



DOCUMENTING DDT SPRAYING, PRODUCTION, POLLUTION AND ALTERNATIVES

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LIST OF ACRONYMS

CoP	Conference of the Parties
CSO	Civil Society Organisation
DDT	Dichloro Diphenyl Trichloroethane
DEO	District Environment Officer
DFID	Department for International Development
DGAL	Department of Government Analytical Laboratory
DHO	District Health Officer
DMO	District Medical Officer
GoU	Government of Uganda
IRS	Indoor Residual Spraying
MCP	Malaria Control Programme
MoH	Ministry of Health
MUK	Makerere University Kampala
NAPE	National Association of Professional Environmentalists
NDA	National Drug Authority
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
PMI	Presidential Malaria Initiative
PPE	Personal Protective Equipment
UMRSP	Uganda Malaria Reduction Strategic Plan
US	United States
VCD	Vector Control Department

1. INTRODUCTION

Dichloro Diphenyl Trichloroethane (DDT) is a chemical that is banned as a pesticide worldwide under the Stockholm Convention, which came into force in 2004, after it was discovered to be dangerous to wildlife and the environment. However, this chemical has continued to be used in some countries in the area of disease vector control (with special focus to malarial mosquitoes) by way of indoor residual spraying (IRS)¹

The Government of Uganda (GoU), with support from the United States (US) Presidential Malaria Initiative (PMI), has been championing the use of DDT for indoor residual spraying (IRS). The PMI is also supported by the United Kingdom's Department for International Development (DFID) and the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) malaria grants. While malaria is recognized as one of the main killers in Uganda, the compulsory use of DDT on every house in the target districts creates reason for concern. The spraying of DDT in Northern Uganda began in 2008, targeting the districts of Apac and the neighboring Oyam. Under this initiative, the government sprayed the walls of people's houses with DDT through IRS, which was purposed to reduce the risk of infection from malaria during sleep²

To further fight the prevalence of malaria in the country, the Government of Uganda, under its Uganda Malaria Reduction Strategic Plan (UMRSP) of 2014, plans to continue with IRS through a number of districts in the country. Under the UMRSP, the government is supporting a scale-up and sustainment of IRS in 45% of Uganda's districts.

The use of DDT in the control of the malaria vector in Uganda was first carried out between 1959 and 1962 by the British government in Kihhi sub-county; presently, Kanungu district. However, DDT was later banned in the 1970s due to its negative health and environmental effects, especially its bioaccumulation and biomagnifications in animals and humans.³

¹ *Malaria Consortium (2019): Indoor Residual Spraying*
(<https://www.malariaconsortium.org/pages/107.htm>)

² *USAID- President's Malaria Initiative (PMI) Uganda (2018): Malaria Operational Plan FY 2018*
(<https://www.pmi.gov/docs/default-source/default-document-library/malaria-operational-plans/fy-2018/fy-2018-uganda-malaria-operational-plan.pdf?sfvrsn=11>)

³ *Ministry of Health (20-14): The Uganda Malaria Reduction Strategic Plan (UMRSP) 2014-2020*
(<https://www.health.go.ug/content/uganda-malaria-reduction-strategic-plan-2014-2020>,
Ellady Muyambi: DDT is not our solution for malaria; January 12, 2014
(https://observer.ug/index.php?option=com_content&view=article&id=29572:ddt-is-not-our-solution-for-malaria-&catid=37:quest-writers&Itemid=66)

However, the Ministry of Health proposed to re-introduce DDT use as a part of its malaria prevention programmes in 2001. The proposal would allow the use of DDT for indoor residual spraying (IRS), a procedure in which DDT is sprayed on the inside walls of homes and buildings. In November 2006, the National Environment Management Authority (NEMA) accepted the reintroduction of DDT. This decision was backed by the exemption provided by the Stockholm Convention on POPs that allows the use of DDT for IRS for disease vector control such as malaria vectors only when there are no safe, affordable, effective and locally-available alternatives. Uganda acceded to the Convention in July 2004.

