



MATERIAL SAFETY DATA SHEET

MBC CONCENTRATE SOIL FUMIGANT

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1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: MBC Concentrate Soil Fumigant Date Prepared: December 20, 2003
CHEMICAL FAMILY: Alkyl bromide, trichloronitromethane mixture Date Revised: May 27, 2005
SYNONYMS: Methyl Bromide, Chloropicrin mixture
PRINCIPAL USE: Pesticide (Fumigant)

REGISTRANT:

Hendrix and Dail, Inc.
P. O. Box 648
1101 Industrial Blvd.
Greenville, NC 27835-0648
Customer Service: 800-637-9466

DISTRIBUTOR EMERGENCY TELEPHONE NUMBER:

(252) 758-4263 Monday – Friday, 8:00 am - 5:00 pm EST

24-HOUR EMERGENCY TELEPHONE NUMBER:

CHEMTREC: (800) 424-9300

2. COMPOSITION / INFORMATION ON INGREDIENTS

| CAS # | Chemical Name | % by Weight | RTECS Number | NFPA 704 Rating |
|---------|----------------|-------------|--------------|-----------------|
| 74-83-9 | Methyl Bromide | 98 | PA49000000 | 3 – 1 – 0 |
| 76-06-2 | Chloropicrin | 2 | PB6300000 | 4 – 0 – 3 |

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/m3 TWA | 0.1 ppm TWA 0.7 mg/m3 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. |
| POISON! | Respiratory distress; may cause lung damage, cardiac arrest. May cause central nervous system effects. |
| Target Organs: | Eyes, skin, respiratory system, stomach. |



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| | |
|---|--|
| 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. And 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 Instructions | Obtain medical assistance at once in case of illness or burn after exposure, or if irritation to eyes and respiratory tract persist. Do not allow conditions that could accidentally cause further exposure until recovery is complete. |



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Note to
Physician

No additional information available.

5. FIRE FIGHTING MEASURES

| | |
|----------------------------------|--|
| Flash Point (°F.) | None |
| Flammable Limits | 10 – 15 % |
| Autoignition 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 cylinders may rupture if heated by fire.• NOTE: Per DOT regulations, cylinders containing Chloropicrin 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, work upwind if possible. |
| Small Spills < 25 gallons | <ul style="list-style-type: none">• Isolate immediate area at least 100 feet.• Wear 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. |
| 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. |



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7. HANDLING AND STORAGE

HANDLING

- This fumigant product is a highly hazardous material and must be handled with care only by those 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 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 spills 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 trimethyl aluminum, 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 CONTROL AND PPE

ENGINEERING CONTROLS

| | |
|---------------------------|--|
| Work / Hygienic Practices | Wash hands and face before eating, drinking, or smoking after handling material. |
| 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. |



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PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT

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|-------------|---|
| 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 wear gloves. |
| Respiratory | <p>Air concentrations less than 5 ppm:</p> <ul style="list-style-type: none"> No respiratory protection required. <p>Air concentrations equal to or greater than 5 ppm:</p> <ul style="list-style-type: none"> Positive pressure self-contained breathing apparatus (SCBA). Continuous-flow supplied air respirator equipped with escape cylinder & full facepiece. <p>Emergency or planned entry into unknown concentrations:</p> <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). <p>Escape:</p> <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 Kappler CPF 3. Use Responder, or Tychem against permeation by Methyl Bromide for periods greater than 8 hours. Use Butyl, Neoprene, or Teflon® for up to 4 hours. |

9. PHYSICAL AND CHEMICAL PROPERTIES OF PRODUCT

| | |
|------------------------|--|
| Physical State | Colorless gas at NTP; colorless liquid below BP |
| Odor | Chloropicrin has intensely irritating odor |
| pH | Not applicable |
| 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 – 1.66 @ 68° F |
| Density | 14.4 pounds/gallon |
| Boiling Point | 38.5° F (3.6° C) Chloropicrin – 234° F |
| Freezing/Melting Point | Not available for product |



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| | |
|---------------------------|---|
| Decomposition Temperature | Not available for product |
| Solubility | 1.75 g/100g of water @ 68° F Chloropicrin – 0.16 g/100 g 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.

