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Hazards of Servicing Propane-Equipped Vehicles

A worker received serious burns when an explosion ripped through a vehicle repair shop, flattening the building.

Workers were preparing to close the shop for the day when leaking propane gas from a vehicle they had been servicing was ignited by an overhead furnace.

When the blast occurred, the workers were ventilating the building after smelling propane fumes. The exact cause of the accident was not confirmed, but it is likely that the propane tank on the vehicle being serviced was over-filled or subjected to temperatures that caused the pressure relief valve to open, releasing explosive gas.

Propane requires special care. It is normally stored as a liquid under pressure. As with most liquefied petroleum gases, it expands as its temperature rises. If a propane-powered vehicle containing more than 80% liquid fuel is brought into a building where increasing temperature could cause the safety relief valve on the tank to open, a fire and explosion hazard is created. Also, if the propane fuel system has any leaks and the vehicle is brought indoors, this also creates a hazardous condition.

General Safety Precautions When Servicing Propane Vehicles

(Technical information provided by the Propane Gas Association of Canada)

1. The Canadian Standards Association B149.5-00 "Installation Code for Propane Fuel Systems and Tanks on Highway Vehicles" states that a propane fueled vehicle may be serviced indoors, provided that there are no leaks in the system and that the tank is not filled beyond its permitted filling density.
2. You can check for leaks by using a soap and water solution, commercial leak detector, or combustible gas indicator (calibrated for propane) to check connections, valves, and lines.
3. Most vehicles are equipped with a "Stop Fill Valve" designed to prevent overfilling the tank. Check the fuel liquid level in the tank by:
 - a) Parking the vehicle on a level area outdoors.
 - b) Reading the fuel gauge on the dash or the magnetic float gauge at the tank.
 - c) If the container is overfilled, the vehicle cannot be taken indoors until the liquid level in the container has been reduced below the 80% level. Allow the vehicle to operate until the liquid level lowers or engage trained service persons to remove the fuel.
4. CSA Standard B149-00 also requires
 - a) All tank shut-off valves to be closed while the vehicle is located in the repair garage. The only exception is when propane is required for engine operation.
 - b) A propane tank on a vehicle that is being serviced indoors not be exposed to temperatures in excess of 100 F (38 C).
 - c) When the propane system on a vehicle is being serviced indoors, the vehicle must not be parked within 10 ft. (3M) of an open flame, any source of ignition, or open pit or drain.

5. Persons performing installation, operation and maintenance work on the propane system of a vehicle must be properly trained in such functions.

If propane vapour or liquid is released in an enclosed area the following points should be considered:

- All personnel must evacuate the building until the area has been determined safe by the fire department.
- Contact the fire department from another location.
- Propane vapours are heavier than air and will settle at floor level and in low areas such as pits and sumps.
- Eliminate all sources of ignition (torches, heaters, pilot lights, cigarettes). Do not turn on electrical switches.
- Close off source of leak if possible.
- Ventilate by leaving garage doors and windows open. Use water spray to ventilate drainage troughs or sumps.
- Prior to restarting any ignition sources, check the area with a combustible gas indicator to make sure that all propane vapour has been eliminated.