

Welding Containers

In two recent incidents in Ontario, explosions during welding fuel tanks killed three workers. In the first, two workers welding a 150-gallon diesel fuel tank were fatally injured. In the second, a 500-gallon gasoline tank exploded during welding, killing a worker. These accidents would not have happened if proper cleaning, purging and testing procedures had been followed.

After the first incident, it was discovered that the diesel fuel in the tank was contaminated with gasoline. As little as **two per cent** of gasoline in diesel fuel can create an explosive mixture in a closed container, with the flashpoint (the temperature at which a spark or other ignition source will cause an explosion) falling below the temperature inside the container.

For any hot work such as welding or cutting a container that may have contained flammable or combustible material, the following **minimum** precautions **must** be taken:

- The container's internal layout must be determined to make sure that fittings such as baffles will not interfere with cleaning or purging.
- The container must be drained and cleaned using appropriate methods.
- To determine whether draining and cleaning has made the container safe, its interior must be tested with a combustible gas detector both **before** hot work begins and **periodically during the work**.

However, some containers cannot be drained and cleaned well enough to make them safe. Such containers may be made safe by purging and inerting with an inert gas, but **only** if these precautions are taken:

- Recognized procedures and proper equipment must be used.
- The oxygen level inside the container must be monitored

with an oxygen analyser and maintained at essentially zero for the duration of the work. To accomplish this, if steam is used the hot work must be completed before the container begins to cool. If inert gas is used then the purging must be continued throughout the duration of the hotwork.

- Workers must be made aware of the limitations of the inerting process.

NEVER ASSUME A CONTAINER IS CLEAN OR SAFE. MAKE SURE THAT IS IT MADE SAFE AND THAT ITS SAFETY IS VERIFIED BY TESTING BEFORE ANY HOT WORK BEGINS. *NOT FOLLOWING THIS RULE IS LIKELY TO KILL YOU!*

Occupational Health & Safety
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