1. IDENTIFICATION OF PRODUCT AND COMPANY

**Product Name:** TRICHLORFON 950 SP  
**UN No.:** 2783  
**Supplier:** Villa Crop Protection (Pty) Ltd.  
PO Box 10413  
Aston Manor, 1630, South Africa  
**Telephone:** (011) 3962233  
**Fax:** (011) 3964666  
**Website:** www.villacrop.co.za

24 Hour Emergency response:  
Bateleur: 083 1233 911 or 0860 333 911  
In case of Poisoning:  
Red Cross Poison Information Centre: 021 689 5227  
Tygerberg Poison Information Centre: 021 931 6129  
Griffon Poison Information Centre: 082 446 8946

2. COMPOSITION / INFORMATION ON INGREDIENTS

**Common Name:** Trichlorfon  
**Chemical Name:** dimethyl 2,2,2-trichloro-1-hydroxethylphosphonate (IUPAC)  
**CAS No.:** 52-68-6  
**Chemical Family:** organophosphate  
**Chemical Formula:** C₄H₈Cl₃O₄P (Mol. Wt.: 257.4)  
**Use:** A water soluble contact and stomach insecticide for the control of fruit flies, pumpkin flies, carnation worm, army worm, cutworm, pluia looper, diamond back moth, lucerne caterpillar, lawn caterpillar on plants and fly maggots on manure heaps. Will also control leaf miner and antestia in coffee.

**Formulation:** Trichlorfon: 950 g/kg  
**Water Soluble Powder**

**Hazardous components:** Trichlorfon  
**SYMBOLS:** Xn, N  
**RISK-PHRASE(S):** R21/22, R26, R36/38, R43, R50,

3. HAZARD IDENTIFICATION

**Toxicity class:**  
WHO: II; EPA: II  
**ADI:** 0.01 mg/kg  
**NOEL:** 100 mg/kg (rats) and 300 mg/kg (mice) - 2 year  
50 mg/kg diet (dogs) - 4 year  
**Main Hazard:** This compound inhibits cholinesterase enzyme activity in the nervous tissue. Contact with skin, inhalation or swallowing may be fatal.

4. FIRST AID MEASURES AND PRECAUTIONS

Symptoms of exposure to the product include: nausea, headache, tiredness, giddiness, blurred vision and pupillary constriction. Depending on severity of poisoning these symptoms become worse with the onset of vomiting, abdominal pain, diarrhoea, sweating and salivation. Confusion, ataxia, slurred speech, loss of reflexes are some of the central nervous system effects that may lead to misdiagnosis of acute alcoholism.

**OVEREXPOSURE EFFECTS:**

After inhalation of vapours or spray effects appears within minutes: ocular and respiratory effects generally appear first. These include marked meiosis, ocular pain, conjunctival congestion, diminished vision, ciliary spasm and brow ache. With acute systemic absorption, meiosis may not be evident due to systemic absorption; meiosis may not be evident due to sympathetic discharge in response to the hypertension. In addition to rhinorrhea and hyperemia of the upper respiratory tract, respiratory effects consist of “tightness” in the chest and wheezing respiration caused by the combination of bronchoconstriction and increased bronchial secretion. Gastrointestinal symptoms occur earliest after ingestion and include anorexia, nausea and vomiting, abdominal cramps, and diarrhoea.

With percutaneous absorption of liquid, localized sweating and muscular fasciculation in the immediate vicinity are generally the earliest manifestations.

**Severe intoxication** is manifested by extreme salivation, involuntary defecation and urination, sweating, lacrimation, penile erection, bradycardia and hypotension. The airway should be kept clear to maintain respiration, particularly when the patient is unconscious or has vomited. The mouth and pharynx should be cleared and denatures removed. The jaw should be supported and the patient placed in a face down position with the head down and turned to one side, with the tongue drawn forward.
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First aid should include, if necessary, mouth-to-nose respiration, cardiac massage and avoidance of injury in patients with trauma.

**Inhalation:** Remove source of contamination or move victim to fresh air. Keep affected person warm and at rest. Supply oxygen if necessary. Treat symptomatically and supportively. Seek medical advice immediately.

