MATERIAL SAFETY DATA SHEET

SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

Product identifier: **METHYL PARATHION 4 EC**

Product use: Insecticide.

Supplier's name and address:

Cheminova Inc.

1700 Route 23, Suite 300
Wayne, NJ, USA
07470
Phone #: (973) 305-6600 (8 AM to 5:00 PM EST, Monday to Friday)

Emergency Telephone #: 1-866-303-6950 (Medical Emergencies)
1-800-424-9300 (24 Hr. Chemtrec Number)

Manufacturer's name and address:

Refer to supplier.

MSDS Prepared by: Cheminova Inc.
MSDS Preparation date: August 18, 2003
Revision date: March 29, 2005

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS #	% (weight)	ACGIH TLV (mg/m^3)	OSHA PEL (mg/m^3)
Parathion-methyl	298-00-0	30 - 60	0.2	N/Av
Aromatic solvent naphtha	64742-94-5	30 - 60	N/Av	N/Av
Xylene	1330-20-7	7 - 13	100 ppm	100 ppm
Valeric acid	109-52-4	0.5 – 1.5	N/Av	N/Av

This material is classified as hazardous under OSHA regulations (29CFR 1910.1200).

SECTION 3 — HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Amber liquid, rancid odor.
Danger! Flammable liquid and vapor. Dangerous exothermic decomposition may occur at temperatures greater than 212°F / 100°C. May be fatal if inhaled or swallowed. Can enter lungs and cause damage. Harmful if absorbed through the skin. Contains a material which can cause nervous system damage. May be dangerous for the environment. This material is toxic to birds, bees and aquatic invertebrates. In case of fire, use water fog, dry chemical, CO_2 or 'alcohol' foam. Water may be ineffective.

POTENTIAL HEALTH EFFECTS

Target organs: Eyes, skin, respiratory system, digestive system, nervous system.

Signs and symptoms of short-term (acute) exposure:

Inhalation: Methyl parathion is a very dangerous poison through inhalation. This material can cause rapid organophosphorous poisoning. Symptoms of poisoning may include headache, nausea, vomiting, blurred vision, tightness in chest, drooling and frothing of mouth and nose, convulsions, coma and death.

Skin contact: Direct skin contact may cause slight irritation. Methyl parathion can be rapidly absorbed through all skin surfaces. Causes symptoms similar to those listed for inhalation.

Eye contact: Direct eye contact may cause slight irritation. Methyl parathion can be rapidly absorbed through all skin and eye surfaces. Causes symptoms similar to those listed for inhalation.

Ingestion: Methyl parathion is a very dangerous poison through ingestion. Causes symptoms similar to those listed for inhalation. This product presents an aspiration hazard. Aspiration into the lungs may cause life-threatening lung injury.

Effects of long-term (chronic) exposure: Prolonged or repeated overexposure may cause behavioural changes. Prolonged or repeated skin contact may cause drying and cracking of the skin (dermatitis). Prolonged or repeated overexposure may cause liver effects.

SECTION 3 — HAZARDS IDENTIFICATION CONTINUED

Carcinogenicity: See TOXICOLOGICAL INFORMATION (Section 11).

Other important hazards: Cholinesterase inhibitor. May cause Central Nervous System depression. May cause damage to the peripheral nervous system. See TOXICOLOGICAL INFORMATION (Section 11).

Potential environmental effects: This material is highly toxic to fish and wildlife. See ECOLOGICAL INFORMATION (Section 12).

SECTION 4 — FIRST AID MEASURES

Inhalation: Immediately remove victim to fresh air. If breathing has stopped, begin artificial respiration immediately. Transport to a clinic or hospital immediately.

Skin: Immediately flush skin with running water for at least 15 minutes, while removing contaminated clothing and shoes. Obtain medical attention immediately. Thoroughly clean contaminated clothing before re-use.

Eyes: Immediately flush eyes with running water for at least 30 minutes. Get medical attention immediately.

Ingestion: If ingested, induce vomiting immediately, only as directed by medical personnel. Be aware that the product contains petroleum distillates which can cause aspiration. Never give anything by mouth if victim is unconscious or convulsing. Transport to a clinic or hospital immediately.

Note to physician: Methyl parathion is a cholinesterase inhibitor affecting the central and peripheral nervous systems and producing respiratory and cardiac depression. Decontamination procedures such as whole body washing, gastric lavage and administration of activated charcoal are often required. Administer atropine sulphate in large doses. Two to four mg intravenously or intramuscularly as soon as cyanosis is overcome. Repeat at 5 to 10 minute intervals until signs of atropinization appear. 2-PAM chloride is a pharmacological antidote and may be administered as an adjunct to, but not a substitute for atropine, which is a symptomatic and often life-saving antidote. DO NOT GIVE MORPHINE OR TRANQUILIZERS. At first sign of pulmonary edema, the patient should be given supplemental oxygen and treated symptomatically. Continued absorption of Methyl parathion may occur and relapse may occur after initial improvement. VERY CLOSE SUPERVISION OF THE PATIENT IS INDICATED FOR AT LEAST 48 HOURS.

