HSE guidelines

January 2022

METHANOL

WORKPLACE EDITION

HSELIFE NL

Management System for a safer and healthier workplace

Work safely or don't work at all

There are strict procedures when working on installations and systems. After all, there's a risk for hazardous substances to be released. Therefore read the Permit to Work carefully and check if the described control measures have been taken. Then take the precautionary measures which belong to your job.

Always be alert to prevent hazardous substances from being released. When in doubt: always ask or stop working!

Note: Check please at **hselifenl.com/en/hse-items** if you are using the latest version!

WHAT IS METHANOL?

Methanol is one of the most widely used raw materials in the chemical industry. It can also be used as an energy source.

In Natural Gas extraction, Methanol can be injected into the process to prevent the formation of hydrate (ice-like blockage in the process) in transport pipes. Methanol is a substance that easily evaporates. Both the liquid and the vapor are highly flammable. The legal limit value for exposure of persons to Methanol is important: an average value of 100 ppm = 133 mg/m^3 during 8 hours.

PROPERTIES OF METHANOL

- Colorless
- Highly flammable
- Toxic
- Volatile substance

HAZARDS

Methanol is a highly volatile substance that can quickly form hazardous concentrations for humans when evaporated. The vapors are heavier than air, spread out on the floor and form in combination with air an explosive mixture. Methanol is easily biodegradable, so it does not pose any hazards to the environment.

HAZARDOUS SITUATIONS

Even though Methanol is processed in a closed system in which employees are not exposed to the substance, there are situations in which exposure to Methanol (vapors) can take place:

- **Maintenance** Methanol vapors may be released when opening installations - for maintenance - that have contained Methanol.
- **Bunkering** When connecting and disconnecting the hose for the supply of Methanol, some vapour will escape and there is a risk of splashing.
- **Unforeseen** Methanol can be released unintentionally, e.g. in case of hose rupture or failure or release of the hose coupling. In such a case, an explosive mixture may form which may rapidly contain a concentration of Methanol that is hazardous to health.

HEALTH EFFECTS

Methanol can be absorbed into the human body through the lungs, by swallowing and by absorption through the skin or eyes.

Immediate effects

- **Inhalation** causes respiratory irritation, coughing and shortness of breath. The vapors can cause dizziness, nausea and unconsciousness and can eventually be fatal.
- **Ingestion** causes nausea, abdominal pain and can cause dizziness, unconsciousness and death just like inhalation.
- **Exposure to the skin** causes degreasing of the skin. Repeated exposure causes irritated skin that is dry, rough, red and painful.
- **Exposure to the eyes** causes irritation, redness and abnormalities of the cornea.

Chronic effects

The chronic effects of Methanol are felt in the central nervous system. There may be persistent or recurring headaches. The facial nerve can also be damaged to such an extent that it leads to blindness. Finally, movement disorders can occur.

PREVENTION

PREVENT PERSONAL CONTACT
Exposure to Methanol can be prevented by properly ventilating and applying the correct PPE at all times and replacing it immediately in case of signs of wear and tear. Always wash your hands at the end of the work activities and remove soiled clothing immediately. Do not eat or drink while working.

To prevent exposure to vapors and liquid Methanol, it is important to rinse the process section with water and purge with nitrogen before opening the process. Afterwards a gas measurement must be carried out. Measurements on Methanol vapors are performed with a gas detector by measuring for VOS (Volatile Organic Substances). If the concentration exceeds the limit value, the correct PPE must always be used to prevent damage to health (see the relevant work permit).

PREVENTING EXPLOSION AND FIRE
Since Methanol is highly flammable, it is important to take measures to prevent discharges of static electricity and to work with explosion proof equipment and lighting. Working with non-sparking tools is also essential.

PROTECTION

When working in a space where Methanol may be present, the following applies:

- Use antistatic and chemical resistant clothing (in the form of a fully protective suit) and footwear.
- Wearing protective gloves made of butyl rubber is recommended for work involving prolonged contact. Nitrile and neoprene gloves are also suitable for short-term work of less than one hour.
- Use safety goggles with side shields or a face mask.
- In case of insufficient ventilation or in case of possible vapour formation, use a half or full face mask with a gas can (filter can) type A class 2, this applies to work activities that take less than 30 minutes. For work that lasts longer, a fresh air hood or full face mask with breathing air is recommended.
- All personal PPE must be replaced immediately in case of signs of wear and tear.

IN CASE OF...

When there's exposure to Methanol (or suspicion of) adequate and proper action must be taken.

EXPOSURE TO METHANOL

For any kind of exposure to Methanol, **ALWAYS CONSULT A DOCTOR!**
In addition, the following is important:

- **Inhalation** Bring the victim into the fresh air as soon as possible.
- **Swallowing** Rinse mouth with water. If the victim has swallowed Methanol and is conscious, let him/her drink small amounts of water. Do not induce vomiting unless directed to do so by medical personnel. If the victim vomits, keep the head low to prevent vomit from entering the lungs.
- **Skin contact** Rinse with large amounts of water and remove contaminated clothing (use gloves).
- **Eye contact** Rinse eyes with large amounts of water for ten minutes.

FIRE FIGHTING

When a fire starts, it can be extinguished with extinguishing powder, Carbon dioxide, water mist (no water jet) or alcohol-resistant foam.

LARGE SPILLS

When large quantities of Methanol have been released you approach the emission with the wind in your back. Use respiratory protection and other PPE (see protection). Stop the leak if you can do so without risk. Remove packaging from the spillage area. Use non-sparking tools and explosion-proof equipment. Absorb spilled Methanol with non-combustible absorbent materials and dispose of in a chemical waste container.

PERSONAL HYGIENE

Make sure to always avoid contact with the skin and your own clothing. Change and remove gloves and protective clothing professionally with gloves. Make sure that you always wash your hands after work and do not eat or drink while working.

QUESTIONS?
NEED MORE INFORMATION?

Feel free to contact the site manager or supervisor at any time.

5 to remember

1. Ensure **proper ventilation** in the work place.
2. Make sure that a qualified person measures the air concentration of Methanol **before starting and during the execution** of the work.
3. Always use the **prescribed PPE** (see PtW).
4. **Replace the PPE immediately** at the first signs of wear and tear.
5. **Consult a doctor immediately** in case of (or suspicion of) contact with Methanol.

Methanol is extremely hazardous and can cause serious health problems. Therefore, make sure you remember these five important rules.

Work safely or don't work!

hselifenl.com