Odorization of Liquefied Petroleum Gas

Research and Development Forum
January 17, 2014

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Why Study the Odorization of Liquefied Petroleum Gas (LPG)?

- There has been noticeable odorant “fade”, ethyl mercaptan, in odorized LPG during transportation and storage (other odorants as well – see §173.315(b)(1))
- Determine cause for odorant “fade”
- Because of the hazards involving non-odorized LPG

Conditions studied to date

- Steel cylinders/tanks are subject to oxidation
- The oxidation appears to occur regardless of the amount of iron oxides present in the cylinder or if the cylinder is stainless steel
- Cylinders/tanks in continuous use may become deactivated with respect to reaction of the mercaptan or may cause a slower rate of reaction

The Massachusetts Propane Investigation

The Incident

- July 30, 2010 at 1220 hrs
- Multiple calls for a reported explosion
- Resulted in 7 injuries and 1 fatality
- 5 alarm rescue/fire mission; took over an hour to extricate victims
- 21 communities in MA responded along with DFS Support Units
- Liquid samples taken from tanks confirmed virtually no Ethyl Mercaptan was present

Recommended Research

- Assess the Performance of Current Practices and Identify Gaps and Vulnerabilities in Regulations and Procedure on Odorization of LPG
- Determine the effectiveness of the “sniff test” and establish an alternate analysis method perhaps based on ASTM standards
- Additional additive to current odorant(s) to prevent “fade”?
- New odorant?
  - Issues – training public to new smell of LPG, need to be unique
- Conditioning of containers/steel to slow (prevent) reaction with odorant?