1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Chemical Name: Trichlorfon

Catalogue #: T773855

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Product Uses: To be used only for scientific research and development. Not for use in humans or animals.

1.3 Details of the Supplier of the Safety Data Sheet

Company: Toronto Research Chemicals
2 Brisbane Road
Toronto, ON M3J 2J8
CANADA

Telephone: +14166659696
FAX: +14166654439
Email: orders@trc-canada.com

1.4 Emergency Telephone Number

Emergency #: +14166659696 between 0800-1700 (GMT-5)

2. HAZARDS IDENTIFICATION

WHMIS Classification (Canada)                          WHMIS Symbols (Canada)

D1B  Toxic Material Causing Immediate and Serious Toxic Effects
     Toxic by Ingestion

D2B  Toxic Material Causing Other Toxic Effects
     Skin Sensitizer

2.1/2.2 Classification of the Substance or Mixture and Label Elements

GHS Hazards Classification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

Acute Toxicity, Oral (Category 4)
Sensitisation, Skin (Category 1)
Hazardous to the Aquatic Environment, Long-Term Hazard (Category 1)

EU Classification (According to EU Regulation 67/548/EEC)

Harmful if swallowed. May cause sensitization by skin contact. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

EU Risk and Safety Statements (According to EU Regulation 67/548/EEC)

<table>
<thead>
<tr>
<th>Hazard Statements</th>
<th>Hazard Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmful</td>
<td>Xn</td>
</tr>
<tr>
<td>Environmental Hazard</td>
<td>N</td>
</tr>
</tbody>
</table>

Risk Codes and Phrases

R22  Harmful if swallowed.
R43  May cause sensitization by skin contact.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
General Advice
If medical attention is required, show this safety data sheet to the doctor.

If Inhaled
If inhaled, move casualty to fresh air. If not breathing, give artificial respiration and consult a physician.

In Case of Skin Contact
Wash affected area with soap and water. Consult a physician if any exposure symptoms are observed.

In Case of Eye Contact
Immediately rinse eyes with plenty of water for at least 15 minutes. Consult a physician.

If Swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Do NOT induce vomiting unless advised to do so by a physician or Poison Control Center. Seek medical attention.

2.3 Unclassified Hazards/Hazards Not Otherwise Classified
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Molecular Formula: \( \text{C}_4\text{H}_8\text{Cl}_3\text{O}_4\text{P} \)  
Molecular Weight: 257.44  
CAS Registry #: 52-68-6  
EC#: 200-149-3  
Synonyms
(2,2,2-Trichloro-1-hydroxyethyl)phosphonic Acid Dimethyl Ester; (±)-Trichlorfon; 1-Hydroxy-2,2,2-trichloroethylphosphonate-O,O-dimethyl Ester; Aerol 1 (pesticide); Agroforotox; Anthon; BAY-L 1359; BAY-a 9826; Bayer Advanced 24hr Grub Control; Chlorak; Chlorofos; Chlorofthalm; Chlorophos; Chloroxyphos; Combot; DEP; DEP (pesticide); DETF; Danex; Depthon; Dibachiung; Dimethyl (2,2,2-Trichloro-1-hydroxyethyl)phosphonate; Dimethyl 1-Hydroxy-2,2,2-trichloroethylphosphonate; Dimetox; Dioxaphos; Dipterex; Dipterex 50; Dipterex 500; Dipterex SL; Dipterex WP 80; Diptevur; Ditrifon; Ditriphon 50; Dylox; Dyrex; Dyvon; ENT 19,763; Flibol E; Fliegenteller; Forotox; Foschlor; Foschlor R; Foschlor R 50; Hypodermacid; Loisol; Masoten; Mazoten; Methyl

3.2 Mixtures
Not a mixture

4. FIRST AID MEASURES

4.1 Description of First Aid Measures
General Advice
If medical attention is required, show this safety data sheet to the doctor.

If Inhaled
If inhaled, move casualty to fresh air. If not breathing, give artificial respiration and consult a physician.

In Case of Skin Contact
Wash affected area with soap and water. Consult a physician if any exposure symptoms are observed.

In Case of Eye Contact
Immediately rinse eyes with plenty of water for at least 15 minutes. Consult a physician.

If Swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Do NOT induce vomiting unless advised to do so by a physician or Poison Control Center. Seek medical attention.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed
No data available
5. FIREFIGHTING MEASURES

5.1 Extinguishing Media
Suitable Extinguishing Media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special Hazards Arising from the Substance or Mixture
Carbon oxides, Phosphorous oxides, Hydrogen chloride

5.3 Advice for Firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further Information
No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures
Use recommended personal protective equipment (see Section 8). Prevent the formation of dusts and mists. Adequate ventilation must be provided to ensure dusts or mists are not inhaled.

6.2 Environmental Precautions
Material should not be allowed to enter the environment. Prevent further spillage or discharge into drains, if safe to do so.

6.3 Methods and Materials for Containment and Cleaning Up
Contain the spill and then collect using non-combustible absorbent material (such as clay, diatomaceous earth, vermiculite or other appropriate material). Place material in a suitable, sealable container and then dispose according to local/national regulations and guidance (see Section 13).

For protective equipment, refer to Section 8. For disposal, see Section 13.

7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling
Avoid contact with skin and eyes. Ventilation and proper handling are to be used to prevent the formation of dusts and mists. Normal measures for preventative fire protection. No smoking, eating or drinking around this material. Wash hands after use.

7.2 Conditions for Safe Storage, Including any Incompatibilities
Ensure container is kept securely closed before and after use. Keep in a well ventilated area and do not store with strong oxidizers or other incompatible materials (see Section 10).

Storage conditions: Amber Vial, Room Temperature,

7.3 Specific End Uses
For scientific research and development only. Not for use in humans or animals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters
Contains no components with established occupational exposure limits.

8.2 Exposure Controls
Appropriate Engineering Controls
A laboratory fumehood or other appropriate form of local exhaust ventilation should be used to avoid exposure.

Personal Protective Equipment
All recommendations below are advisory in nature and a risk assessment should be performed by the employer/end user prior to use of this product. The type of protective equipment must be selected based on the amount and concentration of the dangerous material being used in the workplace.

Eye/Face Protection
Safety glasses or safety goggles. All equipment should have been tested and approved under appropriate standards, such as NIOSH (US), CSA (Canada), or EN 166 (EU).
Skin Protection
Gloves should be used when handling this material. Gloves are to be inspected prior to use. Contaminated gloves are to be removed using proper glove removal technique so that the outer surface of the glove does not contact bare skin. Dispose of contaminated gloves after use in compliance with good laboratory practices and local requirements.

Gloves used for incidental exposures (splash protection) should be designated as “low chemical resistant” or “waterproof” by EU standard EN 374. Unrated gloves are not recommended.
Suggested gloves: AnsellPro nitrile gloves style 92-500 or 92-600, 5 mil thickness.
Penetration time has not been determined.

Gloves used for prolonged direct exposure (immersion) should be designated “chemical resistant” as per EN 734 with the resistance codes corresponding to the anticipated use of the material.
Penetration time has not been determined.

These recommendations may not apply if the material is mixed with any other chemical, or dissolved into a solution. A risk assessment must be performed to ensure the gloves will still offer acceptable protection.

Body Protection
Fire resistant (Nomex) lab coat or coveralls.

Respiratory Protection
Recommended respirators are NIOSH-approved N95 or CEN-approved FFP2 particulate respirators. These are to be only used as a backup to local exhaust ventilation or other engineering controls. If the respirator is the only means of protection, a full-face supplied air respirator must be used.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

A) Appearance
White to Off-White Solid
B) Odour
No data available

C) Odour Threshold
No data available
D) pH
No data available

E) Melting Point/Freezing Point
71-75°C
F) Initial Boiling Point/Boiling Range
No data available

G) Flash point
No data available
H) Evaporation Rate
No data available

I) Flammability (Solid/Gas)
No data available
J) Upper/Lower Flammability/Explosive Limits
No data available

K) Vapour Pressure
No data available
L) Vapour Density
No data available

M) Relative Density
No data available
N) Solubility
Chloroform, Methanol

O) Partition Coefficient: n-octanol/water
No data available
P) Auto-Ignition Temperature
No data available

