

# ERADICATION OF MALARIA

POLITICAL RHETORIC

Part 2



# Typical Homes & Habitats









DDT is still in use and recommended because of its cheapness per unit weight and its durability.

Homes are sprayed twice a year, or only once in areas with a short annual malaria mosquito season.

## Problems

In low income countries, it is almost impossible to prevent illicit diversion of insecticides intended for anti-malaria use to farmers. The consequent insecticidal residues in crops at levels unacceptable for the export trade were an important factor in bans of DDT for malaria control in several tropical countries (Curtis, 1994).



**There is evidence from South Africa (cited by Curtis, 1994) that, in areas with anti-malaria use of DDT, breast milk contains much higher residues than other areas and in the former areas the intake by a breast-fed baby would greatly exceed the Allowable Daily Intake (which is defined by the WHO and FAO on a lifetime intake basis and so is not readily related to a baby's intake of milk).**

There is also some evidence (cited by Curtis, 1994) for neurological abnormalities in babies taking in relatively high DDT residues with their milk.

Resistance has been selected to DDT in some *Anopheles* populations; however, so far has not been a major problem in the field.

DDT tends to irritate mosquitoes so that they do not rest on deposits for long and mosquitoes may escape it without picking up a lethal dose.

House spraying pre-supposes that the mosquitoes will rest inside a house before or after feeding, which is not the habit of some malaria *Anopheles* species, *An.dirus* Peyton & Harrison.

Some *Anopheles* species feed on both domestic animals and people with a preference for buildings with livestock; barns are not typically sprayed.



# NOT A PERFECT WORLD

Residual Spraying is a necessary component of IVM but it has major problems:

1. Resistance
2. Human frailty
3. Logistics
4. Human exposure to residual pesticides  
& consequences

# 3. Pesticide Impregnated Bed Nets

Nets have long been supported as a protection against night biting mosquitoes including malaria vectors. Nets are impregnated with pyrethroids. (Curtis, 1991).

They appear to be a major component of the current initiative according news reports.













Bed Nets are treated with pyrethroids. Like DDT, pyrethroids tend to irritate mosquitoes so that they do not rest on deposits for long. However, the pyrethroids paralyze the nervous system so fast that contact for a few minutes is enough to kill.

The Gambia (W. Africa) National Bed net Impregnation Program has been initiated based on the efforts of village health workers. Monitoring of the first year's results in a sample of the villages showed a 25% reduction in child mortality from all causes (D'Allessandro et al., 1995).

Studies in experimental huts have proved that pyrethroid impregnation of holed nets makes them function much better in preventing biting of a sleeper than do untreated holed nets. This apparently arises because a treated net kills or irritates and drives away mosquitoes before they have found a hole in the net and entered it.

An additional argument for treating bed nets is that they are a rational place in which to deploy a residual insecticide because mosquitoes are attracted to them by the carbon dioxide and body odor emitted by the sleeper.



## Problems

Resistance has been selected to pyrethroids in some *Anopheles* populations.

There are reports that large scale use of pyrethroid impregnated nets has changed mosquito behavior so that they bite out of doors before people go indoors to go to bed.

## Additional Concerns:

1. Nets have to be retreated and maintained.
2. Nets are often torn or hung in such a way that mosquitoes can enter or bite through them.
3. Currently distributed free for use by children and pregnant women. Others have to buy them but most people are subsistence living with little or no money to afford them.

4. Many homes are not of sufficient size to accommodate the effective use of more than two nets.
5. Bed net material has multiple uses
6. During mosquito season, bed nets are stiflingly hot and the heat negates using them.  
(Something that I have experienced!)

# NOT A PERFECT WORLD

The use of pesticide treated bed nets is a necessary component of IVM but it has major problems:

1. Distribution & Logistics & Maintenance
2. Restricts activities in the home at night  
(6 to 6)
3. Unsuitable in most residences
4. No local ownership – imported item  
(Information Theory)