

A. Toxic Chemicals:

- (1) Phosgene, COCl_2
CAS No. 75-44-5
HS No. 28.12.10.90
TDG 1076, Class 2, Secondary risks 6.1 and 8
NIOSH/RTECH No. SY5600000
Merck 7310

Synonyms: Carbonyl chloride, carbon oxychloride, chloroformyl chloride

Physical Characteristics: MW: 98.9; bp: $7.48^\circ \text{d}_{20} 1,387$; soluble in aromatic and aliphatic hydrocarbons, chlorinated hydrocarbons, organic acids and esters. It is a colourless gas or a yellow liquid with a sweet odour.

Synthesis: Manufactured on a large scale by the reaction of highly purified carbon monoxide and chlorine with the reagents being mixed in equimolar amounts over activated charcoal and the condensed phosgene removed. The vapours from the tubular-heat exchanges are scrubbed to remove the remaining phosgene before recirculation.

Reactivity: Decomposes slowly in water producing poisonous vapour, poisonous gases produced on heating, reacts with a wide variety of inorganic and organic substances.

Toxicology: It appears on the EPA extremely hazardous substance list and on the EPA TSCA inventory. It should be labelled as a poisonous gas. It is a severe irritant for eyes, skin and mucous membranes. It is poisonous by inhalation. There is a latent period of two to twenty four hours with death occurring 36 hours after exposure. Odour threshold is 0.5 to 1 ppm with a TLV of 0.1 ppm in air; concentrations in air should be below 0.1 ppm. Moisture leads to the formation of hydrochloric acid and carbon monoxide.

Uses: It is an important and widely used intermediate; mostly captive use within the plant boundary. About 85% of the production is used in the polyurethane industry. In 1977 U.S. demand was about 6.23×10^3 metric tons with a 10% growth per annum. Industrial use distribution was polymeric isocyanates 85%; polycarbonates 6%; pesticides, other isocyanates and speciality chemicals 9%. It has also been used to recover Pt, U, and Nb. Its use has been proposed for the manufacture of AlCl_3 , BeCl_2 and BCl_3 . It is used in the production of chloroformates and in the perfume, herbicide, insecticide and pharmaceutical industries.

Suppliers: The World Directory of Chemical Suppliers lists 22 manufacturers: Brazil (3), USA (4), PRC (1), India (1),