SECTION 5 — FIRE FIGHTING MEASURES

Fire hazards/conditions of flammability: Flammable liquid. This material will burn when exposed to extreme heat, flame and other ignition sources. Material may decompose rapidly when exposed to heat and flame. Heat of decomposition may cause closed containers to build up pressure and explode

Flammability classification (OSHA 29 CFR 1910.1200): Class II Combustible Liquid.

Flash point (Method): 122°F / 50°C (PMCC).

Lower flammable limit (% by volume): 1.0 (Xylene)
0.7 (Aromatic solvent naphtha)

Upper flammable limit (% by volume): 7.0 (Xylene)
7.0 (Aromatic solvent naphtha)

Explosion data:

Sensitivity to mechanical impact: Not sensitive.

Sensitivity to static discharge: Not expected to be sensitive to static discharge.

Auto-ignition temperature: 928°F (498°C) (Xylene)
830°F (443°C) (Aromatic solvent naphtha)

Suitable extinguishing media: For small fires, use dry chemical or carbon dioxide. For large fires, use water spray or foam.

Special fire-fighting procedures/equipment: Firefighters should wear proper chemically protective equipment and self-contained breathing apparatus operated in positive pressure mode. Move containers from fire area if it can be done without risk. Dike area to prevent water run-off. Water spray may be useful in cooling equipment and containers. Avoid spreading burning material with water jet.

Hazardous combustion products: Carbon oxides, nitrogen oxides, phosphorous oxides, sulfur oxides.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal precautions: Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. All persons dealing with clean-up should wear the appropriate chemically protective equipment. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

Environmental precautions: Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. Dike far ahead of the spill for later recovery or disposal.

SECTION 6 — ACCIDENTAL RELEASE MEASURES CONTINUED

Spill response/Cleanup: Eliminate all sources of heat, sparks and flame. Ventilate area of release. Stop leak if you can do so without risk. For spills on the floor or other impervious surfaces, absorb spill with inert, non-combustible absorbent material, such as hydrated lime, Fuller's earth or other absorbent clays. Scoop up and place contaminated absorbent material into suitable containers for later disposal (see Section 13). Rinse spill area with soda lye. Do not flush to sewer or allow to enter confined spaces. Large spills that soak into the ground should be dug up, placed in suitable containers and disposed of appropriately (see Section 13). Notify the appropriate authorities.

Prohibited materials: None known.

Special spill response procedures: If a spill/release in excess of EPA reportable quantity is made into the environment, immediately notify the national response center (phone: 1-800-424-8002).

EPA/CERCLA Reportable quantity: **Methyl parathion** (RQ 100 lbs.)
Xylene (RQ 100 lbs.)
The additional chemical listed below is believed to be at trace levels or is a trace component of the Aromatic solvent naphtha (CAS # 64742-94-5):
Naphthalene, CAS # 91-20-3 (100 lbs.).

SECTION 7 — HANDLING AND STORAGE

Safe handling procedures: This material is a toxic liquid. Wear full chemically protective equipment during handling. Use only in well ventilated area. Avoid all contact with eyes, skin and clothing. Do not inhale vapors or mists. Keep away from all unprotected persons and children. Do not use near sources of heat, flame or direct sunlight. Methyl Parathion 4EC should never be heated above 131°F / 55°C and also local heating above this temperature should be avoided. Keep away from alkalies and incompatibles. Use caution when opening containers. Keep container tightly closed when not in use. Wash thoroughly after handling.

Storage recommendations: Store in a cool, dry, well ventilated area away from incompatibles. Avoid storage above 77°F / 25°C for prolonged periods of time. Protect container from physical damage. No smoking in the area. Inspect containers periodically for damage or leaks.

Special packaging materials: Always keep in containers made of the same materials as the supply container.

SECTION 8 — EXPOSURE CONTROLS AND PERSONAL PROTECTION

Ventilation and engineering controls: If handled indoors, provide mechanical exhaust ventilation to keep concentrations below specified TLV's and PEL's.

Respiratory protection: Respiratory protection is required. Wear a pesticide respirator jointly approved by the MSHA and NIOSH. Advice should be sought from respiratory protection specialists.

Protective gloves: Wear impervious chemical gloves, such as barrier laminate, butyl rubber, nitrile rubber or viton. Advice should be sought from glove suppliers.

Eye protection: Wear chemical splash goggles to prevent splashes from entering the eyes.

