

Workplace Health and Safety Bulletin



Managing Hot Work

A worker in a live plant is welding two pieces of handrail steel together to replace a broken handrail section in a piperack. The work is being done on the ground level, 4 metres away from the piperack, a treater and a pump — all of them containing or processing flammable substances.

What needs to be done to make this hot work situation safe? What does the *Occupational Health and Safety Code* require under these circumstances?

The *Code* states that:

- A gas test must be taken before any hot work is performed.
- The tests must be repeated at regular intervals appropriate to the hazards involved.

Some employers make the potentially dangerous mistake of referring to the Canadian Electrical Code (CEC) classification requirements for hazardous and non-hazardous locations to determine when to take a gas test. In other words, they might think the welding example cited above is safe because the work is located in a non-hazardous zone as described by the CEC. However, the CEC's hazardous and non-hazardous classifications are not a distance parameter for doing hot work. The hot work requirements, which are separate from the classification requirement, must be followed when doing any kind of work in a location where flammable substances are stored, handled, processed or used.

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Explosive atmospheres can be heavier or lighter than air, and can quite easily travel a great distance beyond the classified zone. There can be an explosive atmosphere in a pit or low-lying area, or in a high piperack that is well away from what the CEC identifies as a hazardous zone.

Flammable substances may leak out from gaskets, pump or compressor seals, vents on storage tanks and piping that has been worn through, corroded or eroded.

Know the Code

Section 169, located in Part 10 of the *Occupational Health and Safety Code*, Fire and Explosion Hazards, requires the employer to ensure that hot work is not begun until:

- a hot work permit is issued,
- the work location is clearly or suitably isolated from combustible materials,
- procedures have been implemented to ensure continuous safe performance of the hot work, and
- testing shows that the atmosphere does not contain
 - a flammable substance in a mixture with air, in an amount exceeding 20 percent of that substance's lower explosive limit for gas or vapours, or
 - the minimum ignitable concentration for dust.

When hot work is performed sections 162, 163, 164 and 165 must also be followed, that is the employer must have procedures and precautionary measures to ensure that flammable substances that are stored, handled, processed or present at a work site will not ignite unintentionally.

Hot work defined

Hot work is any work process in which a flame is used or sparks or other sources of ignition may be produced, including:

- open flames e.g. cutting, welding, burning
- electrical, friction or impact sparks e.g. air gouging, riveting, drilling, grinding, chipping
- sparks resulting from the discharge of static electricity

- hot surfaces such as engine manifolds and exhaust systems, brakes, hot bearings, welding or cutting torches, coils and resistors
- heated gases
- internal combustion engines.

For more information



http://employment.alberta.ca/documents/WHS/WHS-PUB_pi002.pdf

Controlling Explosive Atmospheres in Vessels, Tanks and Piping Systems – PI002

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