

PM-14

Reg # 51036-103

8439028 19.14



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 07 1996

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Mr. Morris Gaskins
Manager of Registrations
Micro Flo Co.
P.O. Box 5948
Lakeland, FL 33807

Dear Mr. Gaskins:

Subject: Deletion of Unsupported Malathion Uses
Malathion ULV
EPA Reg. No. 51036-103
Your Application of August 7, 1992
Federal Register Notice of August 25, 1993

The amendment referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, As Amended (FIFRA), is acceptable, provided that you:

Submit one copy of your final printed label incorporating the following corrections before you release the product for shipment.

1. Delete the added claim for Manufacturing Uses which appears on page 3 of the submitted proposed label. This is an added claim which does not appear on the labeling registered for the product on October 12, 1989. The labeling accepted on October 1, 1993 was submitted in compliance with the WPS labeling requirements, and, as such was accepted for the WPS labeling only and did not constitute acceptance of any other changes that may have been made at that time. Refer to the comments in our letter dated October 1, 1993.

This added claim would not be acceptable for the subject product which is registered as an end-use product.

Refer to 40 CFR 152.1(k) regarding the definition of "end use product".

2. For the terrestrial uses on your label, update the water hazards statement under the "Environmental Hazards" paragraph to read as follows.

"For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas



Recycled/Recyclable
Printed with Soy/Canola Ink on paper that
contains at least 50% recycled fiber

Each Nonthermal Aerosol Generator used for dispersal of MALATHION to control adult mosquitos must have minimum capability of producing the droplet spectrum described under DROPLET SIZE. 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. The unit should be rechecked as frequently as necessary 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. Manufacturer's equipment 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 or 2 gallons per hour at 10 mph.

- Nozzle Direction - rear of the vehicle.
- upward at an angle of 45 degrees or more.

- Vehicle Speed - not greater than 10 miles per hour.
- shut off spray equipment when vehicle is stopped.

IMPORTANT - Spray droplets of undiluted MALATHION will permanently damage automobile paint unless all the conditions described and recommended in this leaflet are met.

Directions for Determining the droplet size of

MALATHION INSECTICIDE

nonthermal aerosols

Permanent records of each droplet size determination must be kept and made available to MICRO-FLO COMPANY, upon request.

1. Preparation of Slides with DRI-FILM

MALATHION ULV droplet sizes are determined by depositing a sample of the aerosol on a coated glass slide and measuring the droplets under a high-power microscope. Ordinary 3" x 1" glass slides must be coated with silicone (General Electric SC-87 DRI-FILM) prior to sampling to prevent excessive spreading or coalescence of the droplets. The slides are dipped into a 10 percent solution of DRI-FILM in toluene, drained and dried at about 200 degrees F. for 30 minutes, after which they are dipped in acetone, allowed to dry and stored in a tight slide box. Coating solution must be freshly prepared. Do not store coating solution because it will deteriorate. Slides are lightly polished with a soft tissue before using to remove any foreign particles.

39 14

below the mean high water mark."

3. Add the following environmental hazards statement for the aquatic uses appearing on your label.

"Do not apply directly to water except as specified on this label."

4. Under "other agricultural uses", qualify the claim, "grain crops" by specifying those grain crops being supported for malathion, i.e. corn, rice, grain sorghum, barley, oats and wheat.

5. On the top of page 9, correct the wording to include the missing segments so that the "operating equipment" section reads as it appears on the label accepted for registration. A copy of the pertinent section taken from the October 12, 1989 accepted label is enclosed for your reference.

6. On page 7, item number 12., correct the designation, "10 microns" to read "100 microns" as it appeared on your registered label on file for the product, dated October 12, 1989.

7. This labeling does not bear the required Worker Protection statements as outlined in PR Notices 93-7 and 93-1. We note that you have submitted labels in accordance with the instructions in those Notices and that the WPS labeling was accepted by the Agency on October 1, 1993. The new protective language in those submissions must be incorporated into this label for any shipments released after the deadlines that have been established.

If this condition is not complied with, the registration will be subject to cancellation in accordance with FIFRA sec. 6(e). Your release for shipment of the product bearing the amended labeling constitutes acceptance of this condition.

A stamped copy of the label is enclosed for your records.

Sincerely yours,

man/fa

Robert A. Forrest
Product Manager (14)
Insecticide-Rodenticide Branch
Registration Division (7504C)

49 14

Draft label in response to 6/15/92 DCI by EPA. Any added uses are boldened.

