

## **POLLUTION AND SAFETY**

The raw material ethylene oxide used for the production of carbitol will explode in the presence of common igniters. Pure EtO vapor is difficult to ignite compared to oxide-air or hydrocarbon-air mixtures, requiring spark energies about ten thousand times larger.

The design of the plant should be such that the gas mixtures handled are always outside the explosive limit. The actual safe operating ranges are dependent on operating temperatures, pressures, equipment configurations, gas composition, dynamics of catalyst and instrumentation.

### **Health affects**

#### **Toxic effects**

There are no reports on effects of occupational exposure. There is one case report describing a man who drank about 300 ml of DEGEE. He developed severe symptoms of poisoning: CNS effects, breathing difficulty, thirst, acidosis and albuminuria .

An unpublished report (Kligman, 1972) cited by Opdyke describes dermal application of 20% DEGEE in petroleum jelly, under occlusion, to 25 volunteers for 48 hours. The application resulted in no irritation or sensitization. In another sensitization study, pure DEGEE was applied under occlusion to the backs of 98 young men for 7 days, followed by a 3-day application 10 days later. No skin sensitization or edema was observed, but 7 of the men had pronounced skin reddening.

#### **ACUTE/CHRONIC HAZARDS:**

When heated to decomposition this compound emits acrid smoke, irritating fumes and toxic fumes of carbon monoxide and carbon dioxide

## Personal Protection and Exposure Control

Eye: Wear goggles to avoid splash.

Skin: Use protective gloves.

Inhalation: Use mask while spraying. Avoid inhalation.

Engineering Controls: Sufficient ventilation to keep within OSHA PEL/TLV limit. The dried film of the product may contain all or some of the following OSHA chemicals and may become a dust nuisance when removed by sanding or grinding. OSHA recommends a PEL/TWA of 15 mg/m<sup>3</sup> for the respirable fraction. ACGIH recommends TLV/TWA of 10 mg/m<sup>3</sup> for total dust. Use approved mask, eye goggles and gloves while sanding, or grinding. Skin absorption may contribute to the overall exposure of the material.

## **HEALTH EFFECTS OF OVER EXPOSURE AND FIRST AID**

Primary Routes	Symptoms	First Aid
Eye	May cause burning and irritation upon direct contact.	Flush with water. Seek medical attention
Skin	Direct skin contact may cause skin irritation and dermatitis.	Wash with soap and water.
Ingestion	Severe oral intoxication will lead to intense burning of the throat and may result in drowsiness, numbness and headache followed by weakness & nausea.	Do not induce vomiting. Seek medical attention.
Inhalation	Acute overexposure in mist form may result in irritation of throat & lungs.	Remove person to fresh air. Apply artificial respiration.