Other protective equipment: Wear impervious chemical apron and protective clothing (water-proof pants, coat, hat or rubber boots) to prevent skin contact. Other protective equipment, such as an eyewash station and safety shower, may be required depending on exposure and on workplace standards.

Permissible exposure levels: See Section 2.

General hygiene considerations: Do not breathe vapors or mists. Avoid contact all contact with eyes, skin and clothing. Before removing gloves, wash them with soap and water. Always wash hands, face and arms with soap and water before smoking, eating or drinking. After work, take off all protective equipment, work clothes and shoes, and wash with soap and water. Respirator should be cleaned and filter replaced according to manufacturer's instructions. Wear only clean, uncontaminated clothes when leaving place of work. Persons working with this product for a longer period should have frequent blood tests for cholinesterase levels. If the cholinesterase levels fall below a

critical point, no further exposure should be allowed until it has been determined, by means of blood tests, that cholinesterase levels have returned to normal.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical state, odor and appearance: Amber liquid, rancid odor.
Odor threshold: N/Av
Specific gravity (water = 1): 1.06 g/mL
Solubility in water: 55-60 mg/L @ 68°F/20°C (Methyl parathion)
<0.1% @ 68°F/20°C (Aromatic solvent naphtha)
pH: N/Av.
Melting/freezing point: <63°F / 17°C.
Boiling point: 228°F / 109°C @ 1 mmHg (Methyl parathion)
280-291°F / 138-144°C (Xylene)
347-419°F / 175-215°C (Aromatic solvent naphtha)
Vapour pressure: Methyl parathion: 1.72 x 10^{-5} mmHg @ 77°F / 25°C
21.8 x 10-5 mmHg @ 113°F / 45°C
Aromatic solvent naphtha: 3.8 mmHg @ 100°F / 38°C
9.8 mmHg @ 131°F / 55°C
Xylene: 7 mmHg @ 77°F / 25°C
Vapour density (Air=1.0): N/Av
Percent Volatile by Weight: N/Av
Evaporation rate (n-BuAc=1.0): N/Ap
Coefficient of n-Octanol/water distribution: 3300 (Methyl parathion)

SECTION 10 — REACTIVITY AND STABILITY DATA

Stability and reactivity: Stable if handled below 131°F / 55°C and stored below 77°F / 25°C. At higher temperatures decomposition may take place and lower the quality of the product. The released heat from decomposition can raise the temperature further and accelerate decomposition. Chlorpyrifos can corrode iron, steel, tin plate and copper. It can be hydrolysed in water by heating and adjusting the pH (alkaline).
Hazardous polymerization: Methyl parathion will decompose rapidly when heated to temperatures above 212°F / 100°C, significantly increasing the risk of inducing explosions. The decomposition is to a considerable extent dependant on time as well as temperature due to exothermic and autocatalytic reactions. The reactions involve rearrangements and polymerisation releasing volatile, malodorous and inflammable compounds such as diethyl sulfide.
Conditions to avoid: Avoid heat, flame and direct sunlight.
Materials to avoid (incompatibles): Strong alkalies, strong oxidizing compounds.
Hazardous decomposition products: None known. Refer to 'Hazardous combustion products', Section 5.

SECTION 11 — TOXICOLOGICAL INFORMATION

Routes of exposure: Skin contact, skin absorption, eye contact, inhalation, and ingestion.
Toxicological data: LC_{50} (mg/L/4 hrs) = 0.119
LD_{50}, oral, rat (mg/kg) = 13
LD_{50}, dermal, rat (mg/kg) = 662
Carcinogenicity: This product does not contain any materials above reportable levels which are classified as carcinogenic by IARC, ACGIH, OSHA or NTP.
Teratogenicity, mutagenicity, other reproductive effects: None observed in test animals. This product does not contain any materials above reportable levels which are considered to be Teratogenic, mutagenic or reproductive effectors.
Sensitization to material: None known. This product does not contain any materials above reportable levels which are considered to be respiratory or skin sensitizers.
Synergistic materials: Not available.
Conditions aggravated by exposure: Repeated exposures to cholinesterase inhibitors, such as Methyl parathion, may without warning cause increased susceptibility to doses of any cholinesterase inhibitor.

SECTION 12 — ECOLOGICAL INFORMATION

Chemical fate information: The product should not be allowed to enter drains or water courses or be deposited where it can affect ground or surface waters. Do not discharge product unmonitored into the environment. This material is highly toxic to fish and wildlife. The active ingredient, Methyl parathion, is readily biodegradable. It undergoes rapid degradation in the environment and, without problems, in sewage treatment plants. No adverse effects are observed at concentrations up to 100 mg/L in waste water treatment plants. Degradation occurs both aerobically and anaerobically, and biologically as well as abiologically.