MALATHION ULV

ACTIVE INGREDIENT:

Malathion (O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate

95.00%

INERT INGREDIENTS:

5.00%

TOTAL

100.00%

(1 gallon contains 9.79 pounds of Malathion)

KEEP OUT OF REACH OF CHILDREN

CAUTION

Harmful By Swallowing, Inhalation or Skin Contact

AVOID BREATHING SPRAY MIST - AVOID CONTACT WITH SKIN - WASH THOROUGHLY AFTER HANDLING - CHANGE CONTAMINATED CLOTHING - DO NOT CONTAMINATE FOOD OR FEED PRODUCTS

PRECAUCION AL USUARIO: Si usted no lee ingles, no use este producto hasta que la haya sido explicada ampliamente.

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: Call a physician or Poison Control Center immediately. Induce vomiting by giving 1 or 2 glasses of water and touching back of throat with finger or blunt object. Do not induce vomiting or give anything by mouth to an unconscious person.

IF INHALED: Remove victim to fresh air immediately. Get medical attention.

IF ON SKIN: Remove contaminated clothing and wash affected areas with soap and water.

IF IN EYES: Flush with water for at least 15 minutes and get medical attention.

NOTE TO PHYSICIAN: This material is a cholinesterase inhibitor. Treat symptomatically. Atropine is an antidote. See Side Panels For Additional Precautionary Statement

EPA Reg. No. 51036-103

EPA Est. No. 51036-GA-1

ACCEPTED with COMMENTS in EPA Letter Dated

JUN 07 1996

Manufactured By MICRO FLO COMPANY

Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No.

51036-103

5914

P.O. BOX 5948
LAKELAND, FLORIDA 33807

PRECAUTIONARY STATEMENTS

Hazards To Humans And Domestic Animals

CAUTION

Harmful if swallowed, inhaled, or absorbed through the skin. Avoid breathing dust or spray. Avoid contact with eyes, skin or clothing. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish, aquatic invertebrates, and aquatic life stages of amphibians. Do not apply directly to water or wetlands, (i.e., swamps, bogs, marshes, and potholes). Drift and runoff may be hazardous to aquatic organisms in areas near the application site. Do not contaminate water when disposing of equipment washwaters. This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

PHYSICAL OR CHEMICAL HAZARDS

Before using read the directions contained on this label for the proper methods and procedures which must be followed to achieve effective insect control and avoid permanent damage to automobile and other paint finishes.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

CHEMIGATION PROHIBITION

Do not apply this product through any type of irrigation system.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal. STORAGE: Malathion ULV should be stored at temperatures not exceeding 25 degrees C (77 degrees F). It should never be heated above 55 degrees C (131 degrees F), and also local heating above this temperature should be avoided.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal

facility.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

~~MANUFACTURING USES~~

~~Malathion ULV may be used for the preparation of Malathion insecticides. Before using for this purpose, manufacturers should consult MICRO FLO for manufacturing and safe handling instructions.~~

Not Acceptable

AGRICULTURAL USES

REENTRY STATEMENT

(Does not apply to mosquito control application in populated and rural areas)

Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons. Do not enter treated areas without protective clothing until sprays have dried. Do not enter treated areas without protective clothing until sprays have dried. Protective clothing means, at least, a hat or other suitable head covering, a long sleeved shirt and long legged trousers or a coverall type garment (all of closely woven fabric covering the body, including the arms and legs), shoes and socks. Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information. Written or oral warnings must be given to workers who are expected to be in a treated area or in an area about to be treated with this product. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Written warnings must include the following information:

CAUTION! Area treated with Malathion on (date of application). Do not enter without appropriate protective clothing until sprays have dried. See Statement of Practical Treatment and Precautionary Statements for actions to be taken in case of accidental exposure.

