

Trichlorfon -MATERIAL SAFETY DATA SHEET

Manufacturer/information service:

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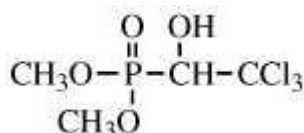
1. Chemical Product Identification

Product Name: Trichlorfon

Molecular Formula: C₄H₈Cl₃O₄P

Molecular Weight: 257.44

Structural Formula:



Chemical Name: dimethyl (*RS*)-2,2,2-trichloro-1-hydroxyethylphosphonate

Form: solid

Color: white

Odor: with organophosphate odor

CAS No.: 52-68-6

2. Composition / Information On Ingredients

Composition	CAS No.	Content %
Trichlorfon	52-68-6	97.0
Other ingredients		3.0

3. Hazards Identification

Harmful if swallowed. Irritating to skin and mucous. It may cause sensitization by skin contact. Typical signs and symptoms of organophosphorus poisoning may occur rapidly with overexposure (weakness, headache, vomiting, excessive sweating and salivation).

Pinpoint pupils; in severe cases, convulsions, unconsciousness and death due to respiratory paralysis). Moderately toxic for birds and fish; highly toxic for arthropods.

4. First Aid Measures

Contact with Skin: Remove and wash contaminated clothing; wash with plenty of water and soap. Obtain medical attention if necessary.

Contact with eyes: Flush with plenty of clean tap water or at least 15 minutes, asking the victim to move them in all directions. If irritation persists, obtain medical attention immediately.

Inhalation: In case of signs and symptoms remove from contaminated area, to fresh air and ask for medical attention.

Ingestion: Induce vomit, provided the victim is conscious. Get medical attention immediately.

5. Fire-Fighting Measures

Suitable extinguishing agents: Alcohol-resistant foam or dry powders.

Extinguishing agents not to be used: Do not use water in order to avoid polluted runoff from the site.

Special measures: Do not spill the extinguishing agents to soil, water or sewers.

Personal protection: Always wear protective clothing and self-contained breathing apparatus.

6. Accidental Release Measures

Personal precautions: Keep unnecessary people away; isolate spill area and deny entry. Avoid skin contamination and inhalation of the product; stay upwind. Ventilate closed spaces before entering.

Precautions for environmental protection: Prevent spillages from getting into sewers, cellars or soil. Cleanup methods: Adsorb spill with sand, sawdust, diatom soil, etc; sweep up and place the sweepings in a closeable, impervious container, labeled to transfer it to a safe place for disposal.

7. Handling and Storage

Handling: Containers and packages containing this pesticide will be handled carefully, so as to avoid spillages and breakings Store in original container, preferably in a locked area, away from children, feed, food. Do not heat above 55°C. Decomposes rapidly above 100°C, explosion may be induced.

8. Exposure Controls/Personal Protection

Engineering controls: Local exhaust or general ventilation to maintain exposure below PEL.

Personal Protective Equipment (PPE)

Eye/Face Protection: Chemical safety goggles

Hand/Skin Protection: Rubber, plastic or latex gloves. Long-sleeved shirt and pants or body coveralls.

Respiratory Protection: Dust/Mist filtering respirator a niosh approved respirator with any N>R>P or HE filter.

Work Practices: Wear appropriate personal protective equipment.

9. Physical and Chemical Properties

Water Solubility: 120,000 mg/L @ 20°C

Solubility in Other Solvents: s. in alcohols, ketones, dichloromethane, 2-propanol, methylene chloride, and toluene; s.s. in aromatic solvents; i.s. in n-hexane

Melting Point: 75-79°C

Vapor Pressure: 0.21 mPa @ 20 °C

Partition Coefficient: 5.75

Adsorption Coefficient: 10

Specific gravity: 1.73

10. Stability and Reactivity

Conditions to avoid: Do not heat above 55°C.

Incompatibility (materials to avoid): None

Hazardous Decomposition Products: Thermal decomposition (e.g. fire) may produce dimethyl sulfide, sulfur dioxide, carbon monoxide, carbon dioxide, phosphorus pentoxide, nitrogen oxides

Stability: This material is stable in normal condition.

