

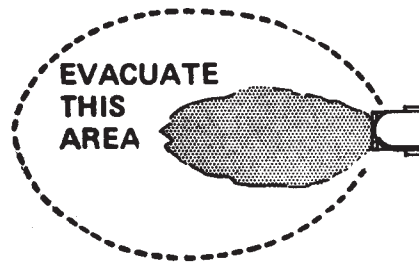
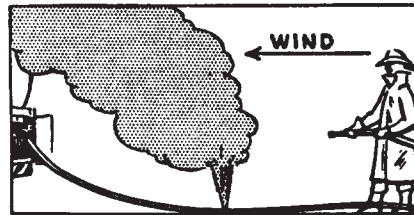
# How To Control LP-Gas Leaks and Fires

As in any emergency situation, it is of paramount importance to avoid endangering human life in event of fire involving or exposing LP-Gas equipment, or serious leakage of LP-Gas without fire.

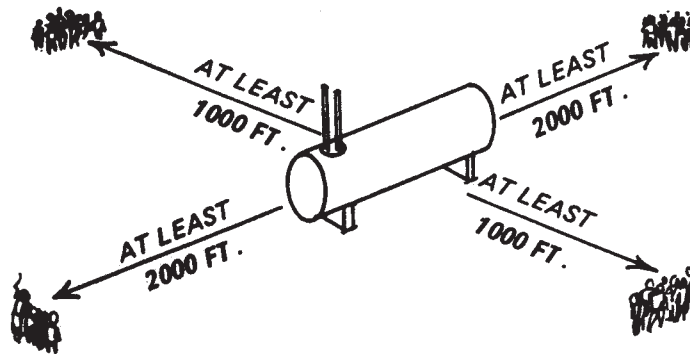
It is very beneficial to invite local fire department personnel to the plant to familiarize them with the plant location, means of entrance, location of valves and other safety features, and to suggest possible ways of handling emergencies.

## Basic Precautions

1 Approach the fire or gas leak from upwind.



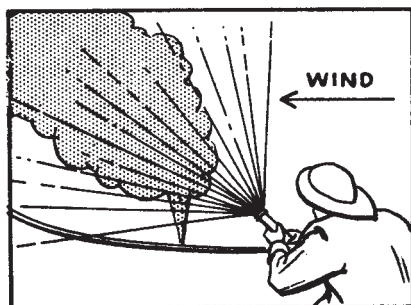
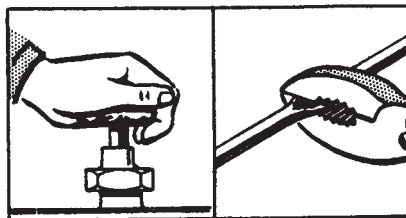
2 Keep all persons out of vapor cloud area. If necessary to evacuate any area which is in the path of the vapor cloud, do so immediately, eliminating all sources of ignition at the same time.



3 Police the area. Keep all persons except those necessary to cope with the condition completely out of the area, but in no case less than the distances shown.

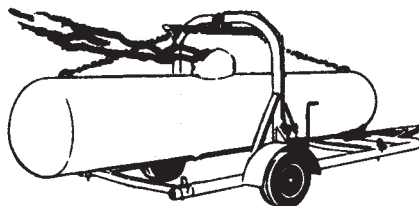
## Leakage Without Fire

1 If escaping LP-Gas is not burning close any valve available that can stop the flow of gas. Small lines such as copper tubing could be flattened to stop the flow. If an LP-Gas vehicle is involved, consult the driver; or if storage facilities are involved, consult plant personnel regarding possibilities of shutting off leaks.



2 Water spray is effective in dispersing LP-Gas vapor. If available it should be used as soon as possible, directing the spray stream across the normal vapor path and dispersing the vapor into a safe location. Those handling the hose should avoid entering the vapor cloud and should keep low behind the spray so that they will be somewhat protected from radiant heat if the vapor should be ignited unexpectedly.