Do not use this product for any uses other than those specified on this label. MALATHION ULV is used undiluted in specially designed aircraft or ground equipment capable of applying ultra low volumes for control of the insects indicated. Aerial applications are most effective when made at a boom height of 5 feet and a swath width of 55 feet. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control. Mist blowers and boom sprayers utilizing a controlled air flow to facilitate particle size and spray

deposition may be used at a vehicle speed of 4 to 10 mph. Mist blowers with pump capable of producing up to 40 psi and blower speeds of 2600 rpm are satisfactory. Use flat fan nozzles, 8001 to 8002, placed 30 degrees into air blast or rotary atomizers into the air blast that produce an efficient spray particle with a mass median diameter of 40 to 100 microns. Swath widths should not exceed 30 feet. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control. Boom sprayers with a filtered rotary air compressor, either PTO or gas engine driven or an air pump capable of producing at least 12 psi are satisfactory. Use air pressure on chemical tanks and an accurate metering valve to assure a calibrated flow of the pesticide. Air should be regulated with relief valve and gauge for proper air and liquid mixture. Pneumatic-type spray nozzles, as suggested by equipment manufacturer, should be used for spray particles with mass median diameter of 30 to 100 microns. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control. Repeat applications should be made as necessary unless otherwise specified.

IMPORTANT

Undiluted spray droplets of MALATHION ULV will permanently damage automobile paint. Cars should not be sprayed. If accidental exposure does occur, the car should be washed immediately. Consult your state experiment station or state extension service for proper timing of sprays. This product is highly toxic to bees exposed to direct treatment or residues on crops. Protective information may be obtained from your Cooperative Agricultural Extension Service.

GENERAL USES

Observe days interval between last application and harvest indicated in ().

ALFALFA:

- Alfalfa caterpillar (0) - 8 fl. oz. per acre. Apply when larvae are small.
- Western yellow striped armyworm (5) - 12 fl. oz. per acre. Apply when larvae are large or when foliage is dense.
- Alfalfa weevil larvae (5) - 16 fl. oz. per acre. Apply when day temperatures are expected to exceed 65 deg F and when 50 to 70% of leaves show feeding damage.
- Beet armyworm (0) - 8 fl. oz. per acre. Apply when larvae are small.
- Beet armyworm (5) - 16 fl. oz. per acre. Apply when larvae are large or when foliage is dense.
- Grasshoppers (0) - 8 fl. oz. per acre. Do not apply to alfalfa in bloom. Do not apply to seed alfalfa.

BEANS (Lima, Green, Snap, Navy, Red Kidney, Wax, Dry, Blackeye):

SD & SA

Mexican Bean Beetle, Leafhoppers, Green Cloverworm, Japanese Beetle
Lygus Bug (1) - 8 fl. oz. per acre.

BLUEBERRIES:

Blueberry Maggot (0) - 10 fl. oz. per acre.

CHERRIES:

Cherry Fruit Fly (1) - 12 to 16 fl. oz. per acre. Apply by aircraft only. Use higher rate when foliage is heavy or infestation is severe. Make first application as soon as flies appear.

CEREAL CROPS (Barley, Corn, Oats, Wheat) and GRASSES:

Cereal leaf beetle - Barley, oats, wheat (7) - Corn (5) - Grasses (0) - 4 to 8 fl. oz. per acre.

CLOVER, PASTURE AND RANGE GRASS, GRASS, GRASS HAY, NON-AGRICULTURAL LAND (Wasteland, Roadsides):

8 to 12 fl. oz. per acre. Do not apply to clover in bloom.

CORN:

Adult Corn Rootworm (5) - 4 fl. oz. per acre.

COTTON:

Early Season Insects, Thrips, Fleahoppers, Leafhoppers (0) - 4 to 8 fl. oz. per acre.

Boll Weevil (0) - 8 to 12 fl. oz. per acre for early to midseason; 16 fl. oz. per acre for late season.

Grasshoppers (0) - 8 fl. oz. per acre.

Lygus bugs (0) - 8 to 12 fl. oz. per acre and 16 fl. oz. per acre for very heavy migrating populations.

GRAIN CROPS (Barley, Corn, Oat, Rye, Rice and Wheat):

Grasshoppers (7 days except corn - 5) - 8 fl. oz. per acre.

GRAIN SORGHUM:

Sorghum Midge (7) - 8 to 12 fl. oz. per acre. Apply during the bloom stage.

Grasshoppers (7) - 8 fl. oz. per acre.

RICE - Grain Form (Louisiana, Texas):

Rice Stink Bug (7) - 8 fl. oz. per acre. Apply by aircraft only. Apply during early milk and dough stage of growing rice.

NONAGRICULTURAL LANDS:

Beet Leafhopper (on wild host plants) (0) - 8 fl. oz. per acre.

