



MATERIAL SAFETY DATA SHEET

TRI-CON PREPLANT SOIL FUMIGANTS

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: Tri-Con Preplant Soil Fumigants Date Prepared: December 30, 2003
 CHEMICAL FAMILY: Alkyl bromide, trichloronitromethane mixture Date Revised: May 7, 2007
 SYNONYMS: Methyl Bromide, Chloropicrin mixture
 PRINCIPAL USE: Pesticide (Fumigant)

DISTRIBUTOR: TriCal, Inc. 8770 Highway 25 Hollister, CA 95023 Customer Service: 831-637-0195, X 3036 Monday – Friday, 8:00am – 5:00 pm PST	24-HOUR EMERGENCY TELEPHONE NUMBER: CHEMTREC: (800) 424-9300 (24 hours)
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2. COMPOSITION, INFORMATION ON INGREDIENTS

CAS #	Chemical Name	RTECS Number	% by Weight	NFPA 704 Rating
74-83-9	Methyl Bromide	PA49000000		3 – 1 – 0
	Tri-Con 45/55		45	
	Tri-Con 50/50		50	
76-06-2	Tri-Con 57/43	PB6300000	57	4 – 0 – 3
	Chloropicrin		55	
	Tri-Con 45/55		50	
	Tri-Con 50/50		43	
	Tri-Con 57/43			

OSHA HAZARDOUS INGREDIENTS

Chemical Name	PEL	TLV – ACGIH	IDLH Immediately Dangerous to Life or Health
Methyl Bromide	C 20 ppm (Skin) 5 ppm (TWA)	C 20 ppm (Skin) 5 ppm (TWA)	250 ppm
Chloropicrin	0.1 ppm TWA 0.7 mg/m ³ TWA	0.1 ppm TWA 0.7 mg/m ³ TWA	2 ppm

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance:	Colorless gas at normal temperatures and pressure.
DANGER!	Toxic. May be fatal if inhaled. Harmful if swallowed. Contact can result in chemical burns.



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POISON!	Respiratory distress; may cause lung damage, cardiac arrest. May cause central nervous system effects.
Target Organs:	Eyes, skin, respiratory system, stomach.
Routes of Exposure:	Ingestion, inhalation and skin absorption.
Signs & Symptoms:	Symptoms appear slowly and include: dizziness, blurred vision, lassitude, sensation of fatigue, staggering gait, slurred speech, nausea, vomiting, lack of appetite, and loss of muscle coordination. High concentrations can cause convulsions; very high concentrations cause lung damage. Prolonged skin and eye contact can cause burns.
Medical Conditions Aggravated by Exposure:	Dermatitis; respiratory disorders

POTENTIAL HEALTH EFFECTS*

Eyes	<ul style="list-style-type: none"> • Chemical burns are possible. • Blurred vision
Skin	<ul style="list-style-type: none"> • Chemical burns are possible
Ingestion	<ul style="list-style-type: none"> • Toxic. May be harmful if swallowed.
Inhalation	<ul style="list-style-type: none"> • Highly toxic. May be fatal if inhaled. May cause respiratory distress, cardiac arrest and nervous system effects.
Chronic	<ul style="list-style-type: none"> • Chronic overexposure may cause neurotoxic effects including peripheral nerve damage and central nervous system effects, respiratory effects and cardiac effects. • Methyl bromide has been classified as Group 3 by IARC. An IARC Group 3 material exhibits limited evidence for carcinogenicity in experimental animals and no human data. • Based on an epidemiology study, methyl bromide may be associated with an increase in prostate cancer risk in both private and commercial pesticide applicators. • May cause genotoxic effects.
Carcinogenicity	None associated with this chemical

4. FIRST AID MEASURES

Eyes	Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Occasionally, lift the upper and lower eyelids. Get medical attention if discomfort continues.
Skin	Immediately remove contaminated clothing, shoes, and other items covering the skin. Wash contaminated skin area thoroughly with soap and water. Aerate and then launder any contaminated clothing, shoes, gloves, etc. Dispose of heavily contaminated clothing.
Inhalation	Get exposed person to fresh air. Keep warm. Make sure person can breathe freely. Place victim in half upright position. If breathing has stopped, give artificial respiration, preferably with the aid of a pocket mask to avoid contact with the chemical substance. Do not give anything by mouth to an unconscious person. Get medical attention as soon as possible. Administer 100% humidified oxygen, if available.
Ingestion	If conscious and alert, have victim rinse the contaminated mouth cavity several times with a fluid such as water. Get medical attention immediately.
Other	Obtain medical assistance at once in case of illness or burn after exposure, or if irritation to eyes



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Instructions	and respiratory tract persist. Do not allow conditions that could accidentally cause further exposure until recovery is complete.
Note to Physician	No additional information available.