**Skin contact:** Remove contaminated clothing, shoes and leather goods. Gently wipe of excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. Seek medical advice if necessary. Persons who become sensitised may require specialised medical management with anti-inflammatory agents.

**Eye contact:** Immediately flush eyes with gently flowing cold water or saline solution for 20 minutes, holding the eyelid(s) open. Seek medical attention immediately.

**Ingestion:** Have victim rinse mouth thoroughly with water. Do not induce vomiting, due to the aromatic solvent. Seek medical advice immediately.

**Advice to physician:** Atropine must be administrated as early as possible and could save lives, if given in time and in an adequate dosage. Patients with organophosphate poisoning require amounts of atropine far in excess of doses usually employed in medical practice. The therapeutic objective is to achieve atropinisation, as evidenced by dilation of the pupils, drying secretion, pulse rate of over 120/min, and flushing skin. To prevent gastrointestinal absorption in unconscious that have swallowed this product, perform stomach lavage using bicarbonate solution and activated charcoal.

In less severe cases begin with 2 mg atropine intravenously for adults or 0.05 mg atropine/kg body weight intravenously for children under 12 years of age and repeat administration of the drug at 15 – 30 min intervals.

In **severe cases** a total atropine dose of 20 – 80 mg in the first hour may be necessary, with repeated drug administrations at 3 – 10 min intervals. When signs of atropinisation appear the dose and frequency of administration should be reduced to a schedule that will maintain full atropinisation for at least 24h. Overdosage with atropine is rarely serious, but underdosage may be fatal in poisoning with organophosphorous compounds. In any severe progressive case of poisoning a cholinesterase reactivator e.g. pralidoxime (2PAM), if available, should be administrated, preferably within 8h after intoxication. An average dose is 1 g for an adult (up to 50 mg/kg for children), usually given half as a single intramuscular or intravenous injection and the other half as an intravenous infusion with glucose and or saline. In severe cases this treatment may be repeated in 1-2 h, then at 10 – 12 h intervals if needed, but not beyond 24 h, or 48 h at the most. Pralidoxime should be administered very slowly. If respiration is depressed during or after pralidoxime injection, pulmonary ventilation should be assisted mechanically.

Toxogonin is a more recent cholinesterase reactivator. It can be administrated instead of 2PAM at a dose of 250 mg intramuscularly for adults (4-8 mg/kg for children) and, if necessary, repeated after 1 –2 h. Diazepam should be included in the therapy of severe cases and whenever convulsions appear. Doses of 5 – 10 mg for adults (2-5 mg for children) can be administrated intravenously or subcutaneously or per rectum, and repeated as required.

**IMPORTANT**

Because of their respiratory-depressant effects, morphine and similar drugs are contraindicated for patients poisoned with organophosphorous compounds. Avoid aminoglycosides and succinylcholine, which have a blocking effect on the neuromuscular junction. Morphine, Phenothiazines, reserpine and theophylline are contraindicated in organophosphorous poisoning.

5. FIRE FIGHTING MEASURES

**Extinguishing agents:** Extinguish small fires with carbon dioxide, dry powder, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Contain water used for fire-fighting for later disposal. Avoid the accumulation of polluted run-off from the site.

**Firefighting:** Remove spectators from surrounding area. Remove container from fire area if possible. Fight fire from maximum distance. For massive fire, use unmanned hose holder or monitor nozzles. Contain fire control agents for later disposal. Use a recommended extinguishing agent for the type of surrounding fire. Water can be used to cool unaffected containers but must be contained for later disposal. Avoid inhaling hazardous vapours. Keep upwind.

**Special Hazards:** When heated to decomposition it emits toxic fumes of carbon monoxide, carbon dioxide, phosphorous oxides, hydrogen chloride and chlorine.

**Personal protective equipment:** Fire-fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES (SPILLAGE)

**Personal precautions:** Do not inhale fumes. Ventilate area of spill or leak, especially confined areas. Avoid contact with skin, eyes or clothes. For personal protection see Section 8.

**Environmental precautions:** Do not allow entering drains or watercourses. When the product contaminates...
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public waters, inform appropriate authorities immediately in accordance with local regulations.

