

FYFANON[®] ULV MOSQUITO INSECTICIDE

ULTRA LOW VOLUME CONCENTRATE INSECTICIDE

FOR USE ONLY BY FEDERAL, STATE, TRIBAL, OR LOCAL GOVERNMENT OFFICIALS RESPONSIBLE FOR PUBLIC HEALTH OR VECTOR CONTROL, OR BY PERSONS CERTIFIED IN THE APPROPRIATE CATEGORY OR OTHERWISE AUTHORIZED BY THE STATE OR TRIBAL LEAD PESTICIDE REGULATORY AGENCY TO PERFORM ADULT MOSQUITO CONTROL APPLICATIONS, OR BY PERSONS UNDER THEIR DIRECT SUPERVISION.

ACTIVE INGREDIENT:

*Malathion 96.5%

INERT INGREDIENTS: 3.5%

TOTAL 100.0%

*O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate

Contains 9.9 lbs. malathion per gallon

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

IN CASE OF MEDICAL EMERGENCY INVOLVING THIS PRODUCT, CALL TOLL FREE, DAY OR NIGHT 1-866-303-6950

SEE ADDITIONAL PRECAUTIONARY STATEMENTS AND DIRECTIONS FOR USE IN BOOKLET.

Net Contents: 5 Gallons

EPA Reg. No. 67760-34

EPA Est. No. 39578-TX-1

Cheminova, Inc.
P.O. Box 110566
Research Triangle Park, NC 27709
Product of Denmark
800-548-6113

10038481 03192015

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

Harmful by swallowing, inhalation or skin contact. Avoid contact with skin. Avoid breathing spray mist.

FIRST AID This product is an organophosphate and is a cholinesterase inhibitor.	
IF SWALLOWED:	<ul style="list-style-type: none">• Call a poison control center or doctor immediately for treatment advice.• Have person sip a glass of water if able to swallow.• Do not induce vomiting unless told to by a poison control center or doctor.• Do not give anything by mouth to an unconscious person.
IF INHALED:	<ul style="list-style-type: none">• Move person to fresh air.• If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.• Call a poison control center or doctor for further treatment advice.
IF ON SKIN OR CLOTHING:	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15-20 minutes.• Call a poison control center or doctor for treatment advice.
IF IN EYES:	<ul style="list-style-type: none">• Hold eye open and rinse slowly and gently with water for 15-20 minutes.• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.• Call a poison control center or doctor for treatment advice.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-866-303-6950 for emergency medical treatment information.	

NOTE TO PHYSICIAN:

This product is a cholinesterase inhibitor. Treat symptomatically. Atropine is antidotal.

PERSONAL PROTECTIVE EQUIPMENT

Some materials that are chemical-resistant to this product are barrier laminate, butyl rubber, nitrile rubber, and viton. If you want more options, follow the instructions for category F on an EPA chemical-resistance category selection chart.

For all formulations and use patterns – mixers, loaders, applicators, flaggers, and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves
- Shoes plus socks

Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

ENGINEERING CONTROLS STATEMENTS

Pilots must use an enclosed cockpit in a manner that is consistent with the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d)(4-6)]. Pilots must wear the PPE required on this labeling for applicators.

USER SAFETY RECOMMENDATIONS

User should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to aquatic organisms, including fish and invertebrates. Use care when applying in or to an area which is adjacent to any body of water, and do not apply when weather conditions favor drift from target area. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. When applying as a wide area mosquito adulticide, before making the first application in a season, it is advisable to consult with the state or tribal agency charged with primary responsibility for pesticide regulation to determine if other regulatory requirements exist. This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply or allow to drift onto blooming crops or weeds while bees are actively visiting the treatment area, except when applications are made to prevent or control a threat to public and/or animal health determined by a state, tribal or local public health or vector control agency on the basis of documented evidence of disease-causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort. When applying as a wide area mosquito adulticide, do not apply over bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fish ponds, swamps, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body.

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 Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flame.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

PESTICIDE STORAGE: Fyfanon ULV Mosquito should be stored in the original unopened container in a secure, dry place. Do not contaminate with other pesticides or fertilizers. Fyfanon ULV Mosquito should never be heated above 55° C (131° F), and should not be stored for long periods of time at a temperature in excess of 25°C (77°F).

PESTICIDE DISPOSAL: To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

CONTAINER DISPOSAL:

Nonrefillable containers (equal to or less than 5 gallons): Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available.

Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Nonrefillable containers (greater than 5 gallons): Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank and store rinsate for later use or disposal. Repeat this procedure two more times.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For use by federal, state, tribal, or local government officials responsible for public health or vector control, or by persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision.

MOSQUITO CONTROL IN POPULATED AND RURAL AREAS PRECAUTIONS AND RESTRICTIONS

Before making the first application in a season, it is advisable to consult with the state or tribal agency with primary responsibility for pesticide regulation to determine if other regulatory requirements exist.

RESTRICTIONS

- Do not apply more than 0.23 lb/ai/A/day.
- Only treat when mosquitoes are swarming or biting. Do not re-treat a site more than 3 times in any one week. However, more frequent treatments may be made to prevent or control a threat to public and/or animal health determined by a state, tribal or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes or the occurrence of mosquito-borne diseases in animal or human populations, or if specifically approved by the state or tribe during a natural disaster effort.
- Apply when wind speed is greater than or equal to 1 mph.
- Do not apply by fixed wing aircraft at height less than 100 feet, or by helicopter at a height less than 75 feet unless specifically approved by the state or tribe based on public health needs.

PRECAUTIONS

- **IMPORTANT: IN AREAS WHERE AUTOMOBILES, TRAILERS, TRUCKS AND PLEASURE BOATS ARE PRESENT,** undiluted spray droplets of Fyfanon ULV Mosquito will permanently damage vehicle paint finishes unless the aircraft used for the ultra low volume application meets all of the specifications listed under **AERIAL APPLICATION.**

AERIAL APPLICATION

Adult Mosquitoes on Rangeland, Pasture, and Other Uncultivated Non-Agricultural Areas (Wastelands, Roadsides)

Spray equipment must be adjusted so that the volume median diameter produced is less than 60 microns (Dv 0.5 < 60 um) and that 90% of the spray is contained in droplets smaller than 100 microns (Dv 0.9 < 100 um). The effects of flight speed and, for non-rotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, pesticide registrant or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated. Adult mosquito control over cities, towns, and other areas where automobiles, trailers, trucks, and pleasure boats are present: Apply 2.6 to 3.0 fluid ounces of Fyfanon ULV Mosquito per acre. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control. See Precautions and Restrictions for additional instructions.

GROUND-BASED APPLICATION

Spray equipment must be adjusted so that the volume median diameter is less than 30 microns (Dv 0.3 < 30 um) and that 90% of the spray is contained in droplets smaller than 50 microns (Dv 0.9 < 50 um). Directions from the equipment manufacturer or vendor, pesticide registrant or test facility using laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

Thermal Aerosols or Fogs

For control of adult mosquitoes with thermal aerosols or fogs. Apply Fyfanon ULV Mosquito at the rate of 3.9 - 5.2 gallons Fyfanon ULV Mosquito in 100 gallons of finished solution by ground equipment delivering 40 gallons per hour at a vehicle speed of 5 miles per hour to treat a swath width of 300 feet (equivalent to 180 acres per hour). At 3.9 gallons Fyfanon per 100 gallons of finished solution this is equivalent to 0.08 lbs active/acre. At 5.2 gallons per 100 gallons of finished solution, this is equivalent to 0.11 lbs active/acre.

*There is a great variation in the chemical composition of fuel oils which may be used as thermal fog solvents. These differences may cause sludge and/or affect the solubility of the Fyfanon ULV Mosquito.

Nonthermal Aerosols

Adult Mosquito Control - Control of adult mosquitoes over a 300-foot swath can be obtained with nonthermal aerosols of Fyfanon ULV Mosquito using the following rates at the indicated vehicle speeds:

Rates for Fyfanon ULV Mosquito					
Undiluted Apply as follows:					
Lbs.A.I./Acre/Day	Application Rates Fluid Ounces per Minute at Vehicle Speeds				Fluid Ounces of Fyfanon ULVMosquito per acre
	5 mph	10 mph	15 mph	20 mph	
0.03 – 0.06*	1.0 - 2.1	2.0 - 4.3	3.0 - 6.3	4.0 - 8.6	0.38 - 0.75

*Use higher rate of application when vegetation is dense and/or mosquito populations are heavy.