OTHER AGRICULTURAL USES

Alfalfa, Clover, Pasture and Range Grass, Grass and Grass Hay, Grain Crops, Beans, Rice, and Nonagricultural Lands (wasteland):

Adult mos-quitoes and flies - Apply MALATHION ULV at the rate of 2 to 4 fluid ounces for control of adult mosquitoes applications as necessary. On alfalfa, clover, pasture and range grass, grass and grass hay, may be applied on day of harvest or grazing. Do not apply to alfalfa and clover in bloom. Do not use on seed alfalfa. On grain crops make no application within 7 days of harvest or forage use; on corn, within 5 days of harvest or forage; on rice, within 7 days of harvest; on beans within 1 day of harvest.

MOSQUITO CONTROL IN POPULATED AND RURAL AREAS IMPORTANT NOTICE: TO BE APPLIED ONLY BY TRAINED PERSONNEL OF PUBLIC HEALTH ORGANIZATIONS, MOSQUITO ABATEMENT DISTRICTS OR PEST CONTROL OPERATORS.

AERIAL APPLICATION

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 MALATHION ULV per acre. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control.

IMPORTANT - Undiluted spray droplets of MALATHION ULV will permanently damage vehicle paint finishes unless the aircraft used for the ultra low volume application meets all of the specifications listed below:

FIXED WING AIRCRAFT

- 1. Aircraft is operated at 150 mph or more.
- 2. There are no leaks in the ultra low volume spray system.
- 3. Nozzles are placed on the boom at a 45 degree angle down and into the wind.
- 4. Diaphragm check valves are used on all nozzles to insure positive cut-off of the spray.
- 5. Dosage of MALATHION ULV does not exceed 3 fluid ounces per acre.
- 6. The spray system produces droplets of this product in the 50 to 60 mass median diameter (MMD) micron range, with no more than 10% of the droplets exceeding 100-microns, as determined by readings made from microscope slides coated with DRI-FILM* or TEFLON**

HELICOPTER

Equipment specifications:

- 1. Rotary nozzle equivalent to Beecomist Spray Head Assembly Model No. 350 equipped with:
 - a. A direct reading RPM tachometer or low RPM signal light readily visible to operator;
 - b. A stainless steel porous metal sleeve, 20 micron pore size, dynamically balanced to the nozzle;
 - c. A diaphragm check valve as near to the rotary nozzle, as possible to insure positive cut off of the spray;
 - d. Nozzle on-off switch separate from main switch and pump switch.

- 2. Minimum no-load nozzle speed of 10,500 RPM.
- 3. A continuous nonpulsating metered flow must be maintained by a variable speed metering pump equipped with:
 - a. a positive cut off valve between tank and pump;
 - b. a flow gauge or tachometer visible to operator;
 - c. a pump on-off switch separate from main switch and nozzle switch.
- 4. Maximum flow rate of 0.5 gallon per minute per nozzle.
- 5. Rotary nozzle must be mounted behind and below the boom with sleeve directed toward the rear of the aircraft and parallel to the ground during flight. Nozzle must be positioned to minimize air turbulence and the collection of MALATHION ULV droplets on mounting brackets, feed lines, fittings, etc., or any part of the aircraft.

OPERATING PROCEDURES

- 6. MALATHION ULV must be prefiltered through a 10 micron filter prior to transfer into helicopter tank. A 50 mesh stainless steel line strainer must be installed in the pump feed line.
 - 7. Entire system, including tank, pump, nozzle and feed lines, to be used only for application of MALATHION ULV.
 - 8. Entire system must be inspected daily to insure that there are no leaks.
 - 9. Sleeve must be removed and cleaned immediately after each use by washing with hot water and blowing dry from outside in with clean air.
 - 10. Rotating nozzle must be turned on and operating before turning on pump. For shut off, pump must be shut off and lines clearer prior to stopping nozzle rotation.
 - 11. Dosage of MALATHION ULV does not exceed 3 fluid ounces per acre.
 - 12. The spray system must produce droplets of MALATHION ULV with a mass median diameter (MMD) of less than 50 microns, with no more than 2.5% of the droplets exceeding 10 microns, as determined by readings made from microscope slides coated with DRI-FILM* or TEFLON**
- *Trademark of General Electric Company
 **Registered Trademark of E.I. duPont de Nemours & Co. Inc.

GROUND APPLICATION

Thermal Aerosols or Fogs

For control of adult mosquitoes with thermal aerosols or fogs, apply MALATHION ULV at the rate of 6 to 8 oz. actual/gallon (3.9-5.2 gallons MALATHION ULV in 100 gallons 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 to 400 feet.

