(8) Trimethyl Phosphite, $C_3H_9O_3P$
CA No. 121-45-9
HS No. 29.20.90.90
TDG No. 2329
NIOSH/RTECS No. TH 1400000

Synonyms: Methyl phosphite; phosphorous acid, trimethyl ester; trimethoxyphosphine

Physical Properties: MW 124.09, mp: -78°, bp: 112°, d 1.052, n_D^{20} 1.4080. Soluble in hexane, benzene, acetone, alcohol, ether and carbon tetrachloride; insoluble in water.

Synthesis: Phosphorous trichloride reacts with methanol in the presence of a base to form trimethyl phosphite.

Reactivity: Trialkyl phosphites react with carboxylic acids to form esters; at high temperatures these esters undergo an auto-Arbuzov rearrangement viz $(CH_3O)_3P\_CH_3P(O)(OCH_3)_2$. Emits toxic fumes, PO_x, on decomposition and is a flammable liquid.

Toxicology: Moderately toxic by ingestion and dermal contact, it is a severe skin and eye irritant. Its LD_{50} is 1600 mg/kg (rat) with a TLV of 2 ppm. It is reported in EPA TSCA inventory.

Uses: An intermediate in the production of persticides, fire retardants and organophosphorous additives. Also used in dyestuffs, optical brightners, plasticizers and lubricants.

Suppliers: There are 8 suppliers listed worldwide. These are Mexico (1), USA (2), PRC (2), Japan (1), Germany (1) and Switzerland (1); SRI International lists 5 USA producers.