SAFETY DATA SHEET

1. Identification of the Substance and Company
   EnviroSystems Ethylene Oxide Sterilant
   Product No. PB013 and PB015
   Use: Sterilant
   SDS No. A500US
   NFPA 704HAZARD RATING:
   HEALTH: 4
   FIRE: 4
   REACTIVITY: 3
   Prepared by: M. Ebers
   asksteris_msds@steris.com
   Date Created: December 1, 2001
   Date Revised: March 10, 2014
   Date Reviewed: NA
   STERIS Limited, Chancery House, 190 Waterside Road, Hamilton Industrial Park, Leicester,
   LE5 1OZ, UK
   Telephone No: +44 (0) 116 276 8636
   Emergency Telephone No: +44 (0) 1895 622 639
   Date Reviewed: NA
   Date Revised: NA

2. Hazards Identification
   Extremely flammable; Toxic (Acutely toxic by inhalation. May cause cancer. May cause inheritable genetic
damage.); Irritant to eyes, respiratory system and skin.

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Hazardous Component(s)</th>
<th>% by Wt.</th>
<th>CAS No.</th>
<th>EU No.</th>
<th>Hazard Class</th>
<th>Hazard Code</th>
<th>Oral LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene Oxide</td>
<td>60-100</td>
<td>75-21-8</td>
<td>200-849-9</td>
<td>Press. Gas</td>
<td>220,350,</td>
<td>mg/kg</td>
<td>800 ppm/4 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Flam. Gas 1</td>
<td>340,331,</td>
<td>(Male</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Carc. 1B</td>
<td>319,335,</td>
<td>Rats)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Muta. 1B</td>
<td>315</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Irr. 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Skin Irr. 2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. First Aid Measures
   Eye Contact: Flush eyes immediately with water for at least 15 minutes. Get medical attention.
   Skin Contact: Flush skin immediately with water for at least 15 minutes. Get medical attention.
   Inhalation: Remove patient to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
   Ingestion: Do not induce vomiting. Get medical attention. Do not give anything by mouth to an unconscious person. If conscious, drink a large quantity of milk or water.
   Note to physician: Persons exposed to ethylene oxide may develop severe and intractable vomiting, requiring the use of antiemetics given intravenously. Prolonged or high vapor concentration exposure may result in the development of pulmonary edema after a latent phase of several hours. Following skin contact, primary irritation and blister formation may be delayed.

5. Fire-Fighting Measures
   Conditions of Flammability/Flash Point/Auto-ignition Temperature: < -18°C (Extremely flammable)
   Method: Closed cup
   Upper Flammable Limit: ND
   Lower Flammable Limit: ND
   Special Hazards: Explosive. Vapors can burn without the presence of air or oxidizing agents and is prone to static or other low energy ignition sources.
   Extinguishing Media: Water spray, carbon dioxide, dry chemical, alcohol-type or universal-type foams.

6. Accidental Release Measures
   May form explosive mixtures with air. Immediately evacuate all personnel from danger area. Wear self-contained breathing apparatus operated in the pressure demand mode and protective clothing. Remove all sources of ignition without risk. Reduce vapors with fog or fine water spray. Ventilate area of leak or move leaking assembly to well-ventilated area. Flood spills with water spray. To handle leaking cartridges, wear butyl gloves, coveralls and positive self-contained breathing apparatus. Neither pure ethylene oxide nor its aqueous solutions should be discharged to streams or sewers. Flammable vapors may spread from spill. Before entering area, especially confined areas, check atmosphere with appropriate device. Contingency planning is recommended for handling releases, spills and emergencies.

7. Handling and Storage
   Store in a cool, dry, well-ventilated area in the upright position. Keep away from heat and ignition sources.

8. Exposure Control/Personal Protection
   8.1 Occupational Exposure Limits
   Ethylene oxide: OSHA PEL = 1 ppm; OSHA Excursion Limit = 5 ppm
   8.2 Personal Protection
   Respirator Protection: An appropriate respirator is required if exposure limits are exceeded.
   Eye Protection: Chemical splash goggles.
   Protective Gloves: Butyl rubber
   Other Protective Clothing and Equipment: Butyl rubber apron.
   Engineering Controls/Ventilation: General or Local exhaust sufficient to control any release in excess of the threshold limits.

