BCEHS | BC Emergency Health Services

Paramedic Specialist

Chemical Response Data Sheet

Methanol 2018 1.0

Chemical Name: Methanol (CH_3OH)

Identifying Data: **UN# 1230** CAS # 67-56-1

Classification: **Flammable**
Poison/ Inhalation Hazard

Placard

NFPA Rating

WHMIS 2015 Symbols

Physical Properties:

Colour	Colourless liquid
Vapour Density	1.1 (Air =1)
Flashpoint	11 C
Flammable Range	6% -36% (60,000ppm – 360,000ppm)
Auto Ignition Temp	464 C
Solubility	**Completely soluble in water**
Boiling point	64.7 C
Specific Gravity	0.7866 @ 25C
Vapor Pressure	127 mm Hg at 25 C >40mmHg = Inhalation risk
Odour	Alcohol like. (Detectable between 100 -2000ppm)

General Description:
Colourless flammable liquid with odor much like ethanol. Vapors heavier then air. Toxic by ingestion and inhalation or absorption. Burns without visible flame in daylight

Commonly Found Locations

- Feed stock to make acetic acid and formaldehyde
- Chemical Industry
- Laboratories
- Pulp and Paper mills
- School Labs
- Petro Chemical Plants

Work Safe BC Permissible Limits

8hr TWA 200 ppm **STEL/Ceiling** 250 ppm **IDLH** 6000 ppm

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Emergency Procedures to Consider for Paramedic Specialist

- Do initial Size-up of incident.
- Remember; no flames may be visible in a methanol fire. Containers may explode!
- Evacuate immediate area and further as situation dictates. 800M for Tanks, Tankers or Railcars
- Recommend operators eliminate/isolate ignition sources from remote areas. (MCC/remote inline disconnects)
- Recommend shut off pumps, and isolate pipe and tank valves etc., from remote locations if possible.
- FD must utilize ATC type Class B foam for vapour suppression at designated induction rate; 3% or 6% to extinguish methanol fires.
- Consider using personal shielding to protect rescuers from spray/splash during rescue.
- Do not delay patient decontamination. See instructions in next section.
- Methanol will not burn if diluted to less than 20% by volume.

(See also)

TDG Reference: Guide 131

Emergency Decontamination:

- Have patient self-Decon with direction as needed from safe distance. Assist removing clothing if needed with appropriate PPE to prevent secondary contamination and injury.
- Use water for decontamination. Large volume/low pressure. Tepid if Immediately available.
- Eyes take precedence.
- Goal is to begin Decon within 1 minute of contact if possible (Time = Tissue).
- Ensure patient is fully decontaminated. Do not forget skinfolds, armpits, groin, buttocks and feet.
- Do not cause hypothermia. Focus on symptomatic areas (pain, visible burns).
  See Pre-Hospital Care below for further information.

PPE

- Wear appropriate protective clothing to prevent skin contact. Gloves, goggles/face shield.
- Gloves/Boots; Chemical resistant to Methanol. Check manufacture's compatibility chart. Data suggests that Rubber, Viton and Nitrile all have breakthrough times >1hr. Ensure compatibility listed has been tested for the concentration on hand.
- Respiratory protection required. SCBA is recommended for all concentrations.
- May not be detected by odor until beyond TWA right up to IDLH levels.
- Full firefighting turn- out gear including Nomex hoods and SCBA when fighting fires, or risk of explosion or VCE (vapour cloud explosion) could occur.
- Face shield with non- vented safety goggles if exposure to gas or liquid may occur.

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Toxidrome: Alcohol Syndrome/ CNS depression, CVS depression, Visual disturbances.

Primary route of exposure: Ingestion/ Inhalation/ Skin/Eyes

Primary Targets of Toxicity: Skin/Eyes/Lungs

- Methanol poisoning is extremely toxic. May be fatal if swallowed, inhaled, or absorbed thru skin in large quantities.
- Extremely Toxic by Ingestion, rare in Industry (Intentional only or accidental). Methanol converts to Formaldehyde and Formic Acid once in blood stream.
- Results in profound CNS effects and metabolic acidosis.
- Inhalation of methanol fumes/mists or vapour may result in significant methanol levels. Dyspnea (Shortness of breath) and bronchospasm can be expected.
- Eyes, considered an eye irritant.
- A skin irritant however rapidly absorbed thru skin. Case reports of severe methanol poisoning by skin absorption although rare, have occurred.
- In some cases, symptoms of Methanol poisoning may be delayed for hours or more. Signs of alcohol intoxication and CNS depression, visual disturbances and GI complaints are early indicators of poisoning, along with a supporting history of exposure to methanol.

Pre - Hospital Care:

- Remove victim from hazardous area utilizing appropriate PPE for hazard.
- **Immediately** remove all contaminated clothing from victim(s). Begin flushing with water while removing clothing if immediately available. **Medium volume/low pressure only. Remove any nozzles from hoses.** Eyes take priority.
- Treat patient following support of ABC's as per training.
- Immediate Decontamination of skin required. DO NOT DELAY. **Flush with water as per training for chemical decontamination. Ensure all areas of body are thoroughly flushed and decontaminated. (*Head, eyes, hair, armpits, groin, genitalia, all skin folds etc.*)**
- Symptomatic patients require prompt transport to Medical Aid while supporting ABC's as per training. Be prepared for CNS depression, seizures, nausea/vomiting and acidosis.
- Contact BC Poison control early. **1-800-567-8911 or 604-682-5050**
- **Antidote (Fomepizole) is available at hospital**. Severely poisoned patients will benefit from additional hemodialysis if available.
- Exposed patients with underlying lung disease (Asthma, COPD) may become symptomatic at lower concentrations then healthy

Fire and Reactivity:

- Highly flammable liquid. Polar Solvent. Utilize Dry chemical or Class B ATC (Alcohol Type Concentrate) Foam for larger fires and spills.
- Methanol burns with no or little visible flame. Watch for heat waves and smoke from secondary involved combustibles. Utilize thermal imaging camera if available.
- Low flashpoint, water spray may be ineffective when fighting fire.
- Keep fire involved containers cool with water spray.
- Containers may BLEVE if exposed to heat. Storage containers are not pressurized during transport or storage.
- May be extinguished by reducing concentration to less than 20% (5 to 1/ water to methanol)
- Dangerous fire hazard when contacts heat, flame, or any oxidizer.

References and Links:

WISER (Wireless Information System for Emergency Responders)

Methanol Institute (*Safe Handling of Methanol)*

AHLS Provider Manual/4th edition.

Cameo Chemicals;

WorkSafe BC/Exposure Limits