PHYSICO-CHEMICAL PROPERTIES

Composition Tech. product is 92-97% pure. It is a mixture of approximately equal quantities of (*E*)- and (*Z*)- isomer.
Mol. wt. 111.0 **Mol. formula** $C_3H_4Cl_2$
Form Colourless-to-amber liquid (tech.) with a sweet penetrating odour.
M.p. < − 50 °C **B.p.** 108 °C; (*Z*)-isomer 104.3 °C; (*E*)-isomer 112 °C **V.p.** 3.7 kPa; (*E*)-isomer 2.3 kPa; (*Z*)-isomer 3.5 kPa (all at 20 °C) **SG/density** 1.214 (20 °C); (*E*)-isomer 1.224; (*Z*)-isomer 1.217 **K_{ow}** logP = 1.82 (20 °C); (*E*)-isomer logP = 2.03; (*Z*)-isomer logP = 2.06 (both 25 °C) **Solubility** In water 2 g/l (20 °C); (*E*)-isomer 2.32, (*Z*)-isomer 2.18 (both in g/l, 25 °C). Miscible with hydrocarbons, halogenated solvents, esters, and ketones. **Stability** Stable under normal conditions. DT_{50} 11.3 d (pH 5-9, 20 °C).
Flash point 25 °C (Abel closed cup).

COMMERCIALISATION

History Properties as a soil fumigant reported by Dow Chemical Co. (*Down Earth*, 1956, **12**(2), 7), who introduced it. **Manufacturer** DowElanco.

APPLICATIONS

Mode of action Soil fumigant nematicide. **Uses** Pre-planting control of most species of nematode in deciduous fruit and nuts, citrus fruit, berry fruit, vines, strawberries, hops, field crops, vegetables, tobacco, beet, pineapples, peanuts, ornamental and flower crops, tree nurseries, etc. Also has secondary insecticidal (soil insects) and fungicidal activity, and, by controlling nematode virus vectors, control is obtained of virus diseases of strawberries, raspberries, tomatoes, hops, etc. **Phytotoxicity** Phytotoxic, and should therefore not be applied near desired plants. **Formulation type** Liquid.
Compatibility Compatible with 1,2-dichloropropane (forming the mixture D-D).
Principal tradename 'Telone' (DowElanco), 'D-D92' (Cyanamid), 'D-D95' (Cyanamid), 'Nematox' (Siapa). **Mixtures** [*1,3-dichloropropene* +] 1,2-dichloropropane.

ANALYSIS

Product analysis by glc: details from DowElanco Ltd and Cyanamid. **Residues** determined by glc (M. V. McKenry & I. J. Thomason, *loc. cit.*; T. R. Roberts & G. Stoydin, *loc. cit.*).

MAMMALIAN TOXICOLOGY

Reviews WHO IPCS Environmental Health Criteria 146. **Acute oral** LD_{50} for rats 150 mg/kg. **Skin and eye** Acute percutaneous LD_{50} for rats 1200 mg/kg; severely irritating to skin, eyes and mucous membranes. Prolonged contact with skin can cause severe burns. **Inhalation** LC_{50} (4 h) for rats 2.70-3.07 mg/l air. See also NOEL data.
NOEL In 90 d inhalation studies NOEL for rats and mice 0.05 mg/l air. In 2 y inhalation studies NOEL for rats 0.099, mice 0.025 mg/l air. Not embryotoxic or teratogenic in rats and rabbits in inhalation studies at 0.59 mg/l. In 2-generation inhalation studies, NOEL on reproduction in rats 0.45 mg/l air. **ADI** Not appropriate.
Toxicity class EPA III. **Other** IARC (1987) Group 2B (Possibly carcinogenic in humans).

ECOTOXICOLOGY

Birds LD_{50} for bobwhite quail 152 mg/kg. Five-day dietary LC_{50} for mallard ducks and bobwhite quail > 10,000 mg/kg diet. **Fish** LC_{50} (96 h) for rainbow trout 3.9, bluegill