

WORLD HEALTH ORGANIZATION

INTER-REGIONAL SEMINAR ON
ANTILARVAL OPERATIONS

Alexandria/Cairo/Asswan

3 - 21 July 1972

Item no. 4.3

ORGANISATION MONDIALE DE LA SANTE

IR/SEM.ANT.LARV.OPR/34.2

ORIGINAL: ENGLISH

29 June 1972

SELECTION OF ANTILARVAL MEASURES

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The criteria for selecting antilarval measures cannot be standardized as for every situation the requirements may be different. As stated before, the selection of a method depends on the local climatic conditions, type of breeding place, type of water and the local availability of material and equipment. However, certain guiding principles can be laid down to assist field workers in making the right approach and selecting the most appropriate measures for any particular situation.* These may be as follows:

(i) Use of fish

In planning antilarval operations, the first attention should be given to the use of fish as a supplementary measures, as the cost is low, it needs little or no skill, and there is very little need for maintenance.

(ii) Source reduction activities

Source reduction activities, water conservation and management measures should receive just as much attention. The objective for these activities should be mainly to reduce the size of breeding places by simple filling and drainage which would not require considerable investment or skilled personnel and sophisticated equipment. Contacts however, should be made with public work departments, agricultural departments and other governmental and private agencies that could be of help. The right approach to these departments should make it possible for the malaria service to implement considerable mosquito control work with borrowed equipment, personnel and sometimes technical staff.

* Working document No. 9.1 "Malaria Control", on page 6, makes reference also to choice of methods.

Another area where the malaria service can work is cooperation and collaboration with development projects, whether agricultural, water or otherwise, to help them to control malaria in their areas of operations.

Major source reduction projects however cannot be considered for the sole purpose of malaria control especially if the time required for planning and construction is longer than the time schedule of the malaria suppression programme. The cost of projects which can be completed in a short time should be less than that for other available methods. Maintenance should be economical especially for projects located in remote areas and breeding places that can be eliminated by simple methods using skills and equipment locally available are desirable.

A significant reduction in mosquito breeding can be effected by maintenance operation, that is cleaning and clearing the edges of the water collections and streams from floating growth and marginal vegetation. These measures are equally useful in agriculture or urban areas and therefore should be planned and carried out mutually with such authorities or with local inhabitants.

(iii) Larviciding

Larviciding should be resorted to where quick results for only a number of years will be required. It should be regarded as an intermediate measure until source reduction or biological control ensures adequate control. Even under conditions as stated above, in larviciding programme certain elements of biological control and source reduction should be introduced wherever possible.

To select the larvicides, one should remember that every compound has its limitations and that larvicides chosen for any situation should be adequately effective, safe and economical. Desirable characteristics of a larvicide are listed as follows. It should be noted, however, that not all of these characteristics are likely to occur in any one larvicide.

- high toxicity to mosquito larvae
- rapid and persistent action
- good dispersal qualities in the spray tank and in the water of the mosquito source
- readily procurable locally at low cost
- safe and convenient to handle, transport and apply
- effective under weather conditions anticipated

- effective primarily against larvae, and eventually against eggs, pupae and adults
- effective in various kinds of water where larvae occur (brackish, polluted, acid, alkali, etc.)
- not toxic to non-target forms of life (man, food, fibre and ornamental plants, poultry, domestic animals, food fish, and larvicidal fish, aquatic insect predators of mosquito larvae).
- good penetration of emergent aquatic vegetation and of debris on water surface
- effective when applied at low dosage rates, exhibiting the following characteristics:
 - no intolerable residues in crops
 - no toxicity to wildlife and/or beneficial arthropods
 - no persistent pollution of water or environment
 - low operational cost.