The reintroduction of DDT was done in spite of the fact that several Civil Society Organizations had proposed to the government some of the alternatives that would be cost effective. Things like informing endangered residents about the threats posed by mosquitoes and the elimination of breeding sites through community works, treatment of stagnant bodies of water (breeding sites) with environmentally-friendly products, distribution and use of bed nets and timely and effective treatment of the malaria disease itself.

From 2009–2014, PMI implemented IRS in ten districts in the northern region of Uganda. Currently, the government of Uganda, with support from the PMI, has shifted its spray operations to target districts in the Eastern region of the country; including Tororo, Lira, Butaleja, Namutumba, Kibuku, Budaka, Pallisa, Bugiri, and Serere, with what has been referred to as a long-lasting organophosphate insecticide (pirimiphosmethyl). In addition to the support from PMI, in 2017 the government of Uganda enlisted support from DFID for the spray of an additional five districts in the eastern region (Otuke, Alebtong, Dokolo, Kaberamaido, and Amolatar). PMI is committed to continue to implement IRS in the nine districts in eastern Uganda with what has been called a *long-lasting non-pyrethroid insecticide*⁴

It has been noted that the use of the DDT IRS program transitioned to other chemicals as local mosquitos began to develop resistance to DDT. After the spray of DDT in northern Uganda, there was an epidemic of mosquitos that led to another round of IRS in 2016 in the very areas where it had happened earlier. The government diverted from DDT because the mosquitoes developed resistance to the chemical but it has not ruled out the use of this chemical in future. According to a Ministry of Health (MoH) official, it is envisaged that the government “*could potentially re-adopt the less-expensive DDT*” as the mosquito resistance subsides (Dr. Myers Lugemwa).

Uganda is using the exemption to continue using DDT, under the Stockholm Convention COP8, Decision SC-8/2 that decided to evaluate the continued need for DDT for disease vector control at COP9, “on the basis of the available scientific, technical, environmental and economic information, including that provided by the

⁴ *Malaria Control Programme – Uganda et al (2013): An epidemiological profile of malaria and its control in Uganda* (<http://www.inform-malaria.org/wp-content/uploads/2014/05/Uganda-Epi-Report-060214.pdf>)

DDT expert group, with the objective of accelerating the identification and development of locally appropriate, cost-effective and safe alternatives.⁵

2. PROJECT OUTCOMES

2.1 Activities conducted

This study was carried out in Uganda and it involved, among other things, a desk study and field work. The desk study involved gathering and looking at various materials both online and in hardcopy. The desk study revealed various aspects regarding the use of DDT in the country including where it was used, when it was used and why it was used. On the other hand, the field work involved moving from the office to visit different stakeholders to gather information on DDT and its use in Uganda. Data was collected from the Kampala-based institutions, including:

- a) Ministry of Health, where the primary target was the Malaria Control Programme (MCP)
- b) The Vector Control Department
- c) The National Environment Management Authority (NEMA)
- d) Makerere University Kampala (MUK)
- e) The National Drug Authority (NDA)
- f) Department of Government Analytical Laboratory (DGAL)
- g) Shares Uganda Limited

NAPE visited the districts of Gulu, Oyam and Lira, where indoor residual spraying was done using DDT. In these districts we specifically targeted the District Medical Officer (DMO), the District Environment Officer (DEO), Vector Control and the District Health Officer (DHO). We also visited schools as well as communities in these areas to be able to gather community perspectives regarding the use of DDT on their households and the use of DDT in their areas in general.

