push down some polymer that blocked the pipe, but that could not be confirmed. OSHA reported many deficiencies, but this Beacon will look at the safe work procedures.

“Looking Back: PHILLIPS 66 Explosion, Pasadena, TX”, P. Sibilski, North Jersey Section AIChE Virtual Meeting, May 27, 2020).

### Did You Know?

- Human error is always a possible source of system malfunction. But applying both engineering and administrative controls can prevent serious incidents.
- Many standards and regulations originate from previous incidents. The intent of these standards is to protect workers from risks they cannot afford to learn through experience.
- Many incidents happen when safeguards (engineering or administrative) fail or are deliberately by-passed.
- A non-standard method may have been used once by exception only. With human nature liking easier ways to do things, the exception becomes routine. This normalization of the deviance is a dangerous behavior, not a safe thing to do!
- The right way to open energized equipment is to use isolation and Lockout/Tagout methods accurately.

### What Can You Do?

- Understand the major hazards at your plant. Know the critical safeguards against those hazards and be sure those safeguards are working properly.
- Do not bypass safeguards without an assessment, special procedure, and additional safeguards that were approved by a Management of Change (MOC) process. The temporary removal or bypassing of safeguards should never be considered normal procedure.
- If you think a process or procedure could be made simpler, submit your idea to your supervisors. It may be an improvement, but it must be assessed to be workable and safe and get proper review and authorization.
- If you see someone taking shortcuts, point out the right procedure – it is to everyone’s benefit to do things safely.
- Everyone must have the operational discipline to “carry out each task, the right way, every time”.

**Do things right the first time; there may be no time later**