*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 MALATHION ULV.

NONTHERMAL AEROSOLS

ADULT MOSQUITO CONTROL - For control of adult mosquitoes over a 300-foot swath with nonthermal aerosols of MALATHION ULV using the following rates at the indicated vehicle speeds:

Vehicle Speed Rate per hour	Flow Rate of MALATHION ULV Fluid Ounces per Minute	Maximum Flow Rate per Hour
5	1.0 to 2.1 fluid ounces	1 gallon
10	2.0 to 4.3 fluid ounces	2 gallons
15	3.0 to 6.3 fluid ounces	3 gallons
20	4.0 to 8.6 fluid ounces	4 gallons

ADULT STABLE FLY CONTROL - For control of adult stable flies over a 300-foot swath with nonthermal aerosols of MALATHION ULV using the ultra low-volume method, use the following flow rates at the indicated vehicle speeds.

Vehicle Speed Rate per hour	Flow Rate of MALATHION ULV Fluid Ounces per Minute	Maximum Flow Rate per Hour
5	2.1 fluid ounces	1 gallon
10	4.3 fluid ounces	2 gallons

DROPLET SIZE

1. The Mass Median Diameter (MMD) of the droplets should not exceed 17 microns. The MMD is the drop diameter which divides the spray volume into two equal parts; i.e., 50% of the volume is in the drop sizes below the MMD and 50% is above the MMD.
2. Spray droplets should not exceed 32 microns in size. Three percent of the spray droplets (6 droplets out of 200) can exceed 32 microns providing the MMD does not exceed 17 microns and no droplets exceed a maximum of 48 microns. Larger droplets, when transported by natural air currents, impinge more readily on objects in their pathway and will permanently damage automobile type paints.
3. More than one-half of the total spray mass must consist of droplets in the 6 to 18 micron range to achieve adequate dispersal of insecticide over a 300-foot swath.
4. A minimum of two-thirds, preferably four-fifths of the total spray mass must consist of droplets not exceeding 24 microns in range.

OPERATING EQUIPMENT

Each Nonthermal Aerosol Generator used for dispersal of MALATHION ULV to control adult mosquitos must have minimum capability of producing the droplet spectrum described under DROPLET SIZE. 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. The unit should be rechecked as frequently as necessary to insure that proper droplet size is maintained for each operation. Determination of droplet size every two months is usually sufficient 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 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 or 2 gallons per hour at 10 mph or 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 degrees or more

VEHICLE SPEED - not greater than 20 miles per hour - shut off spray equipment when vehicle is stopped.

IMPORTANT - Spray droplets of undiluted MALATHION ULV will permanently damage automobile paint unless all the conditions described and recommended in this leaflet are met.

DIRECTIONS FOR DETERMINING THE DROPLET SIZE OF MALATHION ULV Nonthermal Aersols

Permanent records of each droplet size determination must be kept and made available to MICRO FLO COMPANY, upon request.

1. PREPARATION OF SLIDES WITH DRI-FILM MALATHION ULV droplet sizes are determined by depositing a sample of the aerosol on a coated glass slide and measuring the droplets under a high-power microscope. Ordinary 3" x 1" glass slides must be coated with silicone (General Electric SC-87 DRI-FILM) prior to sampling to prevent excessive spreading or coalescence of the droplets. The slides are dipped into a 10 percent solution of DRI-FILM in toluene, drained and dried at about 200 degrees F, for 30 minutes after which they are dipped in acetone, allowed to dry and stored in a tight slide box. Coating solution must be freshly prepared. Do not store coating solution because it will deteriorate. Slides are lightly polished with a soft tissue before using to remove any foreign particles.

2. DEPOSITIUM OF MALATHION ULV DROPLETS ON SLIDES Droplets should be collected under ideal operation conditions to insure representative sampling of droplets in the aerosol. A sample of the MALATHION ULV aerosol is deposited on a slide by waving the slide as rapidly as possible perpendicular through the aerosol cloud at a distance of 25 feet from the point of discarge. The slide velocity may be increased by attaching it to a 3 or 4 foot

stick by means of a spring paper clip. At least two slides should be exposed to insure an adequate sample. Store slides in a tight slide box for transfer to a location where measurements can be made. Avoid excessive heat during transit and store in a cool place until measurements can be made. Although label specifications require the aerosol nozzle to be angles upward at 45 degrees or more during operation, it is more convenient to position the nozzle parallel to the ground for droplet sampling. If this is not possible it will be necessary to be positioned at a sufficient height to obtain a representative sample of the aerosol.

