

Guidelines for Control of Mosquitoes and Flies in Tsunami-affected Areas¹

Guiding principles

The role for vector control in vector-borne disease prevention and control should be assessed, based on the local epidemiological and entomological situation and resources.

WHO recommends a systematic approach to vector control based on evidence and knowledge of the local situation. This approach is called Integrated vector management (IVM). More at: http://whqlibdoc.who.int/hq/2004/WHO_CDS_CPE_PVC_2004_10.pdf

In emergency situations, where rapid insect population control is required, chemical control methods are usually preferred. Environmental management measures should be considered where feasible.

Insecticide application should be carried by trained personnel to ensure safe and effective use, supported by monitoring and evaluation. Proper maintenance and operation of equipment, as well as safe disposal of leftover product and destruction of empty containers to prevent reuse is essential to the safety of operators and others in the environment.

Knowledge of the biology and behaviour of the target species, including the susceptibility to insecticides is critical for proper planning of control operations.

Orders for insecticides and application equipment should preferably conform with specifications of products already approved and registered in the affected country.

WHO specifications for quality control of pesticides and pesticide application equipment are respectively available at <http://www.who.int/whopes/quality/en/> and <http://whqlibdoc.who.int/publications/1990/9241544031.pdf>.

Safety precautions

- ❑ Insecticide application should be carried out exclusively by trained personnel to ensure sound management and effective use, supported by monitoring and evaluation.
- ❑ Always wear protective gear when handling insecticides as they can be absorbed through the eyes, mouth, nose and skin.
- ❑ If skin contact occurs immediately wash the exposed parts with plenty of soap and water. Always wash hands, face and exposed skin after every application of insecticides.
- ❑ Proper maintenance and operation of equipment, is essential to the safety of operators and others in the environment.
- ❑ Keep insecticide supplies in original containers under lock and key, in dry, well ventilated, places, where flooding is unlikely to occur.
- ❑ Dispose off empty insecticide containers by crushing and burying them in a safe place away from water sources and inhabited areas to prevent reuse

Mosquito nets including insecticide-treated mosquito nets

Insecticide-treated mosquito nets (ITNs) offer individual protection against night-biting mosquitoes, including vectors of malaria and dengue as well as nuisance species. ITNs are more effective than and preferable to untreated nets.

¹ Adapted from: *Chemical methods for control of vectors and pests of public health importance*, Sixth edition. Geneva, World Health Organization (In preparation).

World Health Organization

The use of long-lasting insecticidal mosquito nets (LLINs) avoids the need for insecticidal treatment and re-treatment. WHO recommendations are available for Olyset[®] and PermaNet2[®], but specifications for quality control are pending for the latter.

With high levels of coverage, community-wide protection can be expected.

For persons living in scattered or remote locations where there is a risk of malaria, any contact with health posts or other points of service, should be considered as potential opportunities to provide them with ITNs.

More at: <http://mosquito.who.int/rbmdepartment>

Indoor residual spraying

This is a community protection measure for malaria prevention and control—provided that the majority of indoor mosquito resting surfaces are treated. Insecticides are applied to the walls and roofs of houses and other building as well as to the surfaces of temporary shelters, made of canvas or plastic. To plan effective indoor residual spraying operations, local geographical reconnaissance and a knowledge of the structures to be sprayed are needed.

Wettable powder (WP), suspension concentrate (SC) and capsule suspension (CS) formulations are used for indoor residual spraying. WHO recommended insecticides are available at: http://whqlibdoc.who.int/hq/2003/WHO_CDS_WHOPES_2002.5_Rev.1.pdf

Insecticide-treated plastic sheeting

Insecticide-treated plastic sheeting appears to be a promising alternative, but the safety and efficacy of this material has not yet been confirmed by WHO. Data from large scale trials in Africa are currently being analysed.

Space spraying

Space spraying is indicated (a) where mosquito-borne mosquito disease transmission is occurring (e.g., dengue or malaria) and (b) displaced populations are gathered, e.g. in temporary camps, and in established communities where there is additional crowding. Space sprays may also contribute to temporary relief from the discomfort caused by nuisance mosquitoes and for the management of fly populations.

Only flying insects that encounter drifting insecticidal droplets will be killed, so there is no residual insecticidal effect. Thus, optimum efficacy is expected when the spraying coincides with the flight activity of the target vector or pest, e.g., in the early morning for *Aedes aegypti* and houseflies, or at night for most anopheline mosquitoes. Meteorological conditions are usually unfavourable for space spraying between mid-morning and mid-afternoon.

Guidelines for space spraying, including insecticides, are available at: http://whqlibdoc.who.int/hq/2003/WHO_CDS_WHOPES_GCDPP_2003.5.pdf.

Larviciding

Larviciding may be indicated where breeding sites are limited in number and size, are accessible, and are close to or within at-risk settlements, e.g., < 100 m for *Ae. aegypti* less than 500 m for anophelines.

Ae. aegypti typically breed in water storage containers, or rain-filled containers or trash close to human habitation. Reducing or eliminating such breeding sites reduces vector density and risk. Larviciding may also be of critical importance in emergency situations.

A particular challenge for housefly control is the rapid accumulation and continuous change of the breeding substrate. Additional and more detailed information is available at <http://mosquito.who.int/rbmdepartment>