Occupational spill: For small spills, dampen solid spill material with water and transfer the dampened material to a suitable container. Seal contaminated clothing and the absorbent paper in a vapour-tight plastic bag for eventual disposal. Wash all contaminated surfaces with soap and water. Thoroughly wash body areas, which come into contact with the product. Do not allow the product to come in contact with water systems. For large spills contact the manufacturer. Contain spillage and contaminated water for subsequent disposal. Do not flush spilled material into drains. Keep spectactors away and upwind.

7. HANDLING AND STORAGE REQUIREMENTS

Handling: Harmful by inhalation or if swallowed. Avoid contact with eyes and skin and inhalation of the product. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking or using the toilet. Operators should change and wash clothing daily. Remove clothing immediately if the insecticide gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination.

Storage: Store in its original container in isolated, dry, cool (avoid temperatures above 40°C) and well-ventilated area. Avoid cross contamination with other pesticides and fertilizers. Subjected to hydrolysis and dehydrochlorination. Decomposes proceeds more rapidly with heating and above pH 6. The product is rapidly converted to dichlorvos in alkaline media. Keep under lock and key out of reach of unauthorized persons, children and animals. Store away form incompatible substances. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Occupational exposure limits: No occupational limits established by OSHA, ACGIH or NIOSH.

Engineering control measures: It is essential to provide adequate ventilation. Ensure that control systems are properly designed and maintained. Only spark – resistant equipment should be used. Comply with occupational safety, environmental, fire and other applicable regulations.

PERSONAL PROTECTIVE EQUIPMENT: If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal equipment including approved respiratory protection.

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Respirator: An approved full-face respirator suitable for protection against the pesticides is required. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

Clothing: Employee must wear appropriate protective (impervious) clothing and equipment to prevent skin contact with the substance.

Gloves: Employee must wear appropriate chemical resistant protective gloves to prevent contact with this substance.

Eye protection: Employee must wear splash-proof safety goggles and face-shield to prevent contact with this substance.

Emergency eye wash: Where there is any possibility that an employee’s eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: A pale clear, white, or yellow crystalline solid with an ethyl ether odour.

Flammability: Non-flammable

Flash point: Not applicable.

Corrosivity: Corrosive to metals.

Bulk density: 0.65 to 0.8g/cm³. (depending on age of material).

Storage stability: Stable for up to 2 years under normal warehouse and field conditions. Subjected to hydrolysis and dehydrochlorination. Decomposes proceeds more rapidly with heating and above pH 6. The product is rapidly converted to dichlorvos in alkaline media.

Solubility in water: The product is water-soluble. 120 g/l at 20 °C (Active Ingredient)

Solubility in organic solvents: (All solubility figures for active ingredient at 21°C)

<table>
<thead>
<tr>
<th>Organic Solvent</th>
<th>Solubility (g/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>95% Ethanol</td>
<td>&gt;100</td>
</tr>
<tr>
<td>Acetone</td>
<td>&gt;100</td>
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</tbody>
</table>

Partition-coefficient in n-octanol / water: $K_{ow} (logP_{ow}) = 20$ (data for active substance).

Melting point: 75 to 79 °C

10. STABILITY AND REACTIVITY

Stability: The product is stable at room temperature. Subjected to hydrolysis and dehydrochlorination. Decomposes proceeds more rapidly with heating and above pH 6. The product is rapidly converted to dichlorvos in alkaline media.

Incompatibility: The product is compatible with most other common pesticides.
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Do not physically mix concentrate directly with other herbicides or pesticide concentrates; always dilute first.

Hazardous decomposition: Product is considered non-flammable, but it is probably combustible. When heated to decomposition it emits toxic fumes of carbon monoxide, carbon dioxide, phosphorous oxides, hydrogen chloride and chlorine.

11. TOXICOLOGICAL INFORMATION

Acute oral LD₅₀: 560 mg/kg body weight in rats.
Acute dermal LD₅₀: 2000 to 5000 mg/kg in rats.
Acute inhalation LC₅₀ (4 h): > 0.5 mg/l air (aerosol).
Acute skin irritation: Mild irritant to skin.
Acute eye irritation: This product is classified as moderately toxic and irritating to eyes.
Dermal sensitisation: Skin sensitivity has been reported in humans.
Carcinogenicity: Carcinogenic studies were inconclusive. No human information available.
Teratogenicity / Reproductive hazard: Studies at high doses detected tetragenic effects. Tetragenic effects are unlikely to occur in humans at expected exposure levels.
Mutagenicity: Studies indicate that the product display a mutagenic activity.

