

PROJECT PRAYAAS

VECTOR CONTROL MEASURES AT THE COMMUNITY LEVEL

ANTI LARVAL MEASURES

Source reduction

1. Anti-larval operations causing the reduction or elimination of mosquito breeding places or sites are defined as *source reduction methods*. Source reduction primarily aims to prevent development of aquatic stages of mosquito larvae reducing breeding source. Anti-larval measures are broadly categorized into

- (a) Environmental
- (b) Biological
- (c) Chemical

Environmental Methods of Source reduction

2. **Environmental Modification** Reduction of breeding sites primarily involving small scale engineering methods, such as

(a) **Filling up** - for elimination of 'borrow pits', ditches, small unused irrigation canals, unused/abandoned wells, in and around human habitations / villages for prevention of mosquito breeding.

(b) **Drainage** of unwanted water collections :-

(i) eliminating breeding sites by draining away unwanted water collections.

(ii) reducing vector breeding by channeling water to places where the water can be easily controlled, like a single common pond instead of multiple small accumulations.

(iii) Construction of surface ditches, sub-surface drains, vertical drains etc are some of the methods used in drainage. Type of ditch or drain, best suited for a particular situation, will depend upon topography, source of water and soil properties, further, the availability of funds for undertaking the works.

(c) **Drains** Lined drains may require to be constructed from Village or other funds to drain away domestic waste water and prevent accumulations . Proper slope to be ensured to prevent stagnation. Ideally drains should not be covered to ensure proper cleaning. Cleaning to remove garbage should be done, preferably daily, if not, at least once in a week.

3. **Environmental manipulation**. These activities require minimum or no engineering skill and can be under taken by field workers employed for routine hygiene and sanitation activities . Changes are to be effected in the natural conditions under which mosquitoes exist, rendering them unfavourable to the life and activities of these insects either in their aquatic or adult stages.

- (i) Altering flow of water in canal systems,
- (ii) Draining out agricultural fields periodically, i.e intermittent irrigation. The fields must be fully dried out in the interval before next flooding.

4. **Peri Domestic Breeding prevention** : Prevention of egg laying in suitable breeding habitats preferred by different disease vector mosquitoes, is the first step in attacking the life cycle of mosquitoes. Prevention of clean water collections or removal/elimination of clean water collections is environment friendly, cost effective and easy to implement. Throwing of disposable / used tea cups, glasses, buckets, tyres, pots, utensils is a very common habit. These small discarded containers become enormous potential breeding sources for both Anopheles and Aedes vector mosquitoes. Open tanks, overhead and underground tanks, unused wells in urban, peri-urban or semi-urban locality are also potential breeding source for vectors. Concrete roof and terrace without proper drainage may lead to water collections during monsoon months forming breeding sites. The above described breeding sources in and around human settlements (peri domestic) in villages, should be kept under surveillance by Cluster Coordinators during visits to villages.

Comprehensive source reduction should be involving the community, schools, gram panchyats, and local PWD. "Search and Destroy" campaigns should be done across the villages once in two weeks during the period immediately after the monsoon ceases. And be done every week in lull periods between rainfall spells.

The following steps are suggested for implementation of source reduction

- (a) **Discarding of containers** Never to throw any containers in the open which are capable of holding water for more than a week.
- (b) **Overhead tanks** :
 - (i) Lids of these tanks must be checked and kept covered with stones or tied with wires. Check these every month.
 - (ii) Any leakage or overflow should be repaired immediately.
- (c) **Underground and open tanks**. These should be kept covered as much as feasible, with mesh if required. Wherever possible, a weekly "Dry Day" should be maintained.
- (d) **Construction sites** require to have their water storage tanks filled up on completion and kept dry once in a week.

Biological Methods for Larval control

5. These include primarily, the introduction of larvivorous fishes such as Gambusia in permanent or temporary water bodies. As this is a labour intensive activity requiring extensive human resources support in maintaining the initiative, it is advisable for Project personnel to be just aware of this modality and focus mostly on motivating the Distt VBD program to adopt this intervention.

6. Presently, apart from encouragement to the process of introduction of larvivorous fishes into the Action Plan of the Districts, no role for the Project Prayaas is envisaged.

7. Bacterial larvicides are also available for anti larval usage. Details are at Appx. These should be sourced from the Distt VBD program and utilized through the Gram Pradhans.