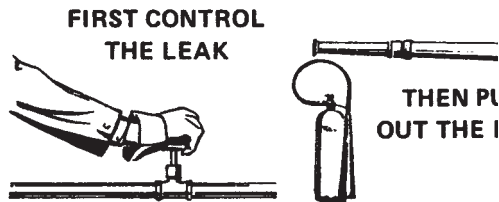
3 In some instances of leakage from a tank without a fire, it may be desirable to move the tank to some remote area such as a blocked-off isolated roadway or open field where it can leak safely away from a source of ignition. However, if this is done, the tank should be moved only in an upright position. Never drag the tank in a manner which might damage valves or piping. Any attempt to turn a tank upright for moving it to some remote location should be done carefully to avoid damage to valves and piping, and preferably under cover of water spray.



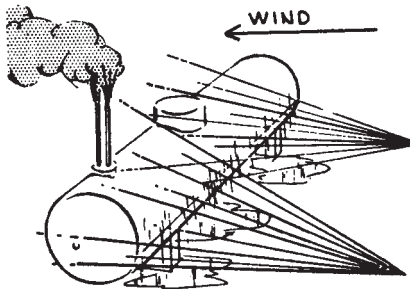
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The Purpose of this bulleting is to set for the general safety practices for the installation, operation, and maintenance of LP-gas equipment. It is not intended to be an exhaustive treatment of the subject, and should not be interpreted as precluding other procedures, which would enhance safe LP-gas operations. Issuance of this bulletin is not intended to nor should it be construed as an undertaking to perform services on behalf of any party either for their protection or for the protection of third parties. BP Products North America assumes no liability for reliance on the contents of this bulletin.

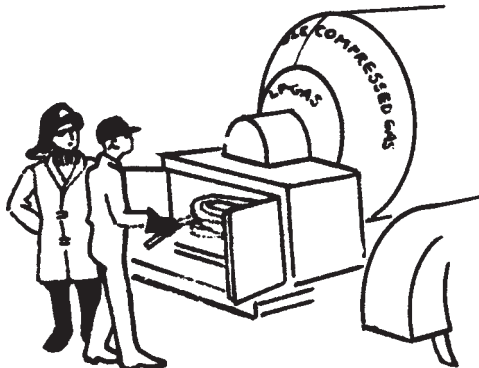
# Leakage With Fire



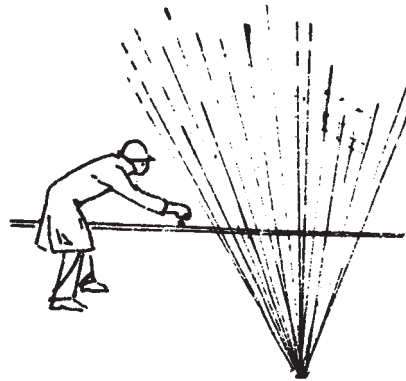
1 Do not extinguish unless leakage can be ped, except under certain conditions.



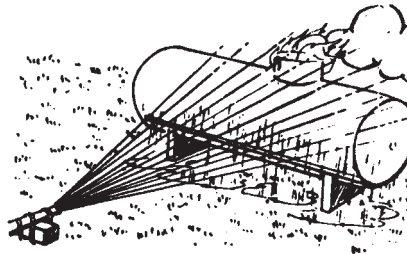
2 If the escaping gas is on fire, apply large quantities of water as quickly as possible to all surfaces exposed to heat. Approach the tank(s) from the sides. Concentrate on piping and metal surfaces of vessels or adjoining vessels, equipment or combustible surfaces exposed to flame or intense radiant heat, especially the upper position of the tank(s) shell (see Step No. 7). If a number of tanks are involved, use additional streams from the opposite sides for adequate cooling.



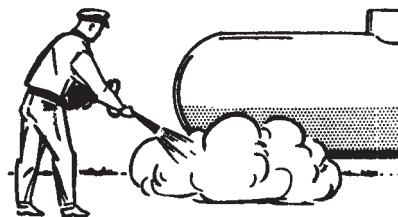
3 Consult driver of vehicle or plant operating personnel (as the case may be) regarding possibilities of shutting off fuel supply. Stopping the flow of gas should be the first consideration after water cooling is established.



4 If the only valve that can be used to stop the flow of fuel is involved in the fire, consider the possibility of effecting shutoff by protecting firemen with water fog streams, protective clothing, and gloves, while they are closing the valve. Proceed slowly to avoid any flashbacks or trapping firemen in the flames.