From northern Uganda, the project team was able to travel to eastern Uganda where we visited the districts of Kumi, Soroti, Mbale, Tororo and Budaka. In these Districts, Abt Associates was conducting indoor residual spraying and access to the areas being sprayed was very restrictive. When the team talked to some of the officers from Abt Associates, they said they were not using DDT and denied access to their stores. For any more information, they said the team had to get permission from the Ministry of Health. The Ministry referred the team to the Uganda National Council for Science and Technology (UNCST). To get permission from UNCST, one should be intending to do an extensive research. The team was able to visit the regional offices of Abt Associates which is based in Tororo town where a beehive of activities were

⁵ *Stefanie Keller: Report on the encounter "DDT controversy in the face of safe and effective malaria vector control" December 20, 2010 (<https://malariaworld.org/blog/report-encounter-%E2%80%9Cddt-controversy-face-safe-and-effective-malaria-vector-control%E2%80%9D>),*

noted. In addition to meeting the Abt Associates in the region, the team were also able to specifically meet the District Medical Officer (DMO), the District Environment Officer (DEO), Vector Control and the District Health Officer (DHO). All the District officers consulted couldn't give clear information about DDT use in the District, they all referred the team to Abt Associates.

2.2 Outreach to Stakeholders

NAPE tried as much as possible to reach out to the different stakeholders throughout the different districts that were visited. The stakeholders visited included the communities, district officials, the farmers (both organic and conventional farmers), the business community; and companies that are involved in export of organic farm produce. It is important to mention that because of the sensitivity of the project, many of the stakeholders were not willing to have their photographs taken or even their names mentioned, but this was not the case with officials from government departments, agencies and academic institutions, who identified themselves and accepted to have their photos taken. However, they skillfully and tactfully navigated us through the information they shared, limiting the extent of the information disclosure.

Due to budgetary constraints, we did not have sufficient funding to follow up this study. However, NAPE, together with its partners, plans to engage the different ministries and government agencies regarding the use of DDT IRS activities in the country. There is a need for NAPE to do an extensive study to ascertain how much DDT is being used in Uganda, which we were unable to find because there is no available data. NAPE will also continue to raise awareness with the view of generating a critical mass of the population that will be able to stand up and be counted as people who have rejected the use of DDT on their households and the community in general.

3. PROJECT DELIVERABLES

3.1 Levels of pollution

The level of pollution arising from the use of DDT in Uganda is not known because there are no substantive studies that have been done to ascertain with evidence about the DDT pollution levels. However, it has been noted that its use has resulted in the pollution of agricultural produce and the prevalence of DDT has been found to be higher than the acceptable levels. The most affected are those areas where the IRS exercise has been conducted. Most of the pollution arises from the dust that

comes from the mud walls. This is according to a performance report for Apac and Oyam for round one spraying of 2008 under the Presidential Malaria Initiative.⁶

3.2 Export of Agricultural Produce

Over the years, many communities in northern Uganda have been practicing organic farming for their own consumption and for selling. However, today, the use of DDT for IRS has greatly affected them as their crops have been rejected on the European market because their farm produce has been found to contain high levels of DDT, higher than what is practically acceptable in the European market. According to some farmers in northern Uganda, before the indoor residual spraying program began, they were growing soy, sesame, maize and cotton. Their sesame and cotton crops were being bought by organic distributors for 20 percent more than the market price, providing them with the funds to send their children to school. However, after the spraying with DDT, the organic companies would no longer buy their crops.

This rejection of “*organic*” agricultural produce from Uganda by Europe has not only led to significant losses in export, but it has also greatly affected household income because Europe provided a lucrative market to the organic farmers.

3.3 Human exposure to DDT

There is fear that the level of DDT contamination among the local communities in the areas where it has been used is very high. According to one of the respondents in the northern Uganda district of Lira, while the company workers engaged in the IRS exercise wore personal protective equipment/gear (PPE), they (communities) did not have any protection during the spraying exercise. He further noted that “when we sweep our houses the wastes are disposed of into our gardens from where we get food; this is the normal practice- we were not told of where else to dispose of such contaminated dust.” Another person expressed concern that people were beginning to suffer from very strange diseases that were not heard of before and it is suspected that this could be arising from the use of DDT. The lack of sufficient studies on the effects of DDT on community health is causing a lot of speculation among the communities.

