

**LNG RISKS**

- **Extremely flammable** gas (methane/natural gas).
- **Extremely low temperatures** (risk of burn injuries and freezing the surroundings).
- LNG is heavier than air when released (be aware of underground pools/sewers where LNG can accumulate).
- Risk of **explosion in closed spaces**.
- **Suffocating** in high concentrations (take victim to fresh air and resuscitate).
- Heated gas is no longer visible (cloud is no longer visible as white vapour).

MANAGING LNG SCENARIOS**Possible aids:**

- Filling station surveillance cameras
- Intercom with operator
- Infra-red imaging camera (IRC)
- Explosion danger meter (or sniffer)
- Infra-red temperature meter (AGS)
- Overpressure ventilator
- Accessibility card (if available)

Scenario: blowing off LNG storage tank/tanker truck

If the pressure is excessively high in the tank, the system will blow off via a blow-off safety feature (sometimes a flare). The blow-off safety feature is fitted in order to maintain the low temperature in the tank and is also an overpressure safety feature, (release Boil Off Gas; BOG)

- Press emergency stop button. System switches off completely. System continues to blow off (mechanical safety).
- Determine (un)safe area with the explosion danger meter.
- **Ventilate closed rooms in connection with the risk of explosion!**
- Do not extinguish any burning safety feature. Allow the flare to continue blowing off.

Scenario: damaged storage tank as a consequence of an accident (external influence)

- Warn the operator and the national support point for LNG accidents (**LIOGS, 010- 2468642**).
- Determine nature of the damage (leaks, risk of accelerated pressure build-up, etc. Use infra-red imaging camera).
- Check the (un)safe area and evaluate escalation risks.

Scenario: Heat radiated onto the installation (parts) (different type of fire than LNG)

- Press the emergency stop button for emergency facilities (blow-off facility and stopping loading and unloading).
- Extinguish the fire in the installation components.
- Screen off the surroundings (cool parts subject to radiated heat), prevent freezing of the blow-off safety feature.
- Examine the installation for damage to the parts subjected to radiated heat (lack of vacuum, use IRC).
- Take account of the risk of pressure build-up after lengthy subjection to radiated heat. The blow-off safety features will then be activated.

Scenario: LNG leak

- Determine the size of the leakage and the (un)safe area (with explosion danger meter).
- Prevent fire starting and try to limit outflow.
- Dilute any gas cloud with water (do not bring liquid LNG into contact with water! Only use water in the case of LNG leaks in consultation with an expert).

Scenario: LNG fire (Flare fire and Pool fire)

- Preferably do not extinguish an LNG fire. Only extinguish if necessary (prevent escalation).
- Check whether the ESD system (emergency shutdown) has been activated.
- Cool the surroundings.



SITUATION SKETCH



Storage tank with heat exchanger.



Recognisability of LNG & contact details of operator in the vicinity of the storage tank.



Supply installation blow-off pipe.



Emergency stop button.



Connection of supply hose to the tank.

Supply point with emergency stop button.

BACKGROUND INFORMATION

- Filling stations are laid out in accordance with PGS 33-1. The safety requirements are therefore the same. Only the construction may differ!
- LNG filling stations are often unmanned. However, they are equipped with an intercom connected to the operator's alarm centre. Contact is always possible via the intercom.
- Information such as pressure and temperature of the installation can be viewed at the operator's alarm centre.
- Every filling station is fitted with surveillance cameras. The operator's alarm centre can view the images in real time.
- When incidents occur, always call on the operator's emergency response coordinator for advice and support.
- If available, consult the accessibility card of the object.
- There are pressure and temperature meters and means of protection (cold) present in the service room.