

TRANSPARENCY AND ACCOUNTABILITY NETWORK



IMMC

INTEGRATED MOSQUITO AND MALARIA CONTROL

A comprehensive integrated mosquito and malaria control program to reduce the incidence of malaria, and other insect spread diseases.

BUSINESS PLAN PORTFOLIO OF IMMC INTERVENTIONS EXTERIOR ADULTICIDE SPRAYING

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DRAFT – FOR DISCUSSION ONLY

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INTEGRATED MOSQUITO AND MALARIA CONTROL CONTEXT

**THIS DOCUMENT IS PART OF A SERIES THAT INCLUDES
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SLIDE PRESENTATIONS

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Introduction

Progress in the reduction of the prevalence of malaria is only going to be achieved if there are adequate physical anti-mosquito and anti-malaria interventions. The interventions included in a comprehensive IMMC strategy include the following:

- (1) neighborhood cleanup to reduce mosquito breeding places;
- (2) interior residual spraying (IRS);
- (3) ultra low volume (ULV) adulticide spraying to kill flying mosquitoes;
- (4) larvaciding to kill larvae and stop mosquito recruitment into the population;
and,
- (5) personal use of insecticide treated bednets (ITN).
- (6) medical treatment

Ultra low volume (ULV) exterior adulticide spraying

The purpose of adulticide spraying is to kill adult mosquitoes. The ULV approach kills mosquitoes when they are flying, and the tiny droplets (under 50 microns) attach to the mosquitoes legs.

Adulticiding can also be done from the air or using vehicle mounted equipment. It is a safe way of reducing the mosquito population and used regularly around the world under protocols that ensure safety for people, animals and the environment. The concentration of pesticide used in ULV spraying is small, around $\frac{3}{4}$ oz per acre, equivalent to about one packet of Sweat and Low per acre.

The method chosen will always be the one that is most suited to the conditions. For example, while mosquitoes in the mangrove swamp will be killed through aerial spraying, ground fogging from vehicles will be used along urban roads. Hand carried spray units will be deployed in areas not accessible by vehicle.

Specially designed aircraft that are able to fly safely at low altitudes will be used. Several hundred of these aircraft are routinely used in the United States for crop spraying and insect control. They are equipped with a spray system that makes it possible to use an especially low spray density with ultra fine droplets (about 50 micron) that are highly effective against airborne mosquitoes.

The following are typical aircraft used for ULV spraying. They are very maneuverable, and suited to flying with very precise positioning and they are also equipped with spray equipment that enables them to generate very small spray droplets just microns in size. Spray equipment can also be mounted on vehicles and the spray delivered from the vehicle.



The ULV adulticide can also be applied very precisely using manual hand held equipment, with or without a support vehicle. This is expensive in terms of large scale coverage, but useful where vector control is needed in a localized area.



Adulticide treatment is commonly used where public health authorities are concerned about the possibility of insect borne disease. In the USA, large areas were sprayed in the aftermath of Hurricane Katrina, and similar interventions have been used after other devastating hurricanes in the USA. Spraying is widely used when West Nile Virus is detected in US communities. Spraying has a role in getting control of mosquito vectors in malaria endemic areas.

The effectiveness of spraying depends on many variables, but it can be anticipated that there will be over 80% kill of mosquitoes in the first weeks of operation. While this is very important, it is not sufficient for enduring success. A mosquito population will reestablish itself very quickly, if the environmental conditions are favorable, and the malaria vector will return to a dangerous status very rapidly unless the program addresses all the relevant issues.

All pesticide use must be done under controlled conditions with strong safety protocols in place. Used in the manner intended, the pesticides and biological agents used are highly toxic to mosquitoes, but safe for humans, animals and the environment. Compared to many of the chemicals used in treatment of malaria and other human diseases, the pesticides have low human toxicity.

The cost data shows that aerial application is very cost effective where there are large areas to be treated. An aeroplane can do in 2 hours what a ground based team will take days or weeks to do.