5. FIRE-FIGHTING MEASURES

Flash Point (°F.)	None
Flammable Limits	10 – 15 %
Auto Ignition Temperature	Not available
Extinguishing Media	All conventional fire extinguishing media are suitable: water spray, dry chemical, carbon dioxide, alcohol-resistant chemical foam.
Special Fire Fighting Procedures	<ul style="list-style-type: none"> • Evacuate area at least 300 feet. • Wear self-contained breathing apparatus and full turnout gear for fire situations. See Section 8, which addresses protective clothing for spill situations. • Cool with flooding water from a distance upwind using unattended hose holders. • Stay away from the ends of cylinders.
Unusual Fire & Explosion Hazards	<ul style="list-style-type: none"> • Not explosive but during a fire, irritating and toxic gas may be generated by thermal decomposition or combustion. • Methyl bromide is ignitable by a high energy spark at the flammability limits listed above. • Closed cylinder may rupture if heated by fire. • NOTE: Per DOT regulations, cylinders containing Methyl Bromide are not equipped with relief valves or fusible overpressure devices.

6. ACCIDENTAL RELEASE MEASURES

Spill Mitigation	<ul style="list-style-type: none"> • Use proper personal protective equipment (PPE) as indicated in Section 8. • Eliminate all sources of ignition in immediate area. • Do not touch damaged containers or spilled material unless wearing appropriate PPE. • Avoid low places, ventilate closed spaces before entering, and work upwind if possible.
Small Spills <25 gallons	<ul style="list-style-type: none"> • Isolate immediate area at least 100 feet. • Wear SCBA and recommended PPE. • Methyl Bromide readily vaporizes so provide ventilation. • Allow spilled fumigant to evaporate or cover spill with water, soil, or plastic tarp to reduce vapors. • Absorb onto inert material such as vermiculite, dry sand, or dirt and deposit spill in a sealable polyethylene or steel container.
Large Spills >25 gallons	<ul style="list-style-type: none"> • Isolate at least 300 feet in all directions. • Wear SCBA and recommended PPE. • Contain with dikes and cover diked area with water to reduce vapors. Move leaking or damaged cylinders outdoors to an isolated location.



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Containment	<ul style="list-style-type: none">• Prevent entry into waterways, sewers, basements, or confined areas.• Do not permit entry into the spill or leak area by any other person until the concentration of Methyl Bromide is measured to be less than 5 ppm.
Disposal	<ul style="list-style-type: none">• See section 13.

7. HANDLING AND STORAGE

HANDLING

- This fumigant product is a highly hazardous material and must be handled with care only by individuals experienced with its proper use. **READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.**
- Persons moving, handling, or opening containers must wear the personal protective equipment as specified in the Hazards to Humans section of the product label.
- Ropes, slings, hooks, tongs, and similar handling devices should not be used for unloading cylinders. A suitable hand truck, fork truck, or similar device to which the cylinders can be firmly secured should be used for transporting the heavier cylinders.
- When cylinder is not in use, keep valves closed and secure.
- Ventilation: Whenever possible. Open cylinder only in a well-ventilated area with the operator "upwind" from the container or provide ventilation to control airborne levels below the permissible exposure limit.
- Keep away from open flame or heat.
- Do not allow to spill.
- Always have adequate clean water available to wash the skin.
- If product splashes or spill on shoes or clothing, remove them at once. Vapors from contaminated area will be an intolerable source of irritation. If liquid contacts skin where rings or bandages are worn, remove them and wash exposed skin with soap and water. Air expose shoes or clothing outside and do not wear until free of all traces of fumigant. Keep and wash PPE and work clothing separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product.
- Use only dry nitrogen gas (180 psig maximum) to pressurize cylinders.
- Do not use containers or application equipment made of magnesium, aluminum, or strong oxidizers. Methyl Bromide attacks aluminum to form aluminum trimethyl, which is SPONTANEOUSLY flammable.
- Containers should never be refilled by the consumer or used for any other product or purpose.
- For disposal, see Section 13.