⁶ <https://www.pmi.gov/docs/default-source/default-document-library/implementing-partner-reports/spray-performance-report-for-apac-and-oyam-districts-uganda-march---may-2008.pdf?sfvrsn=4>

3.4 Storage of DDT and its wastes

During the IRS exercise in northern Uganda, some unspecified amount of DDT was not used. Today, controversy looms over its whereabouts, since sections in the government indicated that it was exported out of the country; yet there is no evidence to show that it was actually exported. It is feared that a bulk of the chemical has been repackaged and used in some communities or even could have been stored, preparing it for reuse at another time. There has not been clear indication on how DDT-contaminated wastes have been managed or disposed of. Generally, the team could not confirm the contents of the stores as it was denied access and information by Abt Associates.

3.5 Research and knowledge generation on DDT and alternatives

During the study it was noted that research on different aspects of DDT was almost non-existent. Information like how much DDT is being used in the country and the level of pollution is non-existent. The source of DDT used is alleged to be from India and South Africa, which needs to be confirmed, as well as the amounts received from each country. Even where studies have been carried out, access to the findings has been restricted. There is therefore a need to do a more extensive research for the case of Uganda. It is also true that research is a costly undertaking, and very many institutions that would be interested in carrying out research do not have the resources to do so.

3.6 Institutional Coordination

While the use of DDT is primarily for the sole purpose of fighting and controlling the malaria vector, its impacts go beyond the health sector to affect agriculture, wildlife and the environment in general.

There should therefore be coordinated efforts among the different agencies among which would include:

- 1) The Ministry of Health through its local government; Medical Officer (DMO), the District Environment Officer (DEO), Vector Control and the District Health Officer (DHO), should be able to conduct clinical examinations of spray pre- and post-spraying, organize and participate in planning and district sensitization meetings.
- 2) The Vector Control Department of the Ministry of Health should perform bioassays and other entomological monitoring tests to ascertain the effectiveness of spray operations in the various districts.

- 3) The Health Communications Partnership (HCP) should provide technical support in the implementation of information, education and communication (IEC) activities in target districts.
- 4) Ministry of Agriculture and NEMA should provide overall monitoring and supervision of spray activities.

Unfortunately, information on the different roles that the different stakeholders are playing is lacking, and, actually, when we interacted with some of them, they were not clear about what they have done and kept referring the team to Abt Associates for any information. Therefore, one can clearly say that little is being done to ensure that institutional coordination is in place and functioning, including citizen's right to information.

3.7 Governments willingness to support the ban of DDT as stipulated under the Stockholm Convention

From the different discussions held with government officials it was noted that the government of Uganda was non-committal towards the total ban on the use of DDT; including in the health sector where it is currently used for malaria vector control. Therefore, the government of Uganda, during the 2009 meetings of the Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions, was not prepared to support any resolutions aimed at the total ban on the use of DDT.

Until 2020, the government of Uganda is not prepared for the phase out of DDT use. On 25 May 2020, the U.S. government's President's Malaria Initiative (PMI) began the second phase of indoor residual spraying (IRS) in eight high-burden malaria districts in Lango and Teso sub-regions through its VectorLink Project. PMI is led by the United States Agency for International Development (USAID) and implemented together with the U.S. Centers for Disease Control and Prevention (CDC) in partnership with the Ugandan Ministry of Health. This is an indicator that the government of Uganda is not yet ready to phase out the use of DDT for IRS.⁷

4. RECOMMENDATIONS

4.1 Levels of pollution

There is a need for extensive research in the country to be able to determine the levels of DDT pollution; in humans and agriculture, amongst others.

⁷ <https://ug.usembassy.gov/u-s-government-begins-phase-two-of-indoor-residual-spraying-in-eight-districts-may-27-2020-pr-04-20/>

4.2 Export of Agricultural Produce

There is a need to put forward measures to protect farmers' organic farming produce for the benefit of their health and the health of local consumers, as well as for the export market for economic gain of the country.

