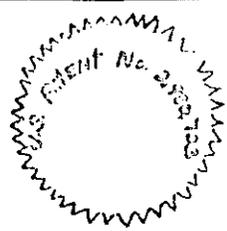


241-208



10-22-1970

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Leaflet

CYTHON
Insecticide
"The Premium Grade Malathion"

USDA Reg. No. 241-208

Ultra Low Volume
Application

NONTHERMAL AEROSOLS
APPLIED BY
GROUND EQUIPMENT

ACCEPTED

OCT 22 1970
UNDER THE FEDERAL INSECTICIDE
FUNGICIDE AND RODENTICIDE ACT
FOR ECONOMIC POISON REGISTERED
UNDER NO. 241-208 SUBJECT
TO ATTACHED COMMENTS.

Before using, read the directions contained in this leaflet for the proper methods and procedures which must be followed to achieve effective adult mosquito control and avoid permanent damage to automobile and other paint finishes.

CAUTION!
KEEP OUT OF REACH OF CHILDREN
HARMFUL BY SWALLOWING, INHALATION OR SKIN CONTACT
Avoid Breathing Spray Mist
Avoid Prolonged Or Repeated Contact With Skin
Wash Thoroughly After Handling
Change Contaminated Clothing
Do Not Contaminate Food Or Feed Products

Highly toxic to fish. Do not contaminate any body of water, by direct application, cleaning of equipment or disposal of wastes and containers.

DIRECTIONS FOR USE

Adult Mosquito Control - For control of adult mosquitoes over a 300-foot swath with nonthermal aerosols of CYTHON using the ultra low volume method use the following flow rates at the indicated truck speeds:

<u>Truck Speed</u> <u>Miles per Hour</u>	<u>Flow Rate of CYTHON</u> <u>Fluid Ounces per Minute</u>
5	1 to 1.5 fluid ounces
10	2 to 3 fluid ounces

In case of an emergency endangering life or property involving this product, call collect, day or night, Area code 201-835-3100.

Droplet Size

1. Spray droplets must not be less than 5 microns in size as the smaller droplets do not impinge readily on adult mosquitoes.
2. Spray droplets must not exceed the range of 23 to 27 microns in size as larger droplets, when transported by natural air currents, impinge more readily on objects in their pathway and will permanently damage automobile paint.
3. More than one-half of the total spray mass must consist of droplets in the 5 to 15 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 20 microns in range.
5. The mass median diameter (MMD) of the droplets should not exceed 14 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 size below the MMD and 50% is above the MMD.
6. The average diameter of the droplets should not exceed 12 microns.

Operating Equipment

1. The Ultra Low Volume cold aerosol nozzle for dispersal of CYTHION to control adult mosquitoes must have the minimum capability of producing the droplet spectrum described under Droplet Size.
2. Tank Pressure - not less than 3 to 3.5 p.s.i.
- not greater than 6 p.s.i.
3. No insecticide pump is necessary with the ULV system.
4. Flow Rate - must be regulated by accurate flow meter.
- not greater than 3 fluid ounces per minute
5. Nozzle Direction - rear of the truck
- upward at an angle of 45° or more.
6. Vehicle speed - not greater than 10 miles per hour
- shut off spray equipment when vehicle is stopped.

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

DIRECTIONS FOR DETERMINING THE DROPLET SIZE OF
CYTHION ULTRA LOW VOLUME NONTHERMAL AEROSOLS

I. Preparation of Slides

CYTHION droplet sizes are determined by depositing a sample of the aerosol on a 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 solution of one part of silicone to nine parts of acetone, allowed to dry and stored in a tight slide box. Slides are lightly polished with a soft tissue before using to remove any foreign particles.

II. Deposition of CYTHION Droplets on Slides

A sample of the CYTHION aerosol is deposited on a slide by waving the slide through the aerosol cloud at a distance of 25 feet from the point of discharge. Slides are waved perpendicular to the movement of the aerosol and then stored in a tight slide box for transfer to a location where measurements can be made.

