



Preventing malaria, promoting health: Supporting safe and effective strategies without DDT

Malaria kills one million people a year, with over 80 per cent of the deaths occurring among children in sub-Saharan Africa.¹ Pesticide Action Network (PAN) International and the 147 partner organizations listed below recognize the importance of targets set by African heads of State in April 2000 to halve mortality for Africa's people by 2010.² Our collective work addresses the health and environmental issues that affect the poor and promotes strategies to improve rural livelihoods. We applaud international efforts to mobilize the political will and resources to tackle malaria worldwide, and join others in calling for a redoubling of these initiatives.

Dealing with this debilitating illness requires both curative and preventive strategies. Programs for prevention play a crucial role. Many are currently employed and encompass a range of elements: improved sanitation, water drainage, public education and surveillance of cases in malarial areas, insecticide-treated and long-lasting bed nets, controlling and reducing the mosquito vectors of malaria, selected use of indoor residual spraying, fish predators of mosquito larvae. Integrated vector management, rather than reliance on a single factor, has been fundamental to success, as has the involvement of affected communities.³

The current advocacy for increased use of the organochlorine pesticide dichlorodiphenyltrichloroethane (DDT) for indoor residual spraying is in danger of dominating the debate on prevention strategies, and potentially derailing much needed progress to prevent malaria with the safest and most effective strategies. DDT has been widely banned because of its accumulation to high concentrations in the food chain where it persists in fatty tissues of animals and humans (it can be monitored in human breastmilk), its ability to move from tropical to temperate zones where break down is further delayed, and its association with a number of chronic illnesses.⁴ For these reasons, many governments banned DDT, and addressed its elimination over time in the Stockholm Convention on Persistent Organic Pollutants (POPs).

Scientific research shows that low-level DDT exposure carries elevated risks of adverse chronic health impacts. Studies have identified evidence of human reproductive disorders associated with exposure to DDT and its more harmful break-down chemical dichlorodiphenyldichloroethylene (DDE). These include:

- higher incidence of undescended testes⁵
- poor sperm quality⁶
- premature delivery and reduced infant birth weight⁷
- miscarriage⁸
- reduced breast milk production⁹
- neurological effects, including developmental delays among babies and toddlers exposed to DDT in the womb¹⁰
- elevated risk of breast cancer (while evidence of a link between DDT exposure and breast cancer is ambiguous, the weight of the evidence indicates increased risk)¹¹

- other cancers (the International Agency for Research on Cancer lists DDT as a possible human carcinogen)¹²
- nervous system impacts due to occupational exposure to DDT¹³
- liver impacts due to occupational exposure to DDT¹⁴

Researchers in South Africa and Mexico have found elevated levels of DDT in the blood of people living where DDT was used to control malaria; breast fed children in those areas received more DDT in their mothers' milk than is considered 'safe' by the World Health Organization (WHO) and the Food and Agricultural Organization of the United Nations.¹⁵ Breastfeeding is an essential safeguard for new-born infants, thus increasing the importance of preventing its contamination. Elevated DDT levels have been found in cows' milk in areas where DDT indoor spraying is used.¹⁶ Some research suggests elevated levels of DDT in water and soil near to DDT spraying for malaria control.¹⁷ The persistence of DDT in the environment increases human exposure .

The WHO malaria eradication program of the 1950s and 1960s helped to control malaria in many places, but wiping out malaria with DDT was an unrealistic goal. One of the many reasons for the failure of this ambitious effort was resistance to DDT among malaria-carrying mosquitoes. Taking into account that resistance arose largely from agricultural use and cross-resistance to pyrethroid insecticides, by 1972 19 species of mosquitoes were resistant to DDT in Africa.¹⁸ Resistance will continue to be a problem.

Often DDT intended for public health use is diverted to illegal agricultural use, carrying greater danger for human exposure than indoor residual spraying, and hastening the development of resistant mosquito populations.¹⁹ New DDT use adds to exposure from old stockpiles that are not properly contained or controlled. The Food and Agriculture Organisation of the United Nations estimates there are more than 100,000 tons of obsolete pesticide stockpiles in Africa, mostly older chemicals such as DDT.²⁰

New demands for DDT use for malaria control also increase the burden on the communities living near production plants. A DDT factory in the Eloor-Edayar region in India has a long record of contaminating the environment, including rivers. The local community is now protesting their poisoning as a result of emissions from this factory.²¹

More effective and safer approaches to malaria control are now being used in many countries. Since 2000 Mexico eliminated the need for DDT and significantly reduced the incidence of malaria. After collecting entomological and epidemiological data to characterize the behavioural patterns of mosquitoes and their interaction with people, a strategy was implemented that combines three main elements:

- a) primary health care to eliminate parasites in people with a new single dose treatment regimen of prophylaxis drugs administered only to the detected positive malaria cases
- b) improvement of personal and household hygiene
- c) use of environmental management practices to eliminate mosquito breeding sites

This systematic approach has reduced costs, and in some areas negated the need for indoor application of pyrethroid insecticides. Community participation is a key element: health workers and trained volunteers diagnose cases of malaria and administer curative treatment; local efforts eliminate mosquito larvae through the cleanup of algae and trash from rivers and streams; and education has improved hygienic conditions in the home.²² The success is a result of cooperative efforts under the North America Regional Action Plan from the Commission for Environmental Cooperation (CEC).²³

A program in the central region of Kenya is successfully focusing on reducing malaria by working with the rice-growing community to improve water management, use livestock as bait, introduce biological controls and distribute mosquito nets in affected areas.²⁴ Vietnam reduced malaria deaths by 97% and malaria cases by 59% when they switched in 1991 from trying to eradicate malaria using

DDT to a DDT-free malaria control program involving distribution of drugs and mosquito nets along with widespread health education organized with village leaders.²⁵ The World Wildlife Fund has documented success in the Kheda district in India, where non-chemical approaches were demonstrated to be cost-effective.²⁶ In the Philippines, the national program phased out and eventually banned DDT with no increase in the incidence of malaria.²⁷ The program owed its success primarily to investment in communities to assist their participation in the strategies adopted.

What countries fighting malaria need is strong support for effective solutions that invest in health, education and appropriate technologies, and improve community resources to participate in malaria control programs. Communities facing the scourge of malaria, which disproportionately affects poor and under-nourished areas, should not have to face the significant long-term health risks posed by exposure to DDT. The mobilization of resources for prevention activities by the international community must focus on solutions that meet international standards and do not pose new risks.

PAN International and the undersigned groups strongly support the Stockholm Convention on Persistent Organic Pollutants' call for elimination of DDT, allowing only use for disease vector control of this persistent and bioaccumulative pesticide, with a review every three years, in the countries where 'locally safe, effective and affordable alternatives are not available'. The 144 governments around the world that are Parties to the Stockholm Convention have endorsed this approach.

We call on all responsible members of the international community – and particularly those governments who are Parties to the Stockholm Convention – to actively promote safe and effective malaria control solutions that protect children and families around the world.

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