Key precursors: methyldiethanolamine (CAS. No. 105-59-9).

Uses: The hydrochloride salt, $C_{15}H_{12}Cl_3N$, is used as an antineoplastic both in human and veterinary medicine. It is variously called Caryolysine, Chloramin, Dichloren, Embichin, Embikhine, Erasol, Mustargen hydrochloride, Mustine hydrochloride and Nitrogranulogen.

HN3, $C_6H_{12}Cl_3N$
CAS No. 55-77-1
HS No. 29.21.19
Merck 9560

Synonyms: Tris(2-chloroethyl)amine;2,2,2-trichlorotriethylamine.

Physical properties: MW: 204.54; mp: -3.7°C; bp: 256°C; $nO(^2D)^5$ 1.4925; d. 1.24; mobile amber liquid with the smell of fish; slightly soluble in water and miscible with most organic solvents; polymerises on standing.

Synthesis: The reaction of thionyl chloride on triethanolamine [Ward, J.A.C.S., 57, 914 (1935); Contardi and Dymontel, Chim. Ind (Milan) 29, 169 (1947) and Wilson and Tishler, J.A.C.S., 73, 3635 (1951)].

Toxicity: Causes immediate eye irritation and respiratory tract damage; liquid splashes will cause rashes followed by blistering. Death is usually due to asphyxiation. Median lethal dose is 1500 mg-min/m³ (inhalation) and 10,000 mg-min/m³ (skin). Vesicant.

Key precursors: triethanolamine (CAS No. 102-71-6).

Uses: Its hydrochloride, $C_6H_{13}Cl_4N$, called trimustine, trichloromethine, Singlost or Trillekamin is used as an antineoplastic.