Hazardous Polymerization: Will not occur.

11. Toxicological Information

Acute Toxicity: (Rat): Oral LD₅₀ approx. 560mg/kg;

Dermal 5000 mg/kg.

Mutagenic effects: Studies indicate that trichlorfon, or its degradation products, can be mutagenic in bacterial and mammalian cells. The insecticide produced mutations in mice when it was given in the highest tolerable single dose and in smaller, repeated doses.

Carcinogenic effects: One study suggests that oral doses of 37.5 to 75 mg/kg/day of trichlorfon contribute to the production of tumors in rats. Carcinogenic effects were also seen in rats given oral doses of 186 mg/kg or intramuscular doses of 183 mg/kg/day for 6 weeks. Benign tumors called 'papillomas' developed in the lining of the forward portion of the stomach when trichlorfon was administered to rats orally or subcutaneously. Rats that survived for 6 months had varying degrees of liver damage. However, no evidence of carcinogenicity was found in rats given the insecticide orally or intraperitoneally for 90 weeks. In addition, no evidence of carcinogenicity was observed when trichlorfon was administered orally, intraperitoneally, or dermally to mice. Thus, the carcinogenic data are inconclusive.

Organ toxicity: Trichlorofn primarily affects the nervous system through inhibition of cholinesterase, and enzyme required for proper nerve functioning. Other target organs include the liver, lungs, and bone marrow (blood-forming tissue).

12. Ecological And Ecotoxicological Information

Effects on birds: Trichlorfon is moderately to highly toxic to birds. Signs of intoxication in birds include regurgitation, imbalance, trembling, slowness, lack of movement, and wing-beat convulsions. Signs of poisoning appear as soon as 10 minutes after exposure, and death usually occurs within 30 minutes to 3 hours of treatment. The dietary LC50 for trichlorfon is 700 to 800 ppm in bobwhites. The estimated dietary LC50 is about 1800 ppm in 2-week-old Japanese quail that were fed treated feed for 5 days, followed by untreated feed for 3 days. Some 77% of exposed hen embryos were killed when 100 ppm of trichlorfon (in acetone) was injected into their eggs. The acute oral LD50 for trichlorfon is 36.8 mg/kg in mallards, 22.4 mg/kg in bobwhite quail, 59.3 in California quail, 95.9 mg/kg in male pheasant, and 23 mg/kg in rock doves.

Effects on aquatic organisms: Trichlorfon, in both technical and formulated forms, is very highly toxic to many aquatic species such as Daphnia, stoneflies, crayfish, and several freshwater fish species. Reported LC50 (96-hour) values are 0.18 mg/L (48-hour) in Daphnia, 0.01 mg/L in stoneflies, 7.8 mg/L in crayfish, 1.4 mg/L in rainbow trout, 2.5 mg/L in brook trout, 0.88 mg/L in channel catfish and 0.26 mg/L in bluegill. Toxicity in the field can be affected by many factors including temperature, pH, and water hardness, which may have different effects across species. In some species, temperature differences of 10 C could result in differences of 7 to 60 fold in observed 96-hour LC50 values. Effects of changing pH from 6.5 to 8.5 resulted in changes of 13 to 20 fold in several species. Generally, toxicity increased (i.e., observed LC50 was lower) with higher temperature and higher pH. Studies did not show a potential for trichlorfon to accumulate in fish.

Effects on other organisms: Trichlorfon has moderate to high acute toxicity toward certain beneficial or non-target insects. This pesticide may be toxic to other wildlife. Data indicate that trichlorfon has a low toxicity to bees; it can be used around bees with minimum injury.

13. Disposal Considerations

Pesticide Diaposal: Pesticide wastes are toxic, Incinerate all disposal material in accordance according to the local state regulations.

14. Transport Information

Not applicable.

15. Regulatory Information

Not applicable.

16. Other Information

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the product as such. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear. It is the responsibility of persons on receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produce formulations containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.