Navigating Methanol Safe Handling Best Practices

Gregory Dolan, CEO – Methanol Institute
IMTOF 2019 – London
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MI History

• The Methanol Institute (MI) was established in 1989 to lobby the US Congress.

• 30 years later, MI is recognized as the trade association for the methanol industry, representing world’s leading methanol producers, distributors and technology companies.
80 million metric tons of global demand, 60% chemical markets and 40% energy markets
2 February: MI releases *Renewable Methanol Report* prepared by ATA Insights

- Contents:
  - Executive summary
  - Why consider renewable methanol?
  - Renewable methanol production
  - Case Studies: CRI, Enerkem, BioMCN
  - Applications and uses of renewable methanol
  - Conclusions and how to find out more

- [www.methanol.org/renewable-methanol/](http://www.methanol.org/renewable-methanol/)
## Renewable Methanol Report

<table>
<thead>
<tr>
<th>Methanol category</th>
<th>Commercial</th>
<th>Feasibility and R&amp;D</th>
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<tr>
<td>Bio-methanol</td>
<td>BASF (GER)</td>
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<td>BioMCN (NL)</td>
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<td>Enerkem (CAN)</td>
<td>LowLands Methanol</td>
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<td>New Fuel (DEN)</td>
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<td>Nordic Green (DEN)</td>
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<td>Renewable methanol</td>
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<td>Innogy (GER)</td>
<td>Asahi Kasei (JP)</td>
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<td>Low carbon methanol</td>
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<td>OPTIMech (GER)</td>
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Methanol is a versatile energy resource

Out of the ~80 million metric tons of methanol sold globally in 2018, energy and fuel uses represent 40% of total demand.
Product stewardship is **Priority #1**

https://www.methanol.org/safety/
## Must Knows of Methanol

<table>
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<tr>
<th><strong>FLAMMABLE</strong></th>
<th><strong>BURNS WITH A CLEAR, LOW HEAT FLAME</strong></th>
<th><strong>DIFFICULT TO SEE DURING DAYLIGHT</strong></th>
<th><strong>IMPACT CONFINED TO SIZE OF SPILL</strong></th>
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<tr>
<td><strong>TOXIC</strong></td>
<td><strong>READILY ABSORBED IN THE BODY</strong></td>
<td><strong>SOLUBLE IN WATER</strong></td>
<td><strong>BIODEGRADES QUICKLY</strong></td>
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Toxicity

Protecting the 4 Routes of Entry

- Inhalation
- Skin Contact
- Eye Contact
- Ingestion
### Comparing apples to apples

<table>
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<th>Hazard pictograms (CPL)</th>
<th>METHANOL</th>
<th>DIESEL</th>
<th>GASOLINE</th>
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<td><img src="image.png" alt="Hazard pictograms" /></td>
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**Signal word: (CPL)**

- **METHANOL**: Danger
- **DIESEL**: Danger
- **GASOLINE**: Danger

**Hazard statements (CPL)**

- **METHANOL**:
  - H223: Highly flammable liquid and vapour.
  - H291: Toxic to aquatic life with long lasting effects.
- **DIESEL**:
  - H280: Harmful if swallowed and in contact with skin.
- **GASOLINE**:
  - H244: Harmful if swallowed.
  - H360: May cause respiratory irritation.

**Precautionary statements (CLP)**

- **METHANOL**:
  - P260: Wash contaminated clothing before reuse.
  - P261: Avoid breathing dust, fumes, gas, spray or vapour.
  - P264: Wash hands and remove all contaminated clothing.
- **DIESEL**:
  - P305/351/333: IF IN EYES: Remove contact lenses, if present and easy to do. Rinse eyes immediately with plenty of water (at least 15 minutes).
  - P303/361/371: IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/shower.
- **GASOLINE**:
  - P273: Avoid release to environment.
  - P301/312: IF SWALLOWED: Call a POISON CENTER/ doctor/physician/...
Fire Risk

Methanol Fire Safety

Methanol Fire Prevention

- No Cell Phones
- No Laptops
- No Power Tools
- No Electronics
Methanol has lower fire risk than gasoline

- Methanol: evaporates slowly, needs lots of vapour to burn, confined fire zone; fires less likely
- Gasoline: evaporates fast, needs little vapour to burn, broad fire zone; fires more likely
The Methanol Institute’s Product Stewardship Committee has developed a set of tools to help navigate the safe handling of methanol across the global distribution chain.
Methanol Safe Handling Manual

• 263-page manual providing guidance for all aspects of methanol safe handling
• Developed for MI by Alliance Consulting International, with contributions from George Wellon and SP Technical Research Institute of Sweden
• 4th Edition released in 2017
• Currently working on updates for 5th Edition
Methanol Safe Handling Manual

• Contents:
  • Methanol General Information
  • Transportation and Storage
  • Health and Safety
  • Process Safety
  • Fire Safety
  • Emergency Response
  • Methanol Incidents and Safeguards
  • Environmental Protection
  • Product Stewardship and Sustainability
  • Risk Communications
  • Glossary
  • Appendix
Safe Handling Video

- Completely new “Methanol Safe Handling Video” was released on 15 April 2019
- Available at www.methanol.org, our YouTube page.

“Our organization and members are committed to promoting the safe handling of methanol across the global distribution chain to protect the health and safety of anyone handling methanol. This includes workers in methanol plants, distributors, chemical and energy consumers, first responders, and the general public,” MI CEO Gregory Dolan
Crisis Communications Guidebook

- Developed by Environ, an international environmental consulting firm.
- The Guidebook is intended to assist in preventing, preparing for, and responding to a crisis situation.
- Effective communication involves cooperation with other stakeholders—employees, public authorities at all levels, news media, members of the community.
Technical Bulletins

• “Drill downs” into the best practices for the safely handling of methanol

• Topics include:
  • Small Quantities
  • Storage Tanks
  • Drum Transport
  • Loading/Unloading
  • Accident Response
  • Flammable Liquids
Safety Newsletter

- Quarterly Methanol Safety Snapshot newsletter
- Highlight latest safety information
- Reach out to broader global audience
- Register for this free newsletter at www.methanol.org
Methanol Safe Handling and Safe Berthing

- Developed by Distribution Consulting Services (Mitch Silver)
- The risk of a marine accident is highest when approaching or departing the berth, followed by the actual loading and unloading of product
- This technical bulletin identifies best practices for safe berthing
- Includes set of checklists for vessel and terminal operators

https://www.methanol.org/marine-fuel/
Suggestions

What methanol safe handling issues should we address next?