DDT and Malaria – DDT should not be used to combat malaria

DDT (dichloro-diphenyl-trichloroethane) is a persistent organic pollutant (POP), that should not be used to combat malaria. Countries have agreed to eliminate or reduce its release into the environment (Maxwell N., 2009 pg 183). It is a chlorinated hydrocarbon insecticide, it is also known as an organochlorine insecticide (Maxwell N., 2009 pg 221). The use of DDT results in environmental and toxicological effects. It is persistent in the environment, can travel long distances in the upper atmosphere and also accumulates in fatty tissues, human blood, serum and breast milk (PAN, 2013; Silberner J., 2006). Its detection in human breast milk has been reported in well over 100 papers. It is concentrated in breast milk because it is lipophilic and the secretion of stored DDT into milk is the main route for excretion of DDT in lactating women (Curtis C., 1994).

Humans are exposed to DDT through diet. Meat, fish, poultry and dairy products are primary sources of DDT exposure and biomagnifies in the food chains (Curtis C., 1994; Maxwell N., 2009 pg 222). The United States National Academy of Sciences (US NAS) confirmed that “the decline of the bald eagle population in 1960s in the United States was primarily due to DDT exposure; it weakened their egg shells and interfered with their reproduction.” Since banning of DDT in the early 1970s, many of the bird populations facing extinction at that time have recovered (PAN, 2013; Pal Singh P., Singh Battu R., Lal Kalra R., 1998; Maxwell N., 2009 pg 222).

In 1991, after data was reviewed by Cooper, it was found that; “very high doses of DDT applied against the beetle vectors of Dutch elm disease led to concentration of residues in earthworms and American robins which ate the worms died”.

Exposure to DDT in humans is linked to a variety of health effects which include;

- It is a nerve toxin that disrupts the central nervous system causing convulsion and deaths at high doses (Maxwell N., 2009 pg 221 & 222). Its neurologic effects (acute neurological effects like headache, dizziness, nausea, vomiting, muscle weakness, coma, convulsion and chronic neurological effects like deficits in cognitive function (memory, attention and visual spatial processing) and in psychomotor function (reaction time) and death (Curtis C., 1994).
- Damage to developing brain
- Parkinson’s disease, amyotrophic lateral sclerosis
- Reproductive disorders; increased risk of spontaneous abortion and stillbirth (Curtis C., 1994).
- Human developmental disorders causing reduced infant birth weight and prematurity
- Reduced lactation in nursing women
- Asthma
- Diabetes (Cone M., 2009)
- Prenatal pesticide exposure has been linked to birth defects like oral cleft
- Childhood exposure linked to increased risk of leukemia, certain brain cancers, alteration of thyroid function and other endocrine disrupting effects (Curtis C., 1994).
- Affects fertility of men (Maxwell N., 2009 pg 226)
- Blocks male hormones (Cone M., 2009)

Mosquitoes develop resistance to DDT so what is the use. The lack of spraying in parts of Africa for several years may make possible to use DDT effectively but, this prospect may weaken over time as DDT exposure will create new resistance (Pal Singh P. et al, 1998).

The public health community should not rely on a single magic bullet (IPEN n. d). These African and Asian communities that need to control malaria are poor. Their individual and environmental health should not be further compromised as they cannot manage cancers, infertility etc well enough as a result of poverty. Several recent studies have shown greater mean reductions in malaria with newer chemicals and or application methods than with conventional DDT spraying and the worst malaria control result among the bed net sectors was better than the best among the DDT sectors (US EPA, 2013).

More effective approaches aimed at safeguarding human health and the environment while decreasing the burden of malaria and other vector borne diseases will save lives without harming communities (PAN, 2013)
These approaches include:
- Preventing mosquito bites by

Staying inside when it is dark outside, preferably in a screened or air-conditioned room, wear protective clothing (long pants and long-sleeved shirts), using insect repellent with DEET (N,N diethylmetatoluamide), using bed nets (mosquito netting) sprayed with or soaked in an insecticide such as permethrin or deltamethrin, using flying-insect spray indoors around sleeping areas, avoiding areas where malaria and mosquitoes are present if you are at higher risk (for example, if you are pregnant, very young, or very old), (Curtis C., 1994; Easmon C., 2012).

- Preventing breeding of the female anopheles mosquito.

by ensuring good flowing rivers in the community and educating community dwellers on need to prevent stagnant water, pouring oil into stagnant water regularly ensuring good hygiene and basic sanitation, cutting of grasses and weeds regularly. Improving health awareness and education to every age group (Curtis C., 1994; Easmon C., 2012).

- Effective policies to fight poverty will result in more sustainable malaria control efforts and guarantee the people’s right to health and a healthy environment (IPEN n. d).
- Improved housing (IPEN n. d).
- Use of chemoprophylaxis like proguanil and chloroquine, pyrimethamine, sulphadoxine and pyrimethamine combination, doxycycline, mefloquine etc (Easmon C., 2012).

From all indications it is wise not to use DDT to combat malaria.

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