

Attacking Mosquito Larvae

- Larviciding with chemical or biological formulations
- Also larvivorous fish (Fish that eat mosquito larvae - Gambusia),
- Mayfly nymphs, but only suitable for specific contexts
- In areas where *A. aegypti* breeds in septic tanks or soak-away pits, expanded polystyrene beads can be applied, as long as the sites are not subject to regular flooding.



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Larviciding

Biological or Chemical Larvicides

A useful tool, requires regular application of larvicide to standing water, where ideally breeding sites are **FEW, FIXED and FINDABLE**



Easily adaptable to urban and camp contexts – with the right tool choices and approach



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Larviciding

- Larvicides such as Temephos (Abate) or Pyriproxyfen or BTI can be applied to drinking water sources
- Formulations may be granules (hand application) or liquid (spray application)
- Larviciding drinking water requires good community sensitisation because people normally fear chemicals being added into their water



Larviciding

- Only use a larvicide that is safe for humans or animals.
- You need to ensure that the larvicide and its formulation is registered in the country where you intend to use it.
- Ideally choose granular formulations for hand application.
- Avoid spray application of larvicide if possible, as PPE is required and people think you must be poisoning the drinking water.

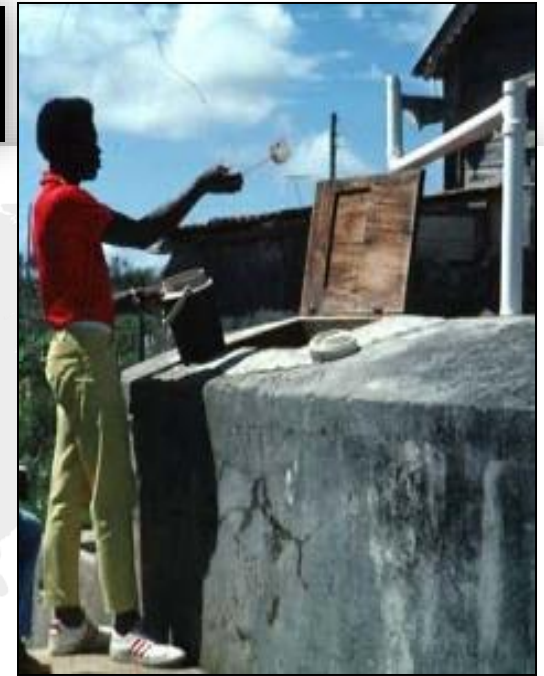


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Larviciding Requirements

- Trained staff
- Larvicide, applied as per manufacturers instructions on the packaging
- Mapping and recording of sites treated and date of treatment
- Spraying equipment and protective gear may be needed if using liquid larvicides
- Good documentation of larvicide used, equipment cleaning and maintenance



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Larviciding

Application

- Hand-operated sprayers for liquid insecticides to larger breeding sites.
- Granule and solid formulations added directly by (protected) hand to confined breeding sites.



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Larviciding

Treatment cycle

Cycle determined by mosquito species, seasonality of transmission, rainfall patterns, properties of larvicide, and types of breeding site.

- Generally 2-3 treatments/year, carefully spaced between periods of rainfall
- More frequent treatment depending on water quality and exposure to sun.

Precautions

- Follow manufacturers and WHO guidelines on drinking water dosage.
- Wear gloves - though not essential



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Chemical Control of Mosquito Larvae



Larviciding domestic water tanks and storage pots (where not manually cleanable) and tires to kill mosquito larvae



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Application of Larvicide



Only use a larvicide that is safe for humans or animals.

WHO have a list of recommended options.

Sand or granules formulation is ideal for community based programmes.



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Example: Haiti earthquake larviciding campaign (*Aedes*)



VCP Vector Control Products

Vector Control Product List

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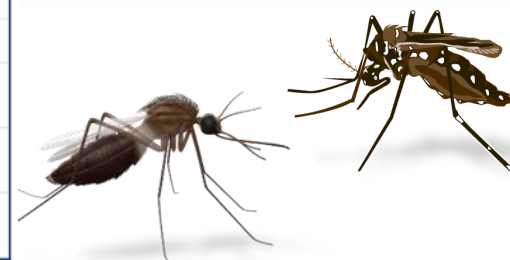
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- ☒ About Vector Control Products Prequalification
- ☒ What We Do
- ☐ Documents A-Z
- ☐ List of Prequalified Vector Control Products

Product Type: PQT/VC Ref Number: Title: Applicant:

Active Ingredient/Synergist:

