1,2-DICHLOROETHANE

($C_2H_4Cl_2$) CAS #107-06-2 (Volatile Organic Compound)

Synonyms include 1,2-Ethylene Dichloride dichloroethylene; ethylene dichloride

SOURCE/USE

1,2-Dichloroethane must be synthesized and does not occur naturally. It is used as a solvent, degreaser, and as a precursor to the synthesis of other chemical agents. It has been used as a soil fumigant and an additive in gasoline.

ROUTES OF EXPOSURE

Ethylene dichloride is absorbed via inhalation, ingestion or skin exposure. Fatal accidental poisonings have occurred by inhalation (1 case) and ingestion. The risk of an exposure sufficient to cause acute symptoms from 1,2-dichloroethane occurring off post due to the RMA remediation activity is very small. In the event of any such exposure, inhalation would be the most likely route. Also, the concentrations resulting in acute clinical effects discussed in this document reflect occupational exposures or animal studies and are much higher than those likely to be encountered at the fence line during remediation at the RMA. Gastrointestinal absorption of 1,2-dichloroethane can occur from swallowing mucus cleared from lungs containing inhaled particles. 1,2-dichloroethane is a colorless liquid which evaporates at room temperature and has a pleasant odor and sweet taste.

APPLICABLE STANDARDS AND LIMITS	
ATSDR MRL	Acute 2.43 mg/m^3
OSHA PEL	4 mg/m^3
OSHA STEL	8 mg/m^3
NIOSH REL	4 mg/m^3
ACGIH TLV	40 mg/m^3
Odor recognition	Not Available
RMA acute fence line criteria	ARC - ? MARC - ?
RMA chronic fence line criteria	Cancer - 0.10 $\mu g/m^3$ Noncancer - 4.9 $\mu g/m^3$

? - Air monitoring screening emission estimates indicate this chemical will only be present at very low concentrations and at low

frequency and will be addressed as needed in the future.

The goal of the remediation is exposure prevention through remedial design, environmental monitoring, and modeling. Failure of prevention could result in acute and/or chronic exposures. Following is an overview of the types of health effects associated with 1,2-dichloroethane exposure.

ACUTE HEALTH EFFECTS

High levels of exposure in animals and man produce CNS depression, with lethargy, confusion, loss of coordination, nausea and vomiting. Seizures may occur, with coma, brain hemorrhage and death when sufficient doses are absorbed.

1,2-dichloroethane produces lung damage with pulmonary edema and lung hemorrhage at high doses. The vapor is only mildly irritating to the respiratory tract.

1,2-dichloroethane is an irritant to skin and eye. Defatting of the skin leading to redness and reversible clouding of the cornea in eye exposure can occur.

Acute ingestion of 1,2-dichlorethane may create nausea, vomiting, diarrhea, and GI hemorrhage. Severe liver damage is a prominent feature of human poisonings.

Severe kidney damage is seen in human poisonings.

In animal testing, suppression of immune function, disturbance of blood clotting and effects on adrenal gland and spleen were variably present. Loss of embryos occurs in animals.

CHRONIC HEALTH EFFECTS

Chronic exposure to 1,2-dichloroethane causes cancer and damages DNA in some animal studies. The EPA has classified 1,2,-dichloroethane as a probable human carcinogen.