STOCKHOLM CONVENTION

SUCCESS STORY #4

PROTECTING POPULATIONS FROM MALARIA WITH PROPER REGULATION OF DDT

Sri Lanka leads the way with outstanding example of best practice

First created in the middle of the nineteenth century, DDT was used for protection from malaria during the Second World War. But by the 1950s, most nation states recognized that whilst highly effective in both the agricultural spheres and general public health, it was also highly destructive for many crops. By the time the Stockholm Convention came into force, most countries accepted that it should only be used when there were no other alternatives to malaria prevention, and should never be used as a pesticide *per se*.

DDT, therefore, was still being deployed for recognised and accepted purposes, provided such purposes conformed with WHO guidelines. The Stockholm Convention therefore began to rationalise and collate all the necessary information that would help countries understand their international obligations by means of a toolkit. There were several existing but different protocols before this intervention and the Convention's innovative toolkit addressed the full lifecycle stages, the obligations, guidelines and international protocols, all to be easily accessed for sound management of DDT.

This was only part of the equation, as several countries still needed to rely on DDT for disease vector control under certain settings. It was therefore very important that the use of DDT in those contexts conforms to the global standards and WHO recommendations.

The Convention also provides for a mechanism to keep track of all those countries still using DDT in the form of an in-depth survey, which is reissued every three years. This was funded generously by the government of Germany. A separate study accounts for the stockpiles of DDT, which pays particular attention to stocks that are now osbolete. Some of this outdated DDT may be stored incorrectly and, as a result, could be highly dangerous.

To account for uncertainties, it was decided to estimate both a lower and higher amount of DDT stockpiles for each country. This resulted in a global total of reported DDT stockpiles ranging from 4'727 tonnes (low estimate) to 45,892 tonnes (high estimate).

The breakdown by region is given in the table, below:

Cumulative amounts of reported DDT stockpiles per UN-region.	Lower estimate (MT)	Higher estimate (MT)
Africa	236.59	2'526.98
GRULAC	44.48	354.72
Asia-Pacific	1'569.82	10'708.89
CEE	2'875.79	32'301.13
Global total	4'726.68	45'891.72

It should also be noted that these figures do not include the estimates of materials (soil, store structures) contaminated with DDT, which in general form a larger volume than the pure stocks themselves, as well as contaminated equipment such as for formulating, mixing, filling, spraying. There are further challenges as often obsolete stockpiles of DDT are mixed with other obsolete (POPs)-pesticides as packaging materials have deteriorated, or different types of obsolete pesticides have been indiscriminately mixed in historic repackaging campaigns.

Sri Lanka represents an outstanding example of 'best practice' when it comes to the eradication of malaria without the use of DDT. Once the civil conflict in Sri Lanka ended in 2009, surveillance activities to combat malaria were significantly stepped up, supported with funds from the government of France. There was targeted surveillance in receptive areas and among vulnerable populations to detect cases that, for whatever reason, were not reporting to health facilities.

On top of this, monthly review meetings at central level provided a forum for the sharing of data between district officers and a technical task force, and to plan and target delivery of control interventions, including vector control. Furthermore, insecticide-treated bed nets were targeted to receptive areas and vulnerable populations, including gem miners, slash-and-burn farmers and security forces' personnel. All these efforts, together with the detection and prompt treatment of all sporadic cases, finally resulted in the interruption of malaria transmission. As a result, in 2016, Sri Lanka was certified malaria-free by the World Health Organization.

But these interventions were underpinned by carefully crafted policy decisions.

Firstly, an independent evaluation provided authoritative technical advice on malaria control. This evaluation facilitated the introduction of drastic change, away from reliance on a long-used product, towards the development of new pesticide policy.

Two policy decisions were made: one to ban DDT, and one to restrict the use of malathion, as the DDT alternative, for malaria only. These decisions were informed by the results of sizeable pilot studies indicating the control failure of DDT, and demonstrating the effectiveness of malathion in reducing malaria cases.

Thirdly, intersectoral agreement on pesticides was key. To preserve insecticides for malaria control, and avoid resistance development due to agricultural use, an agreement was made between Ministers of Health and Agriculture to use malathion in public health only, and ban all agricultural use.

Entomological surveillance on vector behavior – resting, biting, host preference - seasonal abundance, and insecticide susceptibility was routinely conducted. At district level, the data was used to verify suitability, and guide selection, of vector control products and methods, and timing and targeting of operations. Moreover, monthly coordination meetings at central level enabled the exchange of data and ideas between districts and with other experts to benefit decision making.

Finally, in the years approaching elimination, as malaria cases became sporadic, surveillance activities were intensified to identify where transmission continued and to detect the last remaining infections. Control interventions, increasingly using insecticide-treated bed nets, became more precisely targeted to where needed.

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