

## BSEE: Poor preparation prior to hot work leads to fires

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The United States Bureau of Safety and Environmental Enforcement (BSEE) has published [Safety Alert #447](#) relating to incidents in which fires were caused following hot work.

### What happened?

Recently, several fires occurring during hot work have been reported to BSEE. BSEE defines hot work as any job with the potential to create an ignition source, such as an open flame, sparks, or high temperatures. Examples of hot work include welding, using acetylene torches, and grinding and cutting metal.

### Incident 1:

As a construction crew removed skid pads with a torch on the top deck, slag and sparks fell through the grating onto the manway cover of the water skimmer below, igniting a fire. The fire self-extinguished shortly thereafter as the fire watch was securing a dry chemical fire. The water skimmer had been cleaned a week prior in preparation for vessel entry but had not been deemed inert, and the oil dump lines were later found to be full of flammable condensate. Although gas was not detected in the area around the skimmer before starting work, an 8% lower explosive limit was later detected at the manway cover. Workers used fire retardant tarps earlier in the job, but when the workers moved to a new location above the water skimmer, they did not take the retardant tarps with them.

### Incident 2:

While cutting grating with an Oxy-Acetylene torch, falling sparks ignited gas leaking from a pinhole on a gas sales riser located 4m below the grating. The fire watch noticed and **stopped the job**. A worker used a 15kg ABC fire extinguisher to extinguish the flame. Although a gas detector had measured a 0.0% lower explosive limit before the work started, the gas leak occurred in an area not easily accessible for inspection or gas monitoring.

### Incident 3:

Before a construction crew removed steel bar grating from beneath a building, it was elevated a few centimetres to provide a distance barrier between the subfloor and the torch cutting below. Saltwater was used to saturate the subfloor, and water was re-applied periodically. The crew finished their work, and the fire watch remained on location for an additional 30 minutes. A fire was noticed on the lower

#### IOGP Life Saving Rules:



Bypassing safety controls



Hot work

side of the building 15 minutes later, which was extinguished with the saltwater hose. It was found that the distance barrier may not have been sufficient to prevent a fire, and that the combustible surfaces should be saturated with water during the fire watch period as well as during the job.

## Therefore, BSEE recommends:

- Using flameproof tarps or other fire-resistant guards to protect equipment from falling sparks and excessive heat. Scaffolding may be required to cover elevated areas.
- Covering and sealing nearby deck and skid drains before starting hot work to prevent flammable gases from entering the area.
- Checking skid pans (visually and with a gas detector) for residual flammable liquids and flooding them with water if possible.
- Designating a fire watch during jobs involving open flames, sparks, or heat sources. Operators should maintain the fire watch for at least 30 minutes after welding activities end, recognizing that some jobs may require longer periods.
- Ensuring the fire watch is positioned well to view all hazardous areas near the hot work location.
- Locating and inspecting the closest fire extinguisher before starting hot work. If an extra fire extinguisher is available, move it near the work area before starting the job.
- Verifying that any nearby container previously containing hydrocarbons has been properly flushed and deemed inert before starting hot work.
- Using a designated safe welding area for hot work when possible.
- Completing a hot work permit and Job Safety Analysis and reviewing them immediately before starting the job. All personnel involved with the job should participate in this process.
- Using gas detectors to continuously monitor the area and ensuring that flammable gases are not present before and during hot work.
- Testing areas where sparks are likely to fall. Remember: gas detectors may be less effective at finding gas leaks in well-ventilated areas.
- Calibrating gas detectors regularly, and bump testing them before each use.

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