

Storing gas cylinders in vehicles

This Safety Alert provides advice about how to manage the risk of explosion from leaking portable flammable gas cylinders inside work vehicles.

March 2012

Background

Workers have died or sustained serious injuries after their work vehicles exploded. These explosions occurred when gas from leaking portable gas cylinders ignited inside the vehicles. In many cases, the ignition source was the vehicle's electrical system.

Flammable gas cylinders include those containing oxygen, acetylene, liquefied petroleum gas and propane or butane throwaway-style cylinders.

These incidents could have also killed or seriously injured members of the public.

Control measures

Gas cylinders should be stored and transported in vehicles with cargo areas open to the air, and not stored inside closed-type vehicles. When storing or transporting fuel gas cylinders, ensure:

- main cylinder valves are tightly closed
- there is no leakage from the main valve area (eg using a gas detector or soapy water test)
- cylinders are secured in an upright position to prevent them tipping or falling over
- cylinders cannot be struck by other objects (eg loose tools and materials)
- cylinders are always removed from the vehicle before the gas is used
- at least one 10B dry-powder fire extinguisher is fitted in the driver's cabin.

Open-type vehicles

Open-type vehicles have cargo areas open to the air with unrestricted ventilation. The cargo areas of some open-type vehicles with sides (eg utility vehicles) can potentially retain escaped gas.

This is due to escaped gas flowing to and accumulating in low, enclosed and poorly ventilated areas. If you are not sure if your cargo area may allow gas to accumulate, assume it can until a competent person determines otherwise.

The cargo area should be assessed by a competent person for its potential to retain gas, and to identify the likely areas where gas could accumulate. Consider installing vents in these areas.

Closed-type vehicles

Closed-type vehicles are vans, utilities and other vehicles that have cargo areas with restricted natural air movement and ventilation. This includes vehicles where gas cylinders are stored under canopies, inside service bodies or toolboxes, and vehicles where cylinders are covered by tarps or tonneau covers.

If you cannot avoid using a closed-type vehicle, it should be fitted with a separate gas storage cabinet (see Figure 1) that is vapour-tight from the rest of the vehicle.

The gas cabinet must be secured to the vehicle and be big enough to store all cylinders carried in the vehicle, including empty cylinders. It must be designed to ensure gas from leaking cylinders cannot accumulate inside the cabinet but is vented to the atmosphere outside the vehicle (see Figure 2). The cabinet **door must be securely sealed** whenever cylinders are stored in the cabinet.

The cabinet must have:

- one or more permanent vents or drains positioned at the bottom of the cabinet (either floor or side), with an internal diameter of at least 25mm
- vents located so they cannot be blocked when the cylinders are in the cabinet
- a way of securing cylinders in an upright and stable position (eg straps)
- a visible flammable gas label on the outside
- regular inspections and maintenance of door seals and vents.

Gas cabinets must also be installed and maintained in accordance with the manufacturers' instructions. Gas cabinets are available from plumbing wholesalers, gas suppliers and safety equipment suppliers.

Information and training

Ensure workers are informed and trained in procedures for:

- checking and testing for leaking cylinders
- securing cylinders and sealing gas cabinets
- regularly checking cabinet seals and vents
- dealing with damage to the gas cabinet, gas leaks or explosion.

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Figure 1: Ensure the gas cabinet is securely mounted, with vapour-tight seals on the door and around the vent pipe.

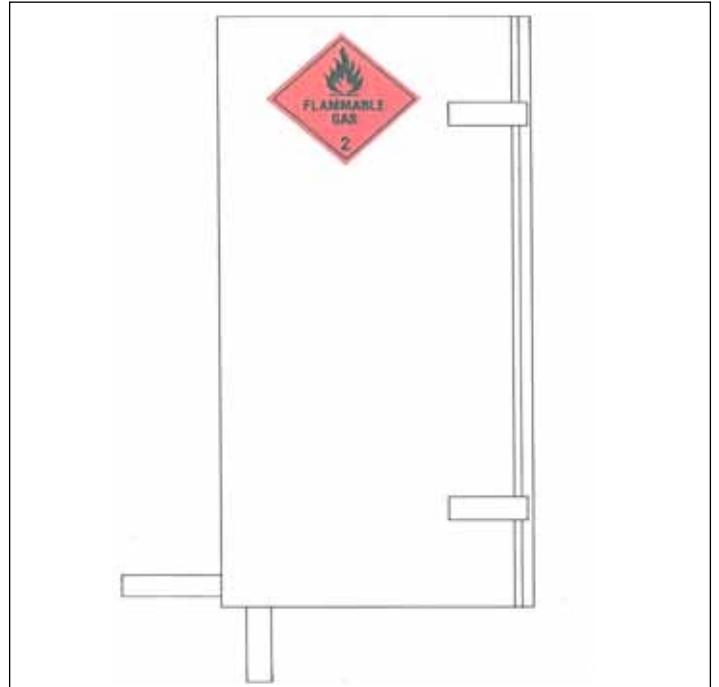


Figure 2: A side view of the gas cabinet shows the side vent and bottom drain alternatives. Vent pipes must be long enough to extend through the wall or floor of the cargo area.

Contact details

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For more information on occupational health and safety, go to WorkSafe's website: worksafe.vic.gov.au

Further information

AS 4332: 2004 – *The storage and handling of gases in cylinders*

AS/NZS 5601.2: 2010 – *LP gas installations in caravans and boats for non-propulsive purposes*

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