

**LNG RISKS**

- Tanks are **pressure vessels (9- 20 bar)** with highly cooled natural gas.
- **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).
- Risk of accelerated blow-off or failure of the **fuel tank** if external damage occurs (loss of vacuum).

CHARACTERISTICS OF LNG TANKS

- Vehicles often use a **combination of fuels** (tanks present at several locations).
- The **blow-off safety feature** of the LNG fuel tank is often located behind the vehicle cabin.
- Trucks and busses are **not recognisable** as LNG-driven (LNG tanks built in, completely round or a type of 'diesel tank'). There is information in the Crash-Recovery-System based on the licence registration number.
- Recognisability: blow-off pipes, filling point on the front of the tank, pressure gauges and stickers.
- The maximum capacity of one fuel tank is +/- 600 litres of liquid LNG (=300 kg.).

MANAGING LNG SCENARIOS**Possible aids:**

- Infra-red imaging camera (IRC)
- Explosion danger meter (or sniffer)
- Infra-red temperature meter (AGS)
- Overpressure ventilator

Scenario: blowing off LNG fuel tank

If the pressure becomes excessive in the tank the system will blow off with a blow-off safety feature (present in spoiler cabin). The blow-off safety feature is fitted in order to maintain the low temperature in the tank and is also an overpressure safety feature, (releasing Boil Off Gas; BOG).

- Determine the (un)safe area with an explosion danger meter (or sniffer).
- Do not extinguish any burning safety feature. Allow the flare to blow off gently.

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

- Consult the driver of the vehicle.
- Warn the transporter and the national support point for LNG accidents (**LIOGS, 010- 2468642**).
- Examine the damage to the tank (leaks, lack of vacuum – use an infra-red imaging camera).
- Check (un)safe area and evaluate escalation risks.
- Provide support for the recovery vehicle/technical emergency service. Pay attention to **possible movement of emission point of blow-off safety feature** for safe working.

Scenario: heat radiated onto the fuel tank (different type of fire than LNG)

- An intact tank provides a great deal of passive protection against heating caused by radiated heat.
- Extinguish fires in the vicinity and cool the fuel tank if necessary.
- Prevent freezing of the blow-off safety feature (due to contact with water).
- Pay attention to the risk of BLEVE (after lengthy exposure to radiated heat).

Scenario: leakage from fuel tank

- Determine (un)safe area with explosion danger meter.



- Leaks can occur in both the gas and the liquid phase.

Scenario: LNG fire (Flare fire or Pool fire)

- Preferably do not extinguish an LNG fire. Only extinguish if necessary (prevent escalation).
- Cool the surroundings.

SITUATION SKETCH



LNG on the side of the truck. There are one or more blow-off valves in the section on the left (under flap and pipes).



1. Connection for the LNG hose (filling)
2. Pressure relief for filling
3. Pipe to blow-off pipe
4. Pipe to engine



Specifications of the LNG tank and contact details of the operator are on the fuel tank.



Truck blow-off pipe

BACKGROUND INFORMATION

Trucks and busses using LNG:

- Frequently a combination of LNG with other fuels such as diesel or CNG (capacity varies).
- Several blow-off safety features – both directly on the tank and at the top on spoilers.
- The location of the LNG fuel tank is now still mainly on the side. It may be built in in future.
- In case of doubts concerning the fuel of the vehicle consult Crash Recovery/ADAC Rettungskarte (www.adac.de)
- Transfer the incident to the transporter/owner when the danger has ended.
- Blowing off a fuel tank takes place after approximately 3 weeks of standstill (rise in temperature due to lack of consumption).

To date, only trucks and busses use LNG. This is NOT yet the case for cars!