

# Hydrogen Vents



EPSC

EPSC Learning Sheet April 2021

## What Happened:

Hydrogen was released by a PSV and ignited, causing damages. The initially installed vent line was dismantled after being folded by high reaction forces during a former release. It was decided to wait until the next turnaround to repair the vent line.

### Relevant Process Safety Fundamental



Report deficiencies of safety critical equipment

## Aspects:

- Expect hydrogen to ignite during process vents due to atmospheric electrical effects or charged dust particles.
- Avoid flow-diverting by weather protection hoods or bent line ends. Use upwards outlet designs as shown in picture C.
- Design aspects: H<sub>2</sub> release points should be above roof top. Assure vent piping has a flame arrester to avoid back fire and is well fixed to handle release forces.
- Flush hydrogen vents with inert gas after the discharge process to prevent explosive mixtures in the vent line.
- Use dispersion modeling to estimate the consequence: Hydrogen cloud size & heat effect upon ignition.

Manage hydrogen vents well

Downward bent discharge tube