12. ECOLOGICAL INFORMATION

Degradability: (Technical material)
Trichlorfon breaks down, or degrades, rapidly in aerobic soils, with a half life of between 3 and 27 days. The pathway of degradation in soil involves both chemical and microbial processes. Intermediates are dichloretanol, dichloroacetic acid and trichloroacetic acid Environmental factors can greatly influence the degradation rate in soil; the most important being moisture, pH, organic content, and pesticide formulation.
Mobility: Trichlorfon is highly mobile in soil, but it is rapidly metabolised to CO₂. It is likely to contaminate ground water.
Accumulation: Will not bio-accumulate.
German wgk: 3
ECOTOXICOLOGY:
Birds: Moderately to highly toxic to birds.
Oral LD₅₀: Mallard ducks: 36,8 mg/kg
Bobwhite quail: 22,4 mg/kg
Rock doves: 23 mg/kg
Fish: Very highly toxic to fish and aquatic organisms.
LC₅₀ (96h): Rainbow trout: 1,4 mg/l
Channel catfish: 0,88 mg/l
Bluegill sunfish: 0,26 mg/l
Daphnia: LC₅₀ (48h): 0,18 mg/l

13. DISPOSAL CONSIDERATION

Pesticide Disposal: Open dumping or burning of this pesticide is prohibited. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Do not contaminate rivers, dams or any other water sources with the product or used containers.
Package product wastes: Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is destroyed. Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is destroyed. Combustible containers should be disposed of in pesticide incinerators. Empty the container of excess product into the container of the applicator. Destroy the emptied containers by perforation and flattening. Bury in an approved, designated landfill. Do not re-use the empty container for any other purpose. Comply with any local legislation applying to disposal. Prevent contamination of food, feedstuffs, drinking water and eating utensils.

14. TRANSPORT INFORMATION

UN NUMBER: 2783
ADR/IRD: Organophosphorous pesticide, solid, toxic (Trichlorfon 950 g/kg)
Substance ID NR: 2783
Hazard ID NR: 60
Label: 6.1
Item no: 73° (c )
AIR/IATA: Class: 6.1
Hazard Label: Toxic
Shipping name: Organophosphorous pesticide, solid, toxic (Trichlorfon 950 g/kg)
Packaging group: III
Passenger aircraft: Y619 (max 10 kg)
Cargo aircraft: 619 (max 100 kg)
619 (max 200 kg)
IMDG/IMO: Packaging group: III
Label of class: 6.1 Marine Pollutant
Shipping Name: Organophosphorous pesticide, solid, toxic (Trichlorfon 950 g/kg)
15. REGULATORY INFORMATION

Symbol: Xn, N
Indication of danger: Harmful, Environmentally Dangerous Substance

Risk phrases:
- R21/22 Harmful in contact with skin and if swallowed.
- R26 Very toxic by inhalation.
- R36/38 Irritating to eyes and skin.
- R43 May cause sensitization by skin contact.
- R50 Very toxic to aquatic organisms.

Safety phrases:
- S2 Keep out of the reach of children.
- S23 Do not breathe spray.
- S24/25 Avoid contact with skin and eyes.
- S36/39 Wear suitable protective clothing and eye/face protection.
- S46 If swallowed, seek medical advice immediately and show container or label.
- S61 Avoid release to the environment. Refer to special instructions/safety data sheets.

16. OTHER INFORMATION

Packing and Labelling:
The product is labelled according to South African regulations and guidelines.

Disclaimer:
The information on this sheet is not a specification; it does not guarantee specific properties. The information is intended to provide general guidance as to health and safety based upon our knowledge of the handling, storage use of the product. It is not applicable to unusual or non-standard uses of the product nor where instructions or recommendations are not followed.
All information is given in good faith but without guarantee in respect of accuracy, and no responsibility is accepted for errors and omissions or the consequence thereof.

END OF DOCUMENT

Compiled: January 1998
Reviewed: November 2013