SECTION 12 — ECOLOGICAL INFORMATION CONTINUED

Ecotoxicological information: Methyl parathion is toxic to birds, bees and aquatic invertebrates. The acute toxicity is:

Fish – 96-Hr LC_{50} (95% CI), Rainbow trout *(Salmo gairdneri)* = 3.70 mg/L.
Invertebrates – 48-Hr EC_{50}, Daphnids *(Daphnia magna)* = 7.3 µg/L.
Birds – LD_{50}, Mallard = 10.0 mg/kg.
Bees - 24-Hr LD_{50}, worker honey-bees *(Apis mellifera)*, acute oral = 0.013 µg/bee.
24-Hr LD_{50}, worker honey-bees *(Apis mellifera)*, topical = 0.04 µg/bee

SECTION 13 — DISPOSAL CONSIDERATIONS

Handling for disposal: Handle waste according to recommendations in Section 7.

Methods of disposal: Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Please contact the Manufacturer for information on returnable / refillable containers. For non-refillable containers, triple rinse (or equivalent) containers, then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill. Disposal must be in accordance with all applicable federal, state and local regulations. Contact your local, state or federal environmental agency for specific rules.

SECTION 14 — TRANSPORTATION INFORMATION

US 49 CFR information:

Proper Shipping Name: Organophosphorous pesticides, liquid, toxic, flammable (Methyl parathion, Aromatic solvent naphtha).
Primary Hazard Class: 6.1.
Label Codes: 6.1, 3.
Identification Number: UN3017
Packing Group: II.
Reportable Quantity: 100 lb
Marine Pollutant: Severe (PP).

Canadian Transportation of Dangerous Goods Clear Language (CLR) information:

Shipping description: ORGANOPHOSPHOROUS PESTICIDE, LIQUID, TOXIC, FLAMMABLE (Methyl parathion, Aromatic solvent naphtha), Class 6.1(3), UN3017, PGII.

SECTION 15 — REGULATORY INFORMATION

Canada:

WHMIS information: This product is a Pest Control Product and is not regulated as a Controlled Product under the Hazardous Products Act (HPA). However, for reference purposes only, this product would have the following WHMIS Classification if it were regulated as a Controlled Product under the HPA: **Class B3** *(Combustible Liquids)*; **Class D1A** *(Materials causing immediate and serious toxic effects, Very Toxic Material)*, **Class F** *(Dangerously Reactive Material)*.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and this MSDS contains all the information required by the CPR.

United States:

EPA/CERCLA Reportable Quantity (RQ): 100 lbs. (Methyl parathion).
100 lbs. (Xylene, CAS # 1330-20-7)
The additional chemicals listed below are believed to be at trace levels or are trace components.
100 lbs. (Naphthalene, CAS # 91-20-3).

SECTION 15 — REGULATORY INFORMATION CONTINUED

SARA TITLE III: *Sec. 313, Toxic Chemicals Notification, 40 CFR 372*: This material may be subject to the TSCA notification requirements, since it may contains Methyl parathion (CAS# 298-00-0) and Xylene (CAS # 1330-20-7) Toxic Chemical constituents. All of the additional Toxic Chemical constituents listed below are believed to be at trace levels or are trace components.

Chemical name	CAS Number
Napthalene	91-20-3
Trimethylbenzene	95-63-6

SECTION 16 — OTHER INFORMATION

HMIS Rating: *3 Health; 2 Flammability; 1 Reactivity

Legend: ACGIH – American Conference of Governmental Industrial Hygienists
CAS - Chemical Abstract Service
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR – Code of Federal Regulations
EPA – Environmental Protection Agency
HMIS – Hazardous Materials Identification System
IARC – International Agency for Research on Cancer
Inh – Inhalation
MSHA – Mine Safety and Health Administration
N/Ap – Not Applicable
N/Av – Not Available
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEHHA – Office of Environmental Health Hazard Assessment
OSHA – Occupational Safety and Health Act
PEL - Permissible Exposure Limit
PMCC – Pensky Martins Closed Cup
SARA - Superfund Amendments & Reauthorization Act
TLV – Threshold Limit Value
TSCA – Toxic Substances Control Act
TWA - Time Weighted Average
WHMIS – Workplace Hazardous Materials Information System

References:

1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2003.
2. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2003 (Chempendium and RTECs).
3. Material Safety Data Sheet from manufacturer.
4. International Agency for Research on Cancer Monographs, Supplement 7, 1988.
5. US EPA Title III List of Lists – October 2001 version.
6. California's OEHHA Proposition 65 List – July 11, 2003 version.

Prepared by: Cheminova Inc.
Telephone #: (973) 305-6600 (8 AM to 5:00 PM EST, Monday to Friday)
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