OPERATING EQUIPMENT

Each nonthermal aerosol generator used for dispersal of Fyfanon ULV Mosquito to control adult mosquitoes must have minimum capability of producing the droplet spectrum described under GROUND-BASED APPLICATION. The initial determination of droplet size is made after the unit is installed in a vehicle and prior to its use in mosquito control operations. Recheck the unit frequently to insure that proper droplet size is maintained for each operation. Determination of droplet size every two months is usually sufficient if the unit has been maintained in good operating condition. Equipment manufacturer's instructions setting forth cleaning and maintenance of the unit must be followed. The unit must be inspected before each operation to correct any leaks or obstructions in the spray system; to detect whether the nozzle, hoses, or other parts are worn and need replacement; to insure that the flow meter is properly calibrated and to determine that the pressure recommended by the manufacturer is being maintained.

- Flow Rate** - Must be regulated by accurate flow meter
- Not greater than 1 gallon per hour at 5 mph; 2 gallons per hour at 10 mph; 3 gallons per hour at 15 mph, or 4 gallons per hour at 20 mph
- Nozzle Direction** - Rear of the vehicle
- Upward at an angle of 45° or more
- Vehicle Speed** - Not greater than 20 mph
- Shut off spray equipment when vehicle is stopped

IMPORTANT: Spray droplets of undiluted Fyfanon ULV Mosquito will permanently damage automobile paint unless all the conditions described and recommended in this label are met. If accidental exposure does occur, the vehicle should be washed at once.

WARRANTY DISCLAIMER

Cheminova warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, CHEMINOVA MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

INHERENT RISKS OF USE

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Cheminova or the Seller. All such risks shall be assumed by Buyer and User. Buyer and User agree to hold Cheminova and the Seller harmless for any claims related to such factors.

LIMITATION OF REMEDIES

To the extent consistent with applicable law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to one of the following, at Cheminova's election:

- (1) Refund of purchase price paid by buyer or user for product bought, or
- (2) Replacement of amount of product used.

To the extent consistent with applicable law, Cheminova shall not be liable for consequential, incidental, or special damages or losses in any matter.

The terms of the Warranty Disclaimer above and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Cheminova or the Seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

SAFETY DATA SHEET

SECTION 1 – IDENTIFICATION

Product Identifier : **FYFANON ULV MOSQUITO**
EPA Reg. No. : **67760-34**
Product Use : Insecticide
Supplier's name and address:
Cheminova, Inc.
One Park Drive, Suite 150
PO Box 110566
Research Triangle Park, NC, USA
27709
Phone #: (919) 474-6600 (8:00 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:
Cheminova A/S
PO Box 9
DK-7620
Lemvig, Denmark
SDS Prepared by: Cheminova Inc.
SDS Preparation date: August 19, 2003
Revision date: May 27, 2015
Revision reason: GHS Revision

SECTION 2 – HAZARDS IDENTIFICATION

GHS Signal Word:
Warning

Classification:

Health	Environmental	Physical
Skin Irritation – Category 2 Eye Irritation – Category 2B	Aquatic Toxicity – Acute 1 Aquatic Toxicity – Chronic 1	Not applicable

GHS Pictogram:



Hazard Statements:

Causes skin irritation.
Causes eye irritation.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

Prevention:

Wash hands thoroughly after handling.
Wear protective gloves.
Avoid release to the environment.

Response:

If on skin: Wash with plenty of water.

For specific treatment, refer to product label.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
Collect spillage.

Storage:

Not applicable.

Disposal:

Dispose of contents/container according to label directions.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredients</u>	<u>CAS #</u>	<u>% (weight)</u>
Malathion (O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate)	121-75-5	60.00 – 100.00

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

SECTION 4 – FIRST AID MEASURES

- IF SWALLOWED:**
- Call a poison control center or doctor immediately for treatment advice.
 - Have a person sip a glass of water if able to swallow.
 - Do not induce vomiting unless told to do so by a poison control center or doctor.
 - Do not give anything by mouth to an unconscious person.
- IF INHALED:**
- Move person to fresh air.
 - If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.
 - Call poison control center or doctor for further treatment advice.
- IF ON SKIN OR CLOTHING:**
- Take off contaminated clothing.
 - Rinse skin immediately with plenty of water for 15-20 minutes.
 - Call a poison control center or doctor for treatment advice.
- IF IN EYES:**
- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
 - Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
 - Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-866-303-6950 for emergency medical treatment information.