III. Determination of CYTHION 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. 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 eyepiece 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 CYTHION spread factor for silicone coated slides is 0.4. Therefore, in Table 1 each division of the eyepiece actually equals 1.4 microns (3.5 microns times the 0.4 spread factor).

The measurements are tabulated and processed as in Table 1. The Average Droplet Diameter is determined by dividing the total of DNM by the total of N and multiplying by the number of microns per eyepiece division. In this example, 1636 divided by 99 equals 8.2. Then, 8.2 times the conversion factor of 1.4 microns per division gives an Average Droplet Diameter of 11.48 microns.

The Maximum Diameter is calculated by converting the diameter of the largest droplet measured into microns. In Table 1, the largest droplet measured had a diameter of 19 eyepiece divisions. Therefore, the Maximum Diameter is 26.6 microns ($19 \times 1.4 = 26.6$).

To determine the Mass Median Diameter (MMD), the accumulative percentages from the last column in Table 1 are plotted against the eyepiece divisions (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 1.4 equals a Mass Median Diameter of 12.88 microns.

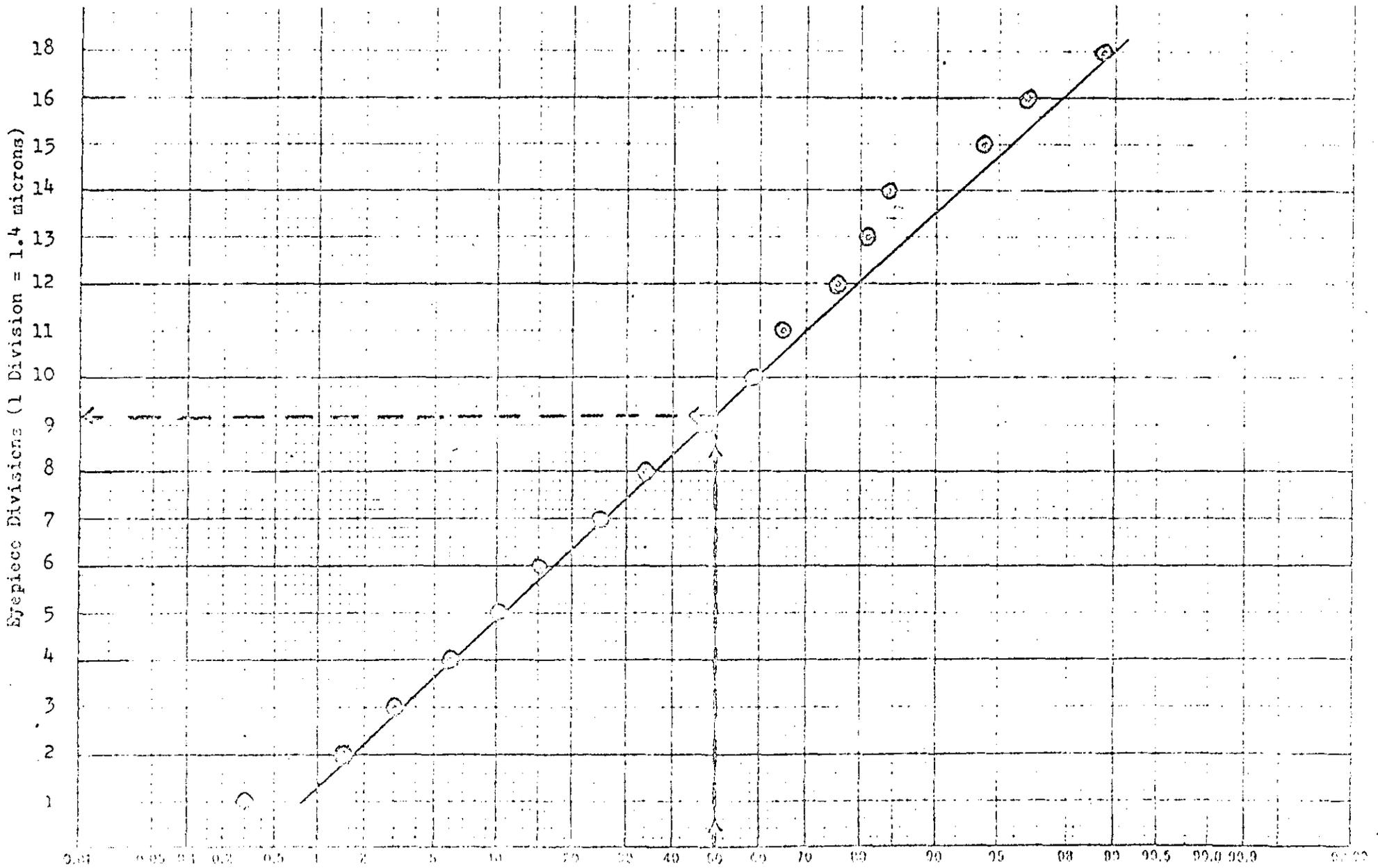
Table 1. - Representative Count of CYPHON Aerosol Droplets Impinged on Microscope Slides.