Q) Decomposition Temperature
No data available
R) Viscosity
No data available

S) Explosive Properties
No data available
T) Oxidizing Properties
No data available

9.2 Other Information
No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical Stability
Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions
No data available
10.4 Conditions to Avoid
No data available

10.5 Incompatible Materials
Strong oxidizing agents.

10.6 Hazardous Decomposition Products
No data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

A) Acute Toxicity
LD50 (oral - rat)  450 mg/kg

B) Skin Corrosion/Irritation
No data available

C) Serious Eye Damage/Irritation
No data available

D) Respiratory or Skin Sensitization
May cause an allergic skin reaction.

E) Germ Cell Mutagenicity
No data available

F) Carcinogenicity
No data available

G) Reproductive Toxicity/Teratogenicity
No data available

H) Single Target Organ Toxicity - Single Exposure
No data available

I) Single Target Organ Toxicity - Repeated Exposure
No data available

J) Aspiration Hazard
No data available

K) Potential Health Effects and Routes of Exposure

Inhalation
May be harmful if inhaled. May cause respiratory tract irritation.

Ingestion
Harmful if swallowed.

Skin
May be harmful if absorbed through skin. May cause skin irritation.

Eyes
May cause eye irritation.

L) Signs and Symptoms of Exposure
No data available

To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been thoroughly investigated.

M) Additional Information
RTECS: TA0700000

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistance and Degradability
No data available

12.3 Bioaccumulative Potential
No data available

12.4 Mobility in Soil
No data available
12.5 Results of PBT and vPvB Assessment
No data available

12.6 Other Adverse Effects
No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

A) Product
Product may be burned in an incinerator equipped with afterburner and scrubber. Excess and expired materials are to be offered to a licensed hazardous material disposal company. Ensure that all Federal and Local regulations regarding the disposal and destruction of this material are followed.

B) Contaminated Packaging
Dispose of as above.

C) Other Considerations
Product is not to be disposed of in sanitary sewers, storm sewers, or landfills.

14. TRANSPORT INFORMATION

14.1 UN Number

| DOT (US): | N/A | IATA: 3077 | IMDG: 3077 | ADR/RID: 3077 |

14.2 UN Proper Shipping Name

| DOT (US)/IATA: | Not dangerous goods / Environmentally hazardous substance, solid, n.o.s. (Trichlorfon) |
| IMDG/ARD/RID: | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Trichlorfon) |

14.3 Transport Hazard Class(es)

| DOT (US): | N/A | IATA: 9 | IMDG: 9 | ADR/RID: 9 |

14.4 Packing Group

| DOT (US): | N/A | IATA: III | IMDG: III | ADR/RID: III |

14.5 Environmental Hazards

| DOT (US): | None | IATA: None | IMDG: None | ADR/RID: None |

14.6 Special Precautions for User

None

15. REGULATORY INFORMATION

This safety data sheet complies with the requirements of WHMIS (Canada), OSHA 1910.1200 (US), and EU Regulation EC No. 1907/2006 (European Union).

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

A) Canada

DSL/NDSL Status: This product or a component of this product is registered on the Canadian DSL/NDSL.

B) United States

TSCA Status: This product or a component is listed on the US EPA TSCA.

C) European Union

ECHA Status: This product is not registered with the EU ECHA.

15.2 Chemical Safety Assessment

No data available

16. OTHER INFORMATION

16.1 Revision History

Original Publication Date: 9/30/2014

16.2 List of Abbreviations

LD50  Median lethal dose of a substance required to kill 50% of a test population.
LC50  Medial lethal concentration of a substance required to kill 50% of a test population.
LDLo  Lowest known lethal dose
TDLo  Lowest known toxic dose
IARC  International Agency for Research on Cancer
NTP   National Toxicology Program
RTECS Registry of Toxic Effects of Chemical Substances

16.3 Further Information

Copyright 2015. Toronto Research Chemicals Inc. Copies may be made for internal use only. The above information is believed to be correct to the best of our knowledge, but is to be only used as a guide. To the best of our knowledge, the
chemical, physical, and toxicological properties have not been thoroughly investigated. Please take all due care when handling this product.