

CHLORDANE

(C₁₀H₆Cl₈) CAS # 12789-03-6 (Pesticide)

Synonyms include Chlordan, Chlor-Kil, CD-68, Octachlor, Termicide C-100, Toxichlor, and Velsicol 1068

SOURCE/USE

Chlordane is a synthetic compound. It was used widely as an insecticide on food crops and as a termiticide in buildings and homes. Since 1988, commercial production of chlordane has been prohibited in the US. However, chlordane is a persistent chemical and many homes and other structures, as well as the surrounding soil, have chlordane residues from prior use. Chlordane may be one of the more toxicologically important air contaminants found during remediation projects.

ROUTES OF EXPOSURE

Most exposures to chlordane occur by inhalation. Although the risk of off-post acute exposure to chlordane as a result of remediation at the Rocky Mountain Arsenal is very small, any such exposure would very likely be via inhalation. Also, the concentrations resulting in acute clinical effects discussed in this document reflect occupational exposures and are much higher than those likely to be encountered at the fence line during remediation at the RMA. Chlordane is odorless and therefore does not provide adequate warning of acutely hazardous concentrations. Chlordane vapor is heavier than air and may cause asphyxiation in enclosed, poorly ventilated, or low-lying areas. Other routes of exposure include dermal/ocular contact and ingestion.

APPLICABLE STANDARDS AND LIMITS	
ATSDR MRL	Acute 2 µg/m ³ Chronic 0.02 µg/m ³
NIOSH REL	0.5 mg/m ³
OSHA PEL	0.5 mg/m ³
ACGIH TWA	0.5 mg/m ³
Odor threshold	Odorless
RMA acute fence line criteria	ARC - 0.19 mg/m ³ MARC - 0.94 mg/m ³
RMA chronic fence line criteria	Cancer - 0.027 µg/m ³ Noncancer - 0.7 µg/m ³

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 chlordane exposure.

ACUTE HEALTH EFFECTS

Chlordane poisoning by any exposure route can cause refractory convulsions, muscle tremors, headaches, dizziness, incoordination, irritability, excitability, confusion, visual changes, loss of consciousness, coma, and death.

Some evidence of chest pains, dyspnea, shortness of breath, sore throat, and respiratory infections occur with exposure to chlordane.

Tachycardia was among the symptoms attributed to chlordane in a compilation of personal reports of accidental human inhalation exposure to high concentrations of chlordane.

Jaundice may occur from exposure to chlordane

Extensive skin contact may result in dermal irritation. Chlordane produced prior to 1951 had a high percentage of irritant impurities; chlordane produced after that date is generally nonirritating. Chlordane is absorbed well even through intact skin, and dermal absorption can lead to systemic toxicity.

No studies were located regarding ocular effects in humans after inhalation exposure to chlordane.

Cramps, nausea, and diarrhea were reported from inhalation exposures of chlordane.

CHRONIC HEALTH EFFECTS

Chronic chlordane exposure can cause headaches, lightheadedness, tremors, loss of coordination, numbness, memory deficits, weakness, and seizures. Chlordane commonly induces hepatomegaly in humans.

Chlordane is classified as a probable human carcinogen by the EPA.

Increased incidence of unspecified ovarian and uterine disease is associated with chlordane exposure. No studies of developmental or genotoxic effects were conducted on chlordane.