4.3 Awareness raising on DDT and other harmful chemicals

There is urgent need for more awareness-raising on the impacts of DDT on human health and the environment. Communities and policy makers must be adequately informed on the risks associated with the use of DDT and other chemicals used in IRS with the aim of enabling them to appreciate, take all the necessary precautions (including the use of preventive measures wherever necessary), and build a broad movement if we are to achieve a total ban in Uganda.

4.4 Information disclosure

Instead of operating secretly, the government needs to put in place a better communication strategy for people to access and utilise information on DDT and other alternatives that are being used. Such knowledge is important in empowering the host communities and other stakeholders to judiciously exercise caution whenever necessary.

Abt Associates, the company mandated to carry out IRS (a company of US origin), needs to improve on its communication strategy to facilitate easy access to information as a way of enhancing openness and transparency in their IRS processes.

4.5 Storage and disposal of DDT and its wastes

The government should disclose the different storage facilities where DDT and other potentially harmful chemicals have been stored. When disposing of obsolete or unwanted chemicals is necessary, there is a need for open and transparent processes to dispel fears and mistrust from the communities. There are some facilities like the Luweero Industries in Nakasongola where Uganda disposes of its obsolete pesticides (among other chemicals), but access is very restrictive.

4.6 Research and knowledge generation on DDT and alternatives

There is urgent need for research on the effects of DDT in areas where the IRS exercise took place so as to address the fear, mistrust and speculation among the host communities.

There is need to ascertain the active ingredient in the chemical that is currently being used for indoor residual spraying, since such information has been kept very

confidential, raising fears that it is probably DDT that is being used but not indicated on different packed containers.

The government should not limit or even interfere with research initiatives on DDT as information from such research is instrumental in informing decision-making processes.

There is a need for the government of Uganda to invest more in research for alternatives to DDT towards toxic-free malaria control.

a) Institutional Coordination

Inter-institutional coordination on DDT and other alternatives that are being used should be enhanced for better results and for the good of the communities' health, economy, and the environment.

b) Banning the use of DDT in IRS and other health interventions

NAPE, together with a host of other Civil Society Organisations (CSOs) in Uganda, recommend that the use of DDT for public health purposes should be banned because of its already known negative impacts to human health and the environment. More potent and environmentally benign alternatives should be promoted in the fight of the malaria vector.

5. RESOURCES

1. Ellady Muyambi: DDT is not our solution for malaria; January 12, 2014 (https://observer.ug/index.php?option=com_content&view=article&id=29572:ddt-is-not-our-solution-for-malaria-&catid=37:guest-writers&Itemid=66)
2. Malaria Consortium (2019): Indoor Residual Spraying (<https://www.malariaconsortium.org/pages/107.htm>)
3. Malaria Control Programme – Uganda et al (2013): An epidemiological profile of malaria and its control in Uganda (<http://www.inform-malaria.org/wp-content/uploads/2014/05/Uganda-Epi-Report-060214.pdf>)
4. Ministry of Health (20-14): The Uganda Malaria Reduction Strategic Plan (UMRSP) 2014-2020 (<https://www.health.go.ug/content/uganda-malaria-reduction-strategic-plan-2014-2020>)
5. Stefanie Keller: Report on the encounter “DDT controversy in the face of safe and effective malaria vector control” December 20, 2010 (<https://malariaworld.org/blog/report-encounter-%E2%80%9Cddt-controversy-face-safe-and-effective-malaria-vector-control%E2%80%9D>)

6. USAID- President's Malaria Initiative (PMI) Uganda (2018): Malaria Operational Plan FY 2018 (<https://www.pmi.gov/docs/default-source/default-document-library/malaria-operational-plans/fy-2018/fy-2018-uganda-malaria-operational-plan.pdf?sfvrsn=11>)
7. <https://ug.usembassy.gov/u-s-government-begins-phase-two-of-indoor-residual-spraying-in-eight-districts-may-27-2020-pr-04-20/>