STORAGE

- Cylinders should be tightly closed.
- Store in a cool, dry, well-ventilated area under lock and key (secured).
- Keep flammable and combustible liquids, oxidizers, and combustible solid materials away from Methyl Bromide cylinders.
- Post as a pesticide storage area.
- Do not contaminate water, food, or feed by storage or disposal.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING CONTROLS



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Work / Hygienic Practices	After handling material, wash hands and face before eating, drinking, or smoking.
Equipment	Emergency eyewash and shower facilities should be readily accessible.
Ventilation	Use in well-ventilated places, and work upwind from cylinders whenever possible. Use only under a chemical fume hood.

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT

Clothing	Loose-fitting or well ventilated long-sleeved shirt, long pants or coveralls, socks with shoes. Do NOT wear jewelry, tight clothing, rubber protective clothing, or rubber boots when handling.
Eyes	Full-face shield or safety glasses with brow and side shields must be worn if full-facepiece respiratory protection is not required. Do NOT wear goggles.
Skin	Gloves – Do Not use gloves.
Respiratory	Chloropicrin acts as a warning agent but must not be depended upon alone to make respirator use decisions. Methyl Bromide air concentrations less than 5 ppm: <ul style="list-style-type: none"> No respiratory protection required. Air concentrations equal to or greater than 5 ppm: <ul style="list-style-type: none"> Positive pressure self-contained breathing apparatus (SCBA). Continuous-flow supplied air respirator equipped with escape cylinder & full facepiece. Emergency or planned entry into unknown concentrations: <ul style="list-style-type: none"> Any full facepiece, positive pressure self-contained breathing apparatus (SCBA). Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand mode in combination with an auxiliary self-contained positive-pressure breathing apparatus (5 to 10 minute escape cylinder). Escape: <ul style="list-style-type: none"> Any appropriate escape-type, self-contained breathing apparatus.
Measurement	The air concentration level can be measured by a direct reading detection device, such as a Rikin Gas Detector, or Dräger pump, using a Methyl Bromide detector tube.

PERSONAL PROTECTION FOR SPILLS/EMERGENCY

Fire	In case of fire only, use normal fire fighting equipment. If chemical release and fire involved, wear recommended chemical protective clothing in conjunction with normal fire fighting gear.
Spills	Minimum PPE: Liquid impervious chemical coveralls, Upgrade respiratory protection in accordance with the "Routine Use" table above in this Section.
Chemical Protective Clothing	<ul style="list-style-type: none"> For cleanup where liquid splash will be incidental, a liquid impervious chemical coverall may be worn such as Tyvek QC or Saranex SL. In confined areas or where liquid splash is likely, wear a vapor-tight suit such as Tychem TK or Lappler CPF3. Use Responder, or Tychem against permeation by Methyl Bromide for periods greater than 8 hours; Use Butyl, Neoprene, Teflon for up to 4 hours.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Colorless gas at NTP; colorless liquid below BP
Odor	Chloropicrin has an intensely irritating odor.
pH	Not applicable



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Vapor Pressure	1400 @ 68 °F; 2600 @ 104 °F Chloropicrin – 18.3 @ 68 °F
Vapor Density	~3.27 Chloropicrin – 5.7
Evaporation Rate	Not available for product
Specific Gravity	1.7 @ 0 °C Chloropicrin – 1.6558 @ 68 °F
Density	13.93 to 13.94 pounds/gallon @ 68 °F
Boiling Point	38.5 °F (3.6 °C) Chloropicrin – 234 °F
Freezing/Melting Point	Not available for product
Decomposition Temperature	Not available for product
Solubility	1.75 g/100g of water @ 68 °F Chloropicrin – 0.16 g/100g water
Viscosity	Not available for product
% Volatile	Not tested, presumed volatile
Molecular Formula	Mixture
Molecular Weight	Mixture
Other	<ul style="list-style-type: none"> Vapors are heavier than air

10. STABILITY AND REACTIVITY

Stability	Product is stable under normal temperatures and pressures.
Conditions to Avoid	Incompatible materials; excess heat.
Materials to Avoid Incompatibility	Aluminum, magnesium, zinc, alkali metals, or strong bases.
Hazardous Decomposition Products	Decomposes to carbon monoxide, carbon dioxide, hydrogen bromide, bromine, nitrosyl chloride and nitrogen oxides.
Hazardous Polymerization	Will not occur.
Special Precautions	None reported.