9. Physical and Chemical Properties
   Solubility in Water: Highly soluble
   Specific Gravity: 0.87 g/mL
   Physical State/Appearance/odor: Colorless liquefied gas with mild odor.
   Freezing Point: -112°C
   Odor Threshold, Vapor Pressure, Vapor Density, Evaporation Rate, Boiling Point and Freezing Point: ND
   Coefficient of Water/Oil Distribution: ND

10. Stability and Reactivity
    Stability: Unstable
    Hazardous Polymerization: May occur if contaminated with aqueous alkalies, amines, mineral acids, metallic chlorides or metal oxides.
    Incompatible Materials: Strong oxidizing agents, silver, magnesium, mercury, alkalis, acids, alcohols, mercaptans, alkali metals, amines metal chlorides and metal oxides.
    Conditions to Avoid/Conditions of Reactivity: Heat and ignition sources.

11. Hazardous Decomposition or Byproducts: Carbon monoxide and carbon dioxide.
11. Toxicological Information

11.1 Acute (Primary Routes of Exposure)

Inhalation of High Concentrations May be Fatal. Vapors cause irritation of the nose, throat and lungs. Depending on the degree of exposure, there may be stinging sensation of the nose and throat, coughing, chest tightness, headache, nausea, vomiting, diarrhea, light headed feeling, weakness, drowsiness, cyanosis, loss of coordination, convulsions and coma. May cause lung injury and the delayed onset of pulmonary edema. Inhalation LC₅₀ 800 ppm/4 hours.

Skin Contact (Irritancy or Sensitization): Sustained contact with the skin is unlikely, but can cause headaches, dizziness, nausea and vomiting. Dilute solutions may penetrate skin, producing a chemical burn. With liquid solutions in water, there may occur a local erythema, edema, and formation of vesicles. There may be a latent period of several hours to the onset of these symptoms. Large volumes of ethylene oxide spilled onto the skin may produce frostbite-like effect.

Eye (Irritancy) Contact: Liquid is irritating and can cause corneal injury. High concentrations of vapor can cause severe irritation and injury to the eyes.

Ingestion: A highly unlikely route of exposure. Severe irritation and ulceration of the mouth and throat, abdominal pain, nausea, vomiting, collapse and coma can occur. Oral LD₅₀ = 72 mg/kg (Male Rats).

11.2 Long Term Exposure

Ethylene oxide is considered by OSHA, NTP and IARC as a potential human carcinogen and mutagen. This product contains a chemical known to the State of California to cause cancer and reproductive harm. Allergic dermatitis may occur in a small proportion of exposed workers. In various reports involving recurrent exposures to high concentrations of ethylene oxide vapor, peripheral neurotoxic effects, and, in some cases, indications of central nervous system toxicity were described. Long term exposure to excessive levels of ethylene oxide may present reproductive, mutagenic, genotoxic, neurologic and sensitization hazards.

Reproductive Toxicity/Teratogenicity/Mutagenicity/Toxicologically Synergistic Products: ND

12. Ecological Information

None available.

13. Disposal Considerations

Do not contaminate ponds, waterways or ditches with chemical or used containers. Aerate empty cartridges according to instructions in the equipment manual. After aeration, dispose of with normal non-incinerated waste. Damaged or Expired Cartridges: Cartridges with damage to cap, or other damage (i.e. dents, scratches, etc.) that renders the cartridges unusable or prone to leakage should not be used. These cartridges should be disposed of according to local hazardous material disposal regulations. Unused cartridges with passed expiration dates should also be disposed of according to local hazardous material disposal regulations. Do not return any damaged, expired or unused cartridges to STERIS or to the cartridge manufacturer.

14. Transport Information

Ground: US Only: UN 1040, Ethylene Oxide, 2.3 (2.1), Inhalation Hazard Zone D, DOT-SP11265
(DOT-SP11265 relieves STERIS from labeling the case as a Toxic for US domestic transport only.)

Ground: Other than US: UN1040, Ethylene Oxide, 2.3 (2.1), Toxic, Flammable Gas, PG: NA

Road/Rail: ADR/RID Class: UN 1040, Ethylene Oxide, 2.3 (2.1), Toxic, Flammable Gas, Class 2, Classification Code 21F, Hazard Identification No. 263

Sea: IMDG Class: UN1040, Ethylene Oxide, 2.3 (2.1), Toxic, Flammable Gas, (Marine Pollutant: No)

Air: Forbidden for air transport