Note to physician: This product is a cholinesterase inhibitor. Treat symptomatically. Atropine is antidotal.

Signs and symptoms of short-term (acute) exposure

Inhalation : Fyfanon (malathion) is a cholinesterase inhibitor of low mammalian toxicity. However storage at too high temperature may induce formation of the much more toxic and synergistic contaminant isomalathion (LD50 acute oral, rat = 89 mg/kg). Malathion and isomalathion can affect you when breathed in and can cause organophosphorous poisoning. Symptoms of poisoning may include headache, nausea, vomiting, blurred vision, tightness in chest, drooling, frothing of mouth and nose, convulsions, coma and death.

- Skin* : Direct skin contact may result in little or no irritation. Malathion and isomalathion can be rapidly absorbed through all skin surfaces. Causes symptoms similar to those listed for inhalation.
- Eyes* : Direct contact causes eye irritation. Malathion and isomalathion can be rapidly absorbed through all skin and eye surfaces. Causes symptoms similar to those listed for inhalation.
- Ingestion* : Malathion and isomalathion are poisons through ingestion. Causes symptoms similar to those listed for inhalation.

Effects of long-term (chronic) exposure

- : Repeated ingestion may cause severe weight loss.

Conditions aggravated by overexposure

- : Prolonged or repeated overexposures may cause behavioral changes.

SECTION 5 – FIRE FIGHTING MEASURES

Fire hazards/conditions of flammability

- : This product is considered non-flammable. Material will decompose rapidly when exposed to heat (>212° F/100° C) and flame, increasing the risk of explosion. Heat of decomposition may cause closed containers to build up pressure and explode.

Flammability classification (OSHA 29 CFR 1910.1200)

- : Non-flammable.

Oxidizing properties

- : None known

Explosion data: Sensitivity to mechanical impact / static discharge

- : Not expected to be sensitive to mechanical impact or static discharge.

Suitable extinguishing media

- : Carbon dioxide or dry chemical for small fires. For large fires, use water spray or foam.

Special fire-fighting procedures/equipment

- : Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame. Avoid spreading burning liquid with water spray used for cooling purposes.

Hazardous combustion products

- : Carbon oxides; Oxides of phosphorus; oxides of sulfur; dimethyl sulfide; irritating fumes and smoke.

NFPA Rating	:	0 – Minimal	1 – Slight	2 – Moderate	3 – Serious	4 – Severe
		Health: 1	Flammability: 1	Instability: 1	Special Hazards:	None

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 protective equipment including self-contained breathing apparatus. 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. If necessary, dike well ahead of the spill to prevent

runoff into drains, sewers, or any natural waterway or drinking supply. Do not flush into surface water or sanitary sewer system. Uncontrolled discharge into water courses may be alerted to the appropriate regulatory body.

Spill response/cleanup : Remove all sources of ignition. Ventilate area of release. Stop the spill at source if it is safe to do so. Contain and absorb spilled material with inert, non-combustible absorbent material, such as sand. Sweep up and shovel into suitable containers for disposal. For a water spill, confine the spill immediately with booms. Notify the appropriate authorities as required. Carefully cover spilled material with soda ash or quicklime to neutralize. Do not flush into surface water or sanitary sewer system. For large spills on surfaces other than pavement (e.g. soil or sand), spills may be handled by digging up and removing the affected surface and placing it in approved containers.

Prohibited materials : None known.

Special spill response procedures

: In case of spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8002)
US CERCLA Reportable quantity (RQ): Malathion (100 lbs/45.4 kg)

SECTION 7 – HANDLING AND STORAGE

Safe handling procedures : This material is a toxic liquid. Wear chemically resistant protective equipment during handling. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Do not use near welding operations, flames or hot surfaces. Malathion should never be heated above 131° F (55° C) and also local heating above this temperature should be avoided. Keep away from acids and other incompatibles. Keep containers tightly closed when not in use. Wash thoroughly after handling. Use caution when opening cap.

Storage requirements : Store in a cool, dry, well ventilated area. Keep away from incompatibles. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. Product should be stored at temperatures not exceeding 68 to 77° F (20 to 25° C). protect against physical damage.

Incompatible materials : Strong alkalis, amines and strong oxidizing compounds. The product can corrode iron, steel, tin plate and copper. Fyfanon is rapidly hydrolyzed at pH > 7.0.