11. TOXICOLOGICAL INFORMATION

HUMAN TOXICOLOGY FOR METHYL BROMIDE

NOTE: Methyl Bromide has been evaluated and the data are summarized below:

Value (LD ₅₀ or LC ₅₀)	Animal	Routes	Components
3,120 ppm/15 minutes	Rat	Acute Inhalation	Methyl Bromide
302 ppm/8-hr	Rat	Acute Inhalation	Methyl Bromide
214 mg/kg	Rat	Acute Oral	Methyl Bromide

TOXICOLOGICAL INFORMATION

An inhalation of LC_{Lo} of 60,000 ppm for 2 hours has been found in humans. Methyl bromide is a poison and can cause respiratory distress, cardiac arrest and central nervous system effects. Overexposure may cause neurotoxic effects from which recovery may be slow. Methyl bromide demonstrates genotoxicity in several test systems at levels above the TLV.

In a two-year inhalation cancer bioassay with rats at 3, 30 and 90 ppm no tumors were observed.



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In a two generation inhalation reproduction study with rats at 3, 30 and 90 ppm the no observed effect level (NOEL) was 3 ppm. At the higher doses organ weight variation was observed in some offspring.

In a 24-month chronic dietary study in rats, a NOEL for systemic toxicity of microencapsulated methyl bromide was considered to be 50 ppm (equivalent to 2.20 mg/kg/day for males and 2.92 mg/kg/day for females). The low observable effect level (LOEL) was considered to be 250 ppm (equivalent to 11.10 mg/kg/day for males and 15.12 mg/kg/day for females) based on reduced food consumption, body weight gains and body weights noted during the first 12 to 18 months of the study. Methyl bromide was not oncogenic upon dietary administration for two years.

In an EPA/NIH-sponsored epidemiology study entitled *Agricultural Health Study*, pesticides were evaluated based on cancer related deaths and questionnaire results provided by farmers, nursery workers and commercial pesticide applicators in Iowa and North Carolina. Results associated methyl bromide with an increase in prostate cancer risk in pesticide applicators. Exposures to methyl bromide were not confirmed. Incidence and intensity estimations were based solely on self-reporting via a questionnaire. Although the interpretation of the data collected in the study led to a statistically significant increase in prostate cancer risk from methyl bromide applicators, the authors could not rule out the possibility that the observations may have occurred by chance alone and findings need to be confirmed.

12. ECOLOGICAL INFORMATION FOR METHYL BROMIDE

- Methyl Bromide is toxic to fish and wildlife. Methyl Bromide is a water priority chemical; and as such, should be kept out of lakes, streams and ponds. Do not contaminate water by cleaning of equipment or disposal of wastes.

13. DISPOSAL CONSIDERATIONS

<u>Return Cylinders To:</u> TriCal, Inc. 8770 Highway 25 Hollister, CA 95023 Customer Service: 800-637-0195, X 3050	<ul style="list-style-type: none"> • Cylinders are the property of Trical, Inc. and should be returned promptly by collect auto freight and according to label instructions on cylinder. • Do not ship cylinders without safety caps or valve protection bonnets. • When a cylinder is partially full and there is no further requirement for the product, contact the company for return instructions.
Discharge	<ul style="list-style-type: none"> • Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a national discharge elimination system (NPDES) permit. • Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority.
Disposal	<ul style="list-style-type: none"> • Do not contaminate water, food, or feed by storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. • If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, the Hazardous Waste representative at the nearest EPA Regional Office, or the product manufacturer or distributor for guidance.



