WORLD HEALTH ORGANIZATION

ORGANISATION MONDIALE DE LA SANTE

a 61923

WHO/Mal/285 Add.1
WHO/Insecticides/120 Add.1

ADDENDUM to
Appendix 1 - Annex 2

12 April 1961

ORIGINAL: ENGLISH

INSTRUCTIONS FOR USE OF THE WHO AEROSOL-DISPENSER FOR ASSESSING INDOOR DENSITIES OF MOSQUITOS

1. Introduction

The WHO "aerosol for room space-spraying", or WHO aerosol-dispenser,[1] is intended primarily for use in entomological field-trials employing the tentative operational method for assessing the effects of insecticide-dosages (see WHO document MHO/PA/205.60 and WHO/Mal/285-WHO/Insecticides/120, issued January 1961). General instructions in the standard procedure for space-spraying (also called "spray-capture") are given in an appendix to each of these documents.

The aerosol-dispenser may also be used independently for determining the day-time or night-time densities of mosquitos in rooms.

Since the aerosol-dispenser will most often be used in conjunction with studies of the effects of residual insecticides on mosquitos, it is considered essential that the aerosol itself should NOT possess (a) a residual insecticidal effect, or (b) a residual repellent effect. Pyrethrins and piperonyl butoxide are well known for their quick knock-down action and their low persistency in volatile solvents, as used in the formulation. Moreover, only a small fraction of the spray should be deposited on surfaces if the directions are followed. It is nevertheless advisable, after space-spraying a room, to wait at least 24 hours before using the room for further experimental observations.

---

[1] According to WHO Technical Report Series No. 206, the term "aerosol-bomb", used in WHO/Mal/285, should be replaced by the term "aerosol-dispenser". This change is adopted in the present document.

2. Specification of the aerosol-dispenser

Composition of aerosol	% by weight
Pyrethrum extract (25% pyrethrins)	2.0
Piperonyl butoxide (technical)	1.5
Odourless kerosene	11.5
Dichlorodifluoromethane	42.5
Trichlorofluoromethane	42.5

Weight of contents: 340 grams Weight of canister: 94 grams

Rate of delivery (intended): 1 g per second at 20°C

Rate of use (intended): 5 g per 30 m^3

(N.B. This figure corrects the one erroneously given in the documents above referred to)

3. Tests on aerosol-dispensers before use

It is recommended, in order to secure maximum efficient service from the aerosol-dispenser, that samples of each consignment be tested on arrival at the field store. The tests advised are the following:

(a) Rate and type of delivery under locally prevailing conditions

(1) The sample dispenser is operated for about 5 seconds;

(2) it is then carefully weighed, preferably with an accuracy of 0.1 g;

(3) operated for exactly 20 seconds (stop watch) in the shade and reweighed.

Make sure that there is no leakage at the valve and that the aerosol discharged is actually atomized in the air, and does not partly hit the container or spit.

(b) Optimal local rate of use

Into a closed, furnished trap-hut or capture-station of known cubic capacity, release a known number of mosquitos (preferably the strongest species in the area). Weigh the dispenser and operate at half 'the

intended rate of use' (i.e. for 2.5 seconds per 30 m^3). After allowing ten minutes for knock-down, count the mosquitos on the floor. Reweigh the dispenser to obtain the actual dosage. If less than 90% of those released are recovered, repeat the test with a higher dosage, e.g. 4 seconds per 30 m^3, after at least one hour of aeration or in another hut.

When a dosage giving over 90% knock-down in ten minutes has been found, this may be taken as a satisfactory rate of use. Conditions permitting, however, it is advisable to repeat the test twice more.

(c) Absence of residual repellency

Use two baited, unsprayed trap-huts or capture-stations in which the comparative night-time and day-time mosquito densities have previously been assessed over a period. Space-spray one hut or station at sunset, using twice the 'intended rate of use' of the aerosol-dispenser. Half-an-hour after space-spraying, reopen the entry-channels to admit mosquitos attracted by the bait during the night. The numbers entering the two huts or stations may be assessed at intervals through the night by captures on the baits or on the walls, and in the morning by those found in the window-trap. If residual repellency is indicated during the first night, further counts may be made the second night following the space-spraying.

If any of the above tests reveals an important discrepancy between intention and performance, please report this promptly to WHO.

4. Operational procedures

4.1 Assess the cubic capacity of the room to be space-sprayed.

4.2 Close up the room as completely as possible, particularly by using blankets or other suitable material to close doorways and windows. Lay down sheeting to cover the whole floor and other horizontal surfaces. (Note: If overnight floor-sheets are in use, they must be cleared of the "floor-kill" before the room is space-sprayed.)

4.3 If the room has narrow spaces (e.g. under the eaves) which cannot easily be blocked up, spray these in advance from the outside. In doing so, operate the dispenser intermittently (1 to 2 seconds at a time) while walking quickly along the outside walls. Do not count this spraying as part of the rate of use to be employed within the room.

4.4 To operate the dispenser remove the outer cap and press with the forefinger on the top of the plastic nozzle, directing the spray towards the upper parts of the walls and the ceiling by holding the dispenser above the head and turning around in the centre of the room. At the same time count the seconds of operation, according to the predetermined rate of use. Increase the dosage if it is obvious that knock-down is incomplete. Replace the cap immediately after the operation.

4.5 Remain at least fifteen minutes, while keeping the room sealed and collecting all the mosquitos knocked down by the aerosol. (For the method of collection, see the references given in the Introduction.)

5. Transport and storage of aerosol-dispensers

Aerosol-dispensers should always be carried (if by road) upright in a rigid equipment-box or (if on the person) in a knapsack. Hard shocks to the canisters should be avoided as far as possible, and every effort should be made to avoid exposing them to high temperatures (e.g. direct sunlight) during transportation and storage.

Where it is found necessary to transport dispensers in the same car as window-traps or cages containing living mosquitos, the two should never be placed in close proximity nor in the same box. A contaminated cage will require thorough airing before re-use, and should preferably be cleaned with a detergent or soap and water.

6. Consumption of aerosol-dispensers in a field-trial

Where the trap-huts or capture-stations are small (about 30 m^3 or 1000 ft^3) one dispenser should suffice to space-spray 65-70 stations. Allowing a margin for the extra spraying of eaves, etc., it is calculated that a field-trial extending over 30 weeks, with weekly evaluations in 25 trap-huts or selected small capture-stations, should consume one dispenser every two weeks: 15 in all.

Where larger rooms are used as capture-stations, the total consumption might be 25 dispensers. An average consumption of 20 dispensers per field-trial has been assumed when ordering supplies.

To workers conducting a field-trial it is suggested that one dispenser at a time may be issued to each assistant detailed to space-spray a fixed number of huts or stations. By marking each with the date of issue, it will then be simple to keep a check on its proper rate of use.

Fresh supplies of aerosol-dispensers may be requested from the WHO regional offices. As, however, they will hold only a limited stock, urgent requests should be avoided; the requirements of workers in the field are more likely to be met if requests are made several weeks in advance.