3. DETERMINATION OF MALATHION ULV DROPLET SIZES A microscope with mechanical stage and an eyepiece micrometer are used to determine the size of the individual aerosol droplets. Prior to taking measurements, the divisions of the eyepiece micrometer must be calibrated into microns by means of a stage micrometer. In the example represented in Table 1, droplets were measured at 400x magnification. At that magnification each division of the eyepiece was calibrated to equal 3.5 microns. At least 200 droplets should be measured. Usually this is easily accomplished on one slide. An accurate method is to measure all droplets that pass through the micrometer scale as the slide is moved from one edge to the other by using the mechanical stage. Measurements should not be taken along the margins of the slide. It is more convenient to measure in terms of the divisions of the eye-piece micrometer and then convert these divisions into microns. The measurements converted into microns must then be corrected for the amount of spread that occurred on the slides. The MALATHION ULV spread factor for silicone-coated slides is 0.5. Therefore, in Table 1 each division of the eyepiece actually equals 1.75 microns (3.5 microns times the 0.5 spread factor). The spread factor for TEFLON-coated slides is 0.69. The following procedures as given for silicone-coated slides, would be the same for TEFLON-coated slides once the value for each eyepiece division has been determined. The measurements are tabulated and processed as in Table 1. The Maximum Diameter is calculated by converting the diameter of the largest droplet measured into microns. In Table 1, the largest droplet measured has a diameter of 19 eyepiece divisions. Therefore, the Maximum Diameter is 33.3 microns (17 x 1.75 = 33.3). To determine the Mass Median Diameter (MMD), the accumulative percentages from the last colum in Table 1 are plotted against the eyepiece division (D) on arithmetic probability paper as in Figure 1. Directly across from the 50 percent point on the line is the median droplet size in eyepiece divisions which must be converted to microns. In Figure 1, 9.2 eyepiece divisions times the conversion factor of 1.75 equals a Mass Median Diameter of 16.1 microns.

Figure 1.
Directly across from the 50 percent point on the line is the median

14 9 14
7

droplet size in eyepiece divisions which must be converted to microns. In Figure 1, 9.2 eyepiece divisions times the conversion factor of 1.75 equals a Mass median Diameter of 16.1 microns.

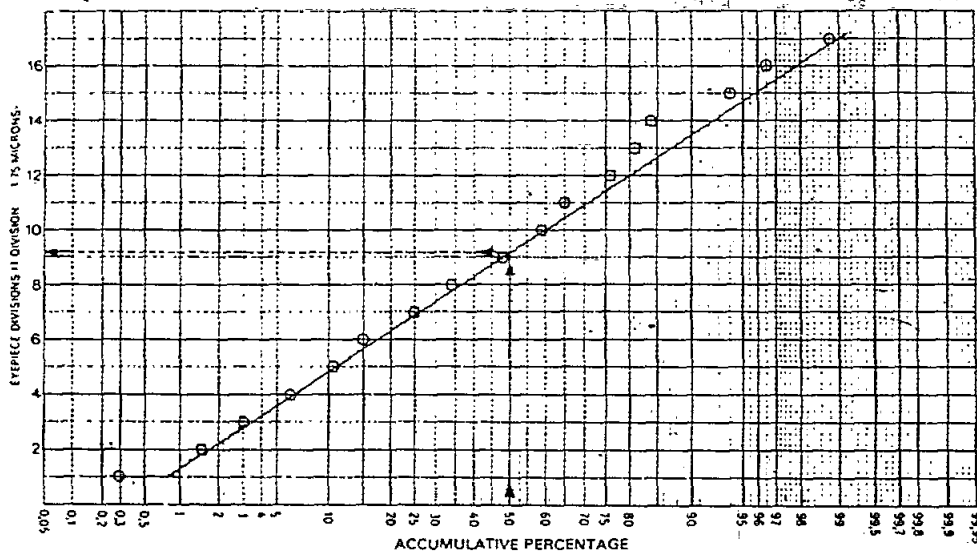


Figure 1. Percentage of the total volume of aerosol samples below each stated droplet size (from Table 1). The Mass Median Diameter is determined from the 50 percent point on the line. The Mass Median Diameter (MMD) = 9.2 divisions times 1.75 = 16.1 microns.

11