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

SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits

<u>Ingredients</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
	<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
Malathion	1 mg/m ³ (inhalable)	N/Av	15 mg/m ³ (total dust)	N/Av

Ventilation and engineering measures

: Provide sufficient ventilation to keep vapor concentration below the given TLV and/or PEL.

Respiratory protection

: Respiratory protection is required if the concentrations exceed the TLV. Wear a pesticide respirator jointly approved by the MSHA and NIOSH. Seek advice from respiratory protection specialists.

Skin protection

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

Eye / face protection

: Safety glasses with side-shields or chemical splash goggles.

Other protective equipment

: Wear appropriate protective clothing to prevent skin contact, such as coveralls or long sleeved shirt, long pants, and shoes and socks. Other protective equipment, such as an eyewash station and safety shower, may be required depending on exposure and on workplace standards.

General hygiene considerations

: Avoid contact with skin, eyes and clothing. Remove soiled clothing and wash it thoroughly before reuse. Separate contaminated work clothes from street clothes. 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

Appearance: Colorless to light yellow liquid

Odor: Slightly aromatic

Odor threshold: ND

pH: 3.7 – 3.8 (equal amounts Fyfanon and distilled water)

Melting point/Freezing point: 37.1° F (2.85° C)

Initial boiling point and boiling range: 313 – 315° F (156 – 157° C)

Flash point: 325° F (163° C)

Evaporation rate: ND

Flammability: Non-flammable

Upper/lower flammability and explosive limits: NA

Vapor pressure: 3.4×10^{-06} mmHg @ 25° C; 1.4×10^{-04} mmHg @ 45° C

Vapor density: ND

Bulk density: ND

Specific gravity: 1.23 g/mL @ 20° C

Solubility(ies): in water 148.2 mg/L @ 25° C

Partition coefficient (n-octanol/water): Kow = 560

Auto-ignition temperature: 532° F (278° C)

Decomposition temperature: ND

Viscosity: ND

ND=Not determined

NA=Not applicable

SECTION 10 – STABILITY AND REACTIVITY

- Stability and reactivity** : Stable if handled below 131 F (55 C). At higher temperatures decomposition may take place, and the released heat from decomposition can raise the temperature further and accelerate decomposition. Malathion can corrode iron, steel, tin plate and copper. It can be rapidly hydrolyzed at pH > 7.
- Hazardous polymerization** : Above 284 F (140 C) Fyfanon will decompose rapidly, significantly increasing the risk of inducing explosions. Direct local heating such as electric heating or by steam must be avoided. The decomposition is to a considerable extent dependant on time as well as temperature due to self-accelerating exothermic and autocatalytic reactions. The reactions involve rearrangements and polymerization releasing volatile, malodorous and inflammable compounds such as dimethyl sulfide.
- Conditions to avoid** : Open flames, sparks, high heat, direct sunlight, and close proximity to incompatible substances.
- Materials to avoid and incompatibility** : Incompatible materials (see Section 7).
- Hazardous decomposition products** : Storage at too high temperatures may induce formation of the more toxic and synergistic contaminant isomalathion. Refer to hazardous combustion products in Section 5.

SECTION 11 – TOXICOLOGICAL INFORMATION

- Target organs** : Eyes, skin, respiratory system, digestive system, central nervous system.
- Routes of exposure** : *Inhalation*: YES *Skin absorption*: YES *Skin & Eyes*: YES *Ingestion*: YES
- Toxicological data** : Fyfanon:
LC50 Inhalation (rat): >5.2 mg/L / 4 Hrs
LD50 Oral (rat): 5500 mg/kg
LD50 Dermal (rat): >2000 mg/kg
Eye irritation: Slight
Skin irritation: Slight
Skin sensitizer: Not a skin sensitizer
- Carcinogenic status** : No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.
- Reproductive effects** : Not expected to have other reproductive effects.
- Teratogenicity** : Not expected to be a teratogen.
- Mutagenicity** : Not expected to be mutagenic in humans.
- Epidemiology** : Not available.
- Sensitization to material** : None known.
- Synergistic materials** : Not available.
- Irritancy** : May cause eye and skin irritation. May cause irritation to upper respiratory system.
- Other important hazards** : Cholinesterase inhibitor may cause central nervous system depression. Contains a material which can cause peripheral nervous system damage.
- Conditions aggravated by exposure** : None known.