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14. TRANSPORT INFORMATION

LAND: US DOT	<p>Shipping Paper Description for non-bulk packages: Chloropicrin and Methyl Bromide Mixture, 2.3, UN1581, Poison Inhalation Hazard, Zone B, RQ (Methyl Bromide)</p> <p>Shipping Paper Description for Bulk packages: Chloropicrin and Methyl Bromide Mixture, 2.3, UN1581, Poison Inhalation Hazard, Zone B, RQ (Methyl Bromide), Marine Pollutant</p> <p>DOT Marking on Non-Bulk Package: Chloropicrin and Methyl Bromide Mixtures, Inhalation Hazard, UN1581, RQ (Methyl Bromide)</p> <p>DOT Marking on Bulk Package: Chloropicrin and Methyl Bromide Mixtures, Inhalation Hazard, UN1581, RQ (Methyl Bromide) Marine Pollutant</p> <p>DOT Hazard Warning Label: Poison Gas 2</p> <p>DOT Placard: Poison Gas 2</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. For empty packages containing residue only, add the words "RESIDUE, Last Contained" in association with the proper shipping description listed above. 2. For packages that contain less than the reportable quantity of 1000 lbs. of Methyl Bromide, "RQ (Methyl Bromide)" is not necessary on shipping paper or marking.
WATER (IMO/IMDG)	Use the shipping information indicated above for LAND transport adding the words " MARINE POLLUTANT " to the shipping description on both Bulk and Non-Bulk packages, add the DOT MARINE POLLUTANT mark to both Bulk and Non-Bulk packages, add the MARINE POLLUTANT mark to the outside of the Freight Container.
AIR (IATA/ICAO)	Forbidden
Reportable Quantity	1000 lbs. (Methyl Bromide)
Emergency Guide	123 (ERG-Emergency Response Guidebook)

15. REGULATORY INFORMATION

U.S. FEDERAL

TSCA

TSCA Inventory:	Methyl Bromide, CAS# 74-83-9 is listed Chloropicrin, CAS# 76-06-2 is listed
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SARA

Section 302 (RQ)	RQ (Reportable Quantity) for Methyl Bromide is 1000 lbs. No RQ for Chloropicrin		
Section 302 (TPQ)	TPQ (Threshold Planning Quantity) for Methyl Bromide is 1000 lbs. No TPQ for Chloropicrin		
SARA Codes	Tri-Con Preplant Soil Fumigant	Acute, Chronic	
	Methyl Bromide, CAS# 74-83-9	Acute, Chronic	
	Chloropicrin, CAS# 76-06-2	Acute, Chronic	
Section 313	This product contains the following EPCRA Section 313 chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372):		
	CAS Registry Number	Chemical Name	% by Weight
	74-83-9	Methyl Bromide	45, 50, 57
	76-06-2	Chloropicrin	55, 50, 43

RCRA (HAZARDOUS WASTES)

Listed U or P	This product or its ingredients are not specifically listed.
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CLEAN AIR ACT

Hazardous Air Pollutants	This material does not contain any HAPS.
Class 1 or 2 Ozone depletors	Methyl Bromide is considered to be an Ozone depletor.

CLEAN WATER ACT / OIL POLLUTION ACT OF 1990

Section 311 (40 CFR 110)	Methyl Bromide is classified. Chloropicrin is not classified.
Priority Pollutants	Methyl Bromide is listed. Chloropicrin is not listed.

STATE

Methyl Bromide can be found on the following state right-to-know lists: New Jersey, Massachusetts, Pennsylvania
Chloropicrin can be found on the following state right-to-know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts

EUROPEAN / INTERNATIONAL REGULATIONS

This material is listed on the following inventories:

- | | |
|------------------|---------------------|
| Canada – DSL | Korea – ECL |
| EU – EINECS | Philippines – PICCS |
| Australia – AICS | China – List I |
| Japan – ENCS | |



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16. ADDITIONAL INFORMATION

Hazard Rating Systems

Category	NFPA 704*	NPCA-HMIS**
	Tri-Con	Tri-Con
Health	4	4
Flammability	1	1
Reactivity	3	3

* NFPA – National Fire Protection Association

704 – (National Fire Code Standard No. 704)

** NPCA – National Paint Coatings Association

HMIS – Hazardous Material Information System

Hazard Key

4 - Severe 3 - Serious 2 - Moderate 1 - Slight 0 - Minimal

WARRANTY

Notice: The information above is believed to be accurate and represents the best information currently available to us. Seller warrants that this product conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use, but neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use of this product contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to seller, and buyer assumes the risk of any such use. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.