PQT/VC Ref Number	Product Name	Applicant	Product Type	Active Ingredient/Synergist	Date of Prequalification
002-004	Abate 1 SG	BASF AGRO B.V. Arnhem (NL) Freienbach Branch	Larvicide	Temephos	18 Apr, 2018
002-003	Abate 500 EC	BASF AGRO B.V. Arnhem (NL) Freienbach Branch	Larvicide	Temephos	18 Apr, 2018
012-002	Actellic EC	Syngenta Crop Protection AG	Larvicide	Pirimiphos-methyl	3 May, 2018
027-001	Aquatain AMF	Aquatrain Products Pty Ltd	Larvicide	PDMS (Polydimethylsiloxane)	19 Dec, 2018
025-002	Device 25WP	Arysta LifeScience	Larvicide	Diflubenzuron	3 May, 2018
025-003	Dimilin GR	Arysta LifeScience	Larvicide	Diflubenzuron	3 May, 2018
025-001	Du-Dim 2 DT	Arysta LifeScience	Larvicide	Diflubenzuron	3 May, 2018
004-011	LIMITOR 5 GR	Tagros Chemicals India Pvt. Ltd	Larvicide	Pyriproxyfen	7 Dec, 2017
019-001	Mosquiron 100EC	Adama Agricultural Solutions Ltd	Larvicide	Novaluron	19 Feb, 2018
022-001	MOZKILL 120 SC	Corteva Agriscience LLC	Larvicide	Spinosad	21 Feb, 2018
020-004	Spinosad 0.5% GR	Clarke International	Larvicide	Spinosad	28 Feb, 2018
020-002	Spinosad 20.6% EC	Clarke International	Larvicide	Spinosad	28 Feb, 2018
020-003	Spinosad 25 Extended Release GR	Clarke International	Larvicide	Spinosad	23 Mar, 2018
020-001	Spinosad 7.48% DT	Clarke International	Larvicide	Spinosad	28 Feb, 2018
020-005	Spinosad Monolayer DT	Clarke International	Larvicide	Spinosad	28 Feb, 2018
001-002	Sumilarv 0.5G	Sumitomo Chemical Co., Ltd	Larvicide	Pyriproxyfen	7 Dec, 2017
001-006	Sumilarv 2MR	Sumitomo Chemical Co., Ltd	Larvicide	Pyriproxyfen	7 Dec, 2017
007-009	Temeguard	Gharda Chemicals Limited	Larvicide	Temephos	3 May, 2018
011-001	VectoBac GR	Valent BioSciences Corporation	Larvicide	Bacillus thuringiensis subsp. Israelensis strain AM65-52	19 Feb, 2018
011-002	VectoBac WG	Valent BioSciences Corporation	Larvicide	Bacillus thuringiensis subsp. Israelensis strain AM65-52	13 Mar, 2018
011-003	VectoMax FG	Valent BioSciences Corporation	Larvicide	Bacillus sphaericus strain ABTS-1743, Bacillus thuringiensis subsp. Israelensis strain AM65-52	13 Mar, 2018



WHO Manual for Larval Source Management:
http://apps.who.int/iris/bitstream/10665/85379/1/9789241505604_eng.pdf



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Larviciding Requirements

- Larvicide that works and is usable at community level
- Trained staff
- Spraying equipment, protective gear may be needed (depending on formulation)
- Good documentation of larvicide used, equipment cleaning and maintenance,
- Mapping and recording of sites treated



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Larviciding

Treatment cycle

- Cycle determined by mosquito species, seasonality of transmission, rainfall patterns, properties of larvicide, and types of breeding site
- Generally 2-3 treatments/year, spaced between rains
- More frequent treatment depending on water quality and exposure to sun

Dosage (WHO guidance for drinking water):

- Pyriproxifen: max dosage for drinking-water of 1 mg/l
- Spinosad: dose range of 0.25–0.5 mg/l



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VBD Larviciding-Issues

Can be effective in controlling larvae, as a public health tool for dengue control

- Larviciding large or multiple water bodies is very expensive and requires a large number of staff for potentially little impact as breeding sites are so numerous
- Water supplies in emergencies (particularly acute phases) are rare, highly valued and breeding sites are multiple
- Cultural issue with spraying/treating valued water sources even when the chemical is harmless to humans



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Aedes Control - Key Points

Vector Control - Larviciding

Granules: Easy to apply, little training, no special equipment needed. Must be repeated every 6-8 weeks for large water containers. Larviciding may not be sustainable in endemic settings but can be highly effective in epidemic settings.



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Fogging



Fogging- mix of diesel and an insecticide can be effective for the control of adult dengue vectors



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Fogging

Application

- Space sprays applied either as thermal fogs (10–50 l/ha) or as ultra-low volume applications in the form of a cold aerosol of droplets of controlled size $\sim 20\text{ }\mu\text{m}$ at 0.5–2.0 l/ha.
- Portable or vehicle-mounted thermal or cold fog generators used for ground application
- A wind speed of 1–4 m/s ideal to drift droplets downwind from line of travel.
- Space sprays applied when colder air closer to the ground, (early in the morning or in the evening). With *Aedes* these species spraying usually outdoors in early morning or late afternoon



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Fogging-Requirements

- Insecticide, appropriately diluted
- Regular applications
- Trained staff
- Spraying equipment, protective gear, face masks
- Good documentation of insecticide used, equipment cleaning and maintenance,
- Mapping and recording of sites treated



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VCP

Vector Control Products

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List of Prequalified Vector Control Products

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Fees](#)

Vector Control Product List

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Product Type

PQT/VC Ref Number

Title

Space Spray (indoor & outdoor) ▾

Applicant

Active Ingredient/Synergist

- Any - ▾

- Any - ▾

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PQT/VC Ref Number	Product Name	Applicant	Product Type	Active Ingredient/Synergist	Date of Prequalification
P-11637	Optica ULV	Clarke International	Space Spray (indoor & outdoor)	Broflanilide	30 May, 2025

[CSV](#)

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Fogging

Treatment Cycle

- For rapid reduction in vector density space treatment should be carried out every 2–3 days for 10 days.
- Further applications once or twice a week to sustain suppression of the adult vector population

Precautions

- When treatment is carried out with portable equipment, operators should take special safety measures. Protective clothing, face masks, operate the equipment for short periods.
- Fogging in urban areas can be a traffic hazard, and spotted staining of vehicles may result



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Fogging

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Fogging-Issues

- Expensive as it must be repeated several times at short intervals (e.g., 3 to 4 times in a week)
- Needs special equipment
- Dengue adults re-infest sprayed regions as are very widespread
- Possible role in crowded settings
- Not effective on it's own
- Follow immediately with larvicide and garbage control for dengue
- If residual spraying can be implemented quickly and effectively, there is probably no role for fogging or larviciding in the acute phase of an emergency



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