In a two generation inhalation reproduction study with rats a 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/hg/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



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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

| | |
|---|---|
| Return Cylinders To: Hendrix and Dail, Inc. 1101 Industrial Blvd Greenville, NC 27834 Customer Service: (800) 637-9466 | <ul style="list-style-type: none">• Cylinders are the property of Hendrix and Dail, 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

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|---------------------|--|
| LAND USDOT | Shipping Paper Description: Methyl Bromide, 2.3, UN1062, Poison Inhalation Hazard, Zone C, RQ (Methyl Bromide) DOT Marking: Methyl Bromide, Inhalation Hazard, UN1062, RQ (Methyl Bromide) DOT Hazard Warning Label: Poison Gas 2 DOT Placard: Poison Gas 2 Notes: <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 above2. For packages that contain less than the reportable quantity of 1000# of Methyl Bromide, "RQ (Methyl Bromide)" is not necessary on shipping paper or marking |
| WATER (IMO/IMDG) | Same as Land above |
| AIR (IATA/ICAO) | Forbidden |
| Reportable Quantity | 1000# (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 |
|-----------------|--|

SARA

| Section 302 (RQ) | RQ (Reportable Quantity) for Methyl Bromide is 1,000 lbs No RQ for Chloropicrin | | | | | | | | | | | |
|----------------------------|--|--|--|----------------------------|----------------------|--------------------|---------|----------------|----|---------|--------------|---|
| Section 302 (TPQ) | TPQ (Threshold Planning Quantity) for Methyl Bromide is 1,000 lbs No TPQ for Chloropicrin | | | | | | | | | | | |
| Sara Codes | MBC Concentrate Soil Fumigant Methyl Bromide, CAS# 74-83-9 Chloropicrin, CAS# 76-06-2 | Acute, Chronic Acute, Chronic Acute, Chronic | | | | | | | | | | |
| Section 313 | This product contains the following EPCRA section 313 chemicals subject to the reporting requirements of EPCRA section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372): <table><tr><th><u>CAS Registry Number</u></th><th><u>Chemical Name</u></th><th><u>% by Weight</u></th></tr><tr><td>74-83-9</td><td>Methyl Bromide</td><td>98</td></tr><tr><td>76-06-2</td><td>Chloropicrin</td><td>2</td></tr></table> | | | <u>CAS Registry Number</u> | <u>Chemical Name</u> | <u>% by Weight</u> | 74-83-9 | Methyl Bromide | 98 | 76-06-2 | Chloropicrin | 2 |
| <u>CAS Registry Number</u> | <u>Chemical Name</u> | <u>% by Weight</u> | | | | | | | | | | |
| 74-83-9 | Methyl Bromide | 98 | | | | | | | | | | |
| 76-06-2 | Chloropicrin | 2 | | | | | | | | | | |



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RCRA (HAZARDOUS WASTES)

| | |
|---------------|---|
| Listed U or P | This product or its ingredients are not specifically listed |
|---------------|---|

CLEAN AIR ACT

| | |
|------------------------------|--|
| Hazardous Air Pollutants | This material does not contain any HAPS |
| Class 1 or 2 Ozone depleters | This material is considered to be an Ozone depletory |

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, Pennsylvania, Massachusetts

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

Australia – AICS

EU – EINECS

Philippines – PICCS

China – List 1

Japan – ENCS

16. ADDITIONAL INFORMATION

HAZARD RATING SYSTEMS

| | NFPA 704* | NPCA-HMIS** |
|--------------|-----------|-------------|
| Category | MBC Conc. | MBC Conc. |
| Health | 4 | 4 |
| Flammability | 1 | 1 |
| Reactivity | 3 | 3 |

* NFPA – National Fire Protection Association

** NPCA – National Paint Coatings Association

704 - (National Fire Code Standard No. 704)

HMIS – Hazardous Material Information System

Hazard Key

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



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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.