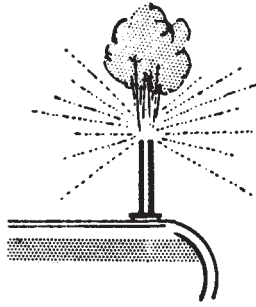
5 The controlled burning of escaping LP-Gas (which cannot be shut off by closing a valve) is a commonly accepted fire-fighting practice. Application of sufficient water to keep the shell of the vessel and piping cool will allow the fire to consume the product in the tank without danger of causing failure.



6 Dry chemical portable extinguishers are effective for extinguishing small LP-Gas fires. Extinguishing agent should be directed toward point of vapor discharge. Carbon dioxide may also be used.

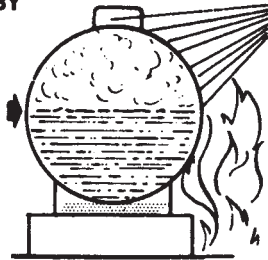
## Leakage With Fire cont.

7 Failure of LP-Gas tanks usually occurs only when some portion of the metal surface in the vapor space of the vessel becomes overheated, softens and weakens to the point that it will not contain the pressure of the product. In the absence of sufficient water to keep the metal surface cool where it is exposed to direct flames or extreme radiant heat, there is danger of the tank rupturing.

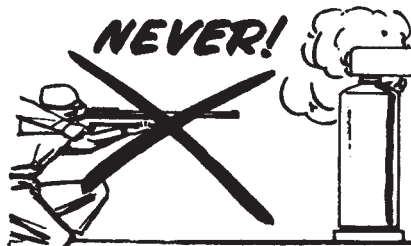


### PROTECT VAPOR AREA BY SPRAYING WITH WATER

Sometimes a white frost line will appear all around the container that will show the liquid level inside the container. This frost line is a sign that the temperature of the propane liquid and the pressure inside the container are reduced greatly.



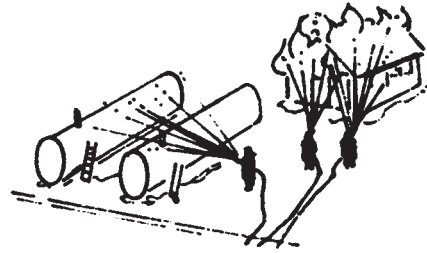
8 When sufficient water is not available to keep the tank cool, where excessive heat is present, some warning of increased pressure may be noted from the increase in volume of the fire or of noise level. This should be a signal to consider withdrawal of all men to a safe area.



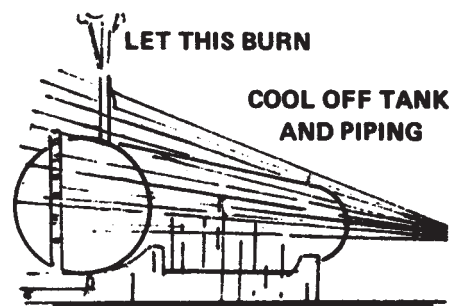
9 Shooting holes in an LP-Gas tank that is involved in fire does not serve any useful purpose and should not be permitted.

10 Where possible, remove container from area before flames of burning building reach the container. It may be advisable to move the container under cover of water spray. It should be moved in only an upright position. Never drag it in a manner that might further damage valves. Any attempt to turn the tank upright to remove it to some remote location to facilitate product withdrawal should be done carefully to avoid damage to valves and piping.

## Exposure to Fire



1 It is always important to control any exposure fire. In addition, when LP-Gas storage vessels or equipment are subjected to serious fire exposure such as from a nearby burning building or a fire involving another fuel, it is of prime importance to apply sufficient water to keep the shell of the vessel and piping cool to avoid any unnecessary release of LP-Gas.



2 If the LP-Gas storage vessel becomes heated to the point of causing the relief valve to function, the discharge should be allowed to burn if it becomes ignited. At the same time, continue to apply large volumes of water to the vessel and piping to keep them cool and to allow the relief valve to close after the excess pressure has been relieved.

3 Portable LP-Gas cylinders that are exposed to a fire should be moved, if feasible, to a safe location.