SECTION 12 – ECOLOGICAL INFORMATION

- Ecotoxicity** : The toxicity of the active ingredients to wildlife species is measured to be:
Fish – 96-Hr LC50, Rainbow Trout (*Salmo gairdneri*) = 0.18 mg/L
37-day NOEC, Rainbow Trout (*Salmo gairdneri*) = 21 µg/L
Invertebrates – 48-hr EC50, Daphnids (*Daphnia magna*) = 0.72 mg/L
21-day NOEC, Daphnids (*Daphnia magna*) = 0.06 µg/L
Algae – 72-Hr LC50, Green Algae (*Selenastrum capricornutum*) = 4.06 mg/L
Birds – LD50, Bobwhite quail (*Colinus virginianus*) = 359 mg/kg
5-day dietary LC50, Bobwhite quail (*Colinus virginianus*) = 3497 mg/kg
Earthworms – 14-day LC50, *Eisenia foetida foetida* = 613 mg/kg soil
Bees –LD50, worker honey-bees, acute oral = 0.38 µg/bee
LD50, worker honey-bees, topical = 0.27 µg/bee
- Mobility** : Under normal conditions, the active ingredient is of medium mobility in soil, but is degraded rapidly.
- Persistence** : The active ingredient, Malathion, 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. Under normal conditions, Malathion is of medium mobility in soil, but is degraded rapidly. 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.
- Bioaccumulation potential** : The bioconcentration factor (BCF) of Malathion is 95 (average for several fish species).
- Other adverse environmental effects** : This product is an insecticide. Malathion is toxic to birds, fish, aquatic invertebrates, aquatic life stages of amphibians and highly toxic to bees. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

SECTION 13 – DISPOSAL CONSIDERATIONS

- Handling for disposal** : Handle wastes according to recommendations in Section 7.
- Methods for disposal** : Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Triple rinse (or equivalent) containers, then offer for recycling or recondition, or puncture and dispose of in a sanitary landfill. Dispose in accordance with all applicable federal, state, provincial and local regulations. Contact your local, state, provincial or federal environmental agency for specific rules.
- RCRA** : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method.

SECTION 14 – TRANSPORT INFORMATION

Regulatory Information	UN Number	Shipping Name	Class	Packing Group	Label
49CFR/DOT	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (malathion)	9	III	
49CFR/DOT Additional information	None.				
TDG	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (malathion)	9	III	
TDG Additional information	Only regulated for marine transport.				

SECTION 15 – REGULATORY INFORMATION

US Federal Information:

FIFRA: This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required on safety data sheets, and for workplace labels on non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION

Harmful by swallowing, inhalation or skin contact.

Avoid contact with skin.

Avoid breathing spray mist.

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

CERCLA Reportable Quantity (RQ) (40 CFR 117.302): Malathion (100 lbs/45.4 kg)

SARA TITLE III: Sec. 302, Extremely Hazardous Substances, 40 CFR 355: No Extremely Hazardous Substances are present in this material.

SARA TITLE III: Sec. 311 and 312, MSDS Requirements, 40 CFR 370 Hazard Classes: Immediate (Acute) Health Hazard; Chronic Health Hazard. Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SARA TITLE III: Sec. 313, Toxic Chemicals Notification, 40 CFR 372: This material may be subject to SARA notification requirements, since it contains Toxic Chemical constituents above their de minimus concentrations. This product contains: Malathion

US State Right to Know Laws:

California Proposition 65: To the best of our knowledge, this product does not contain any chemicals known to the State of California to cause cancer or reproductive harm.

International Information:

This product is a Pest Control Product and is not regulated as a Controlled Product under the Hazardous Products Act (HPA). For informational purposes, this product would have the following WHMIS classification:

Class D2B (Materials Causing Other Toxic Effects, Toxic Materials)

Class F (Dangerously Reactive Material)

This product has been classified according to the hazard criteria of the CPR and the SDS contains all of the information required by the CPR.

SECTION 16 – OTHER INFORMATION

HMIS Rating	:	*-Chronic Hazard	0 – Minimal	1 – Slight	2 – Moderate	3 – Serious	4 – Severe
		Health: * 1		Flammability: 1		Reactivity: 1	

Prepared by: Cheminova Inc.

Telephone #: (919) 474-6600 (8:00 AM to 5:00 PM EST, Monday to Friday)

SDS Preparation date: August 19, 2003

Revision date: May 27, 2015

Revision reason: US GHS Revision