Chemical Methods for Anti Larval actions

8. Various larvicidal chemicals are available, and preferably should be sourced through the Distt VBD Program. Temephos is the most commonly used chemical for anti larval action. If to be used, it will be diluted as follows :-

(a) **In water bodies** (not for human consumption)

Add 05 ml (five ML) Temephos, to 10 Liters of water in the spray tank and then spray in water bodies. Repeat every two to four weeks. After a week, it is advisable to do a dip check of larval breeding at the spray sites.

(b) **In water bodies** (used for human consumption)

Add 2.5 ml Temephos, to 10 Liters of water in a spray tank and then sprayed in water bodies.

Note

- (i) Use a syringe to measure the required quantity. Tie the syringe to the spray pump with a string.
- (ii) Spray is to be repeated every two to four weeks.
- (iii) After a week of the spray being done, it is advisable to do a dip survey with a scoop, to check for larval breeding at the spray sites.

ANTI ADULT MOSQUITO MEASURES

9. **Personal Protection**

- (a) Use mosquito repellent creams on exposed body parts especially in the evenings and nights
- (b) Preferably wear loose long sleeved clothing.
- (c) Avoid bathing in the open at dawn or dusk.

10. **Bednets**

- (a) Use bednets when sleeping at night.
- (b) Repair bednets by "patch repair".
- (c) Treat bednets with Govt prescribed Insecticide whenever advised
- (d) Store treated bednets in polythene packets when not in use.

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SAFETY MEASURES FOR SPRAY OPERATIONS AT THE COMMUNITY LEVEL

Safety precautions should be consistently observed by all individuals involved in spraying operations involving any substance for anti larval action. This is required to be reinforced periodically by Cluster Coordinators.

1. Do not eat, drink or smoke while working.
2. Do wash your hands and face with soap and water after spraying and before eating, smoking or drinking.
3. Do take a bath at the end of every day's work and change into clean clothes.
4. Do wash the clothing worn during spray, at the end of each working day in soap and water and keep them separate from the rest of the family's clothes.
5. If the insecticide gets on your skin, wash off immediately with soap and water.
6. Change your clothes immediately if they become contaminated with insecticides.
7. Inform your supervisor immediately, if you do not feel well.
8. Use protective clothing :
 - (a) Any cap.
 - (b) Tie a big cloth around your face.
 - (c) Long sleeved shirt
 - (d) Full pants
 - (e) Shoes
 - (f) Rubber gloves when mixing chemicals with water in the tank or treating bednets in basins.

Note : Safety Instructions are to be conveyed using instructional Standees designed for the purpose

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MAINTENANCE OF SPRAY EQUIPMENT AT THE COMMUNITY LEVEL

1. After completing the day's spray work, de-pressurize the tank and empty any remaining insecticide.
2. Clean the tank as explained below :-
 - (a) De-pressurize the tank.
 - (b) Fill the tank half-full with clean water.
 - (c) Replace the lid.
 - (d) Shake the tank so all inside surfaces are washed
 - (e) Pump up pressure in the tank.
 - (f) Spray water through nozzle to clean nozzle.
 - (g) De-pressurize the tank and pour out any remaining water into pit latrines or into a pit away from sources of water.
 - (h) Unscrew trigger on/off valve handle and check and clean the strainer.
 - (j) Reassemble the trigger on/off valve.
 - (k) Remove the nozzle tip and wash.
 - (l) Refit the nozzle.
 - (m) Clean the outside of tank.
 - (n) With lid open, turn tank upside down, open the on/off valve and let all the water drain out of the hose and lance.
 - (o) Ensure the lance is parked to protect nozzle when not in use.
 - (p) When storing the sprayer for a long period, hang it upside down with lid open to allow air circulation. Allow lance to hang from the tank with the trigger valve kept open.

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USAGE INSTRUCTIONS : BACTICIDE WP

Product : *Bacticide WP* Containing *Bacillus thuringiensis* var. *israelensis*

Spectrum Of Action: Highly effective against feeding larval stages of various mosquito species

Formulation : Wettable Powder(WP)

Usage: For use in both clean and polluted water with a residual effect of 2 - 4 weeks.

Directions For Use :

1. Make homogenous solution of 250 g of Bacticide WP in 10 Liters of water in the spray tank. Preferably use a bucket specifically for the purpose of spray operations, to do the mixing.
2. For optimum results, its advised to remove vegetation and garbage in the area of water accumulation before spray.

Eco-Safety : Extremely safe to non-target species including mammals, human beings, predators of mosquito larvae, other insects, fishes, birds, flora fauna.

Shelf Life And Storage : Minimum two (2) yrs. The product must be kept in its original properly labelled packing well sealed and stored in dry ventilated room at temperature not exceeding 45°C. Room should be dry, well ventilated.