

## Ethylene Oxide/Other Facts

- At sea level (standard atmospheric pressure), EO becomes flammable at a concentration of 30,00 ppm.
- In percentage terms, EO becomes flammable above a 3% concentration.
- Definitions:
  - PEL: Permissible Exposure Limit (OSHA) 1 & 5 ppm
  - REL: Recommended Exposure Limit (NIOSH Canada)
  - STEL: Short Term Exposure Limit
  - TWA: Time Weighted Average (8hr or 15min)
  - LEL: Lower Explosive Limit (EO, 3%)
  - UEL: Upper Explosive Limit (EO, 100%)
  - IDHL/IDLH: Immediately Dangerous to Health/Life (NIOSH)
  - TLV: Threshold Limit Value (ACGIH) same as PEL
  - NFPA "704" System: National Fire Protection Association – Placards
  - OSHA: Occupational Safety and Health Administration
  - NIOSH: National Institute of Occupational Safety and Health
- The EPA has named all of the following chemicals to its list of "Extremely Hazardous Substances": EO, H<sub>2</sub>O<sub>2</sub>, & Peracetic acid.
- Following are the approximate IDLH for each chemical:
  - EO - 880ppm
  - H<sub>2</sub>O<sub>2</sub> (Hydrogen peroxide) - 75ppm
  - Peracetic acid - 75ppm
- The EPA has a reportable quantity (RQ) limit for spills of toxic substances. EO has an RQ of 10 lbs., and H<sub>2</sub>O<sub>2</sub> and peracetic acid have an RQ of 1 lb.
- In the case of an accident involving spilled toxic substances that exceeds the RQ, the following must be notified within 30 minutes of the spill or release:
  - Local fire department
  - Local Emergency Planning Committee (LEPC)
  - State Emergency Response Commission (SERC)
  - National Response Center (NRC)
- Under the NFPA "704" System, chemicals are assigned health risk numbers. EO has the lowest health risk of '2', while H<sub>2</sub>O<sub>2</sub> and Peracetic acid are rated '3'.
- Under the NFPA "704" System, EO has the highest flammability rate, rated 4 out of 4.
- The following items cannot be sterilized with H<sub>2</sub>O<sub>2</sub> plasma:
  - Closed cell foam
  - Cellulose materials (paper products)
  - Anodized metals
  - Lumens over 10 inches in length