

## PPE only works when you wear it correctly!

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Figure 1. Valves isolating the pressure gauge



Figure 2. Plugged pressure gauge from the incident

On May 4, 2023, approximately 790 pounds (358Kg) of a hydrocarbon mixture containing hydrogen sulfide ( $H_2S$ ) was accidentally released at a refinery in California. Exposure to the toxic  $H_2S$  gas seriously injured one employee.

Four operators were sent to the field to replace a broken pressure gauge. Because the lower valve (blue oval) was visibly broken, the operators closed the valve closest to the pressure gauge (blue rectangle). They were not aware that an internal obstruction prevented fully closing the valve. One operator began removing the pressure gauge; there was no indication of residual pressure while unscrewing the gauge. After the gauge was removed, the process pressure likely dislodged debris in the piping and released flammable hydrocarbon mixture containing toxic hydrogen sulfide. None of the operators wore respirators to protect them from the  $H_2S$  vapor. Three operators regained consciousness and evacuated. The fourth operator was unconscious and was rescued by emergency responders and received medical treatment at a hospital.

The investigation determined that the release was caused by failure to effectively isolate the piping before removing the pressure gauge. The plugged gauge gave a false sense of safety. The severity of the incident was increased by the failure of the operators to wear appropriate personal protective equipment (PPE).

### Did You Know?

- PPE is an administrative safeguard that requires people to know the proper PPE for the job, and to ensure it is worn properly. It includes protection from bodily and respiratory exposures.
- Operating and maintenance procedures should specify the PPE required to safely perform the task.
- Safety Data Sheets (SDS) have a section on recommended PPE.
- There are several reasons why PPE might not be effective:
  - It is not used or not used properly.
  - User is not properly trained on using the PPE.
  - The specified PPE is not correct for the task.
  - The task changed.
  - The PPE is in poor condition.
- PPE cannot prevent the release of hazardous materials but is a critical line of defense when a loss of containment occurs.

### What Can You Do?

- Before starting a task consult the procedure to know what PPE that is required. The SDS for the materials can also provide guidance on proper PPE.
- Inspect your PPE before use to ensure it is in good condition.
- Wear the required PPE until the task is completed and the hazards are contained.
- Inspect your PPE regularly to ensure that it remains in good condition and key parts such as respirator cartridges are not expired.

**Take care of your PPE and it will take care of you.**