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Eye-piece Divisions (D)*	Number of Droplets (N)	DXN	% of Total $\frac{DXN}{\Sigma(DXN)}$	Accumulative Percentages
1	5	5	0.31	0.31
2	10	20	1.22	1.53
3	9	27	1.65	3.18
4	12	48	2.93	6.11
5	15	75	4.58	10.69
6	12	72	4.40	15.09
7	25	175	10.70	25.79
8	14	112	6.85	32.64
9	28	252	15.40	48.04
10	19	190	11.61	59.65
11	14	154	9.41	69.06
12	10	120	7.33	76.39
13	6	78	4.77	81.16
14	4	56	3.42	84.58
15	11	165	10.09	94.67
16	2	32	1.95	96.62
18	2	36	2.20	98.83
19	1	19	1.16	99.99
Total	199	1636		

*Measurements were taken at 400x magnification. Each eye-piece division equals 1.4 microns (3.5 microns times the 0.4 spread factor).

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 1.4 = 12.88 microns.



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DISCLAIMER

American Cyanamid Company warrants only that the material contained herein conforms to the chemical description on the label and is reasonably fit for the use therein described when used in accordance with the directions for use.

Any damages arising from a breach of this warranty shall be limited to direct damages, and shall not include consequential commercial damages such as loss of profits or values, etc.

American Cyanamid Company makes no other express or implied warranty, including any other express or implied warranty of FITNESS or of MERCHANTABILITY.

BUYER assumes the risk of any use contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable by American Cyanamid Company.

AMERICAN CYANAMID COMPANY
AGRICULTURAL DIVISION
PRINCETON, N. J.

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Pressure-Sensitive Sticker to be affixed to: 5-gallon can

Notice -- CYTHION Insecticide, The Premium Grade Malathion must not be used undiluted as a nonthermal aerosol applied ultra low volume by ground equipment for control of adult mosquitoes unless written authorization and specific instructions for this use are obtained from American Cyanamid Company.

IMPORTANT -- Undiluted spray droplets of CYTHION Insecticide, The Premium Grade Malathion will permanently damage automobile paint unless these specific instructions are followed.

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Pressure-Sensitive Sticker to be affixed to: 29-gallon drum

Notice -- CYTHION Insecticide, The Premium Grade Malathion must not be used undiluted as a nonthermal aerosol applied ultra low volume by ground equipment for control of adult mosquitoes unless written authorization and specific instructions for this use are obtained from American Cyanamid Company.

IMPORTANT -- Undiluted spray droplets of CYTHION Insecticide, The Premium Grade Malathion will permanently damage automobile paint unless these specific instructions are followed.

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Pressure-Sensitive Sticker to be affixed to: 54-gallon drum

Notice -- CYTHON Insecticide, The Premium Grade Malathion must not be used undiluted as a nonthermal aerosol applied ultra low volume by ground equipment for control of adult mosquitoes unless written authorization and specific instructions for this use are obtained from American Cyanamid Company.

IMPORTANT -- Undiluted spray droplets of CYTHON Insecticide, The Premium Grade Malathion will permanently damage automobile paint unless these specific instructions are followed.