

DDT & Malaria: Setting the Record Straight

With the 50th Anniversary of Rachel Carson's "Silent Spring" approaching, DDT is once again in the news, still being promoted by a handful of aggressive advocates as a silver bullet solution to malaria in Africa. This false "debate" over DDT is a dangerous and unfortunate distraction from the urgent work of combatting this devastating disease.

Malaria kills millions of people in Africa every year, a preventable tragedy of catastrophic proportions. Public health experts and development agencies have ramped up efforts to tackle the disease in recent years—and are seeing real progress. Yet DDT-promoters continue to pitch widespread use of the antiquated chemical as the best solution to malaria. Steadfastly ignoring both the findings of literally hundreds of scientists—from Carson's work to research published in 2012—as well as the on-the-ground realities in Africa and beyond, these advocates continue to demand that we "haul out the DDT."¹

"DDT is a short-sighted response with long term consequences," says Paul Saoko, M.D., Director of Physicians for Social Responsibility in Kenya. "While it may be effective in some cases where mosquitoes haven't yet developed resistance, it won't solve the malaria health crisis. Technical expertise and better malaria control methods already exist in Africa. It's only resources and political will that are lacking."

Public health experts, government officials and environmentalists around the world support the approach to DDT taken by the

Stockholm Convention on Persistent Organic Pollutants (POPs). The treaty targets DDT (along with 21 other dangerous chemicals) for global phaseout, but allows exemptions for malaria control in countries that request it. This approach recognizes that in some cases, DDT can be an effective temporary tool for malaria control. Most importantly, the treaty also mobilizes desperately needed funds for malaria control and prevention, with an emphasis on helping countries move toward safer, more effective strategies that don't further jeopardize the health of current and future generations.



Source: IDRC CRDI, Gerry Toomey

Empty DDT can used for mixing cement.

Here are some basic facts to dispel the myths about DDT:

Myth "DDT only hurts birds, not people."

Fact In 1972, both health and environmental impacts led officials to ban use of DDT in the United States. Today, we know even more about DDT's harmful effects on human health. Reproductive disorders associated with DDT are well-documented, including higher rates of undescended testes, poor sperm quality and miscarriages.² One study found neurological effects—including developmental delays—among babies and toddlers exposed to DDT in the womb.³ Studies have also linked exposure to reduced breastmilk production among nursing women,⁴ and U.S. researchers have found that the DDT breakdown product, DDE, can increase risks of premature delivery and reduced infant birth weights.⁵ DDT and its breakdown products have been found in human blood and breast milk in dozens of studies around the world.⁶ DDT is also classified by U.S. and international authorities as a probable human carcinogen.⁷

Myth "DDT is the best tool to fight malaria."

Fact The World Health Organization tried to eradicate malaria worldwide with a massive DDT spray program in

the 1950s and 60s. While the program helped to control malaria in many places, wiping out malaria with DDT was an unrealistic goal that could not be met. One of the many reasons for the failure of this ambitious effort was resistance to DDT which developed among malaria-carrying mosquitoes. Resistance was identified in Africa as early as 1955, and by 1972 19 species of mosquito worldwide were resistant to DDT.⁸ In addition, DDT intended for public health use is often diverted to illegal agricultural uses, hastening the development of resistant mosquito populations. More effective and safer approaches to malaria control are now being used in many countries. Examples include early detection of malaria cases and prompt medical treatment, community participation in notification of malaria cases and cleaning of streams and other sites where mosquitoes breed, and widespread use of bed nets combined with community education.⁹

Myth "DDT wiped out malaria in the U.S."

Fact Malaria had been largely eliminated in the U.S. by the time the Centers for Disease Control (CDC) first used DDT in spray campaigns in 1947. CDC's four-year spray effort was designed to prevent the reintroduction of malaria from troops coming home from World War II. Almost

20 years earlier the Public Health Service had already noted the decline of malaria in the U.S.¹⁰ The pockets that persisted in the South until the late 1930s were controlled by the Tennessee Valley Authority's efforts to cut down on mosquito breeding sites by draining swamps and protect the population by building well-screened houses.¹¹ According to one journalist investigating the introduction of DDT in U.S. malaria control efforts, "About the best one CDC physician involved in the campaign could say about it was that 'we kicked a dying dog.'"¹²

Myth "DDT use for malaria control is completely harmless."

Fact When DDT is used for malaria control, it is usually sprayed on the walls inside homes, so risk of exposure is very high. Researchers in Mexico and South Africa found elevated levels of DDT in the blood of those living where DDT was used to control malaria, and breast-fed children in those areas received more DDT than the amount considered "safe" by WHO and the U.N. Food and Agricultural Organization (FAO).¹³ Evidence also shows that long-lasting residues from DDT house spraying seep into nearby waterways, creating additional pathways of exposure. For example, elevated DDT levels have been found in cow's milk in indoor DDT treatment areas.¹⁴ In many countries, this adds to exposure from old stockpiles of DDT that are not properly contained or controlled. FAO estimates there are more than 100,000 tons of obsolete pesticide stockpiles in Africa, mostly older chemicals such as DDT.¹⁵

Myth "All countries with malaria need DDT."

Fact Many countries are controlling malaria with effective alternative approaches. 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.¹⁶ A program in the central region of Kenya is 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.¹⁷ The World Wildlife Fund has documented success in the Kheda district in India, where non-chemical approaches were demonstrated to be cost-effective.¹⁸ In the Philippines, the successful national program has relied on treated bed nets and spraying of alternative chemicals.¹⁹ What countries fighting malaria need is strong support for effective solutions, not increased reliance on DDT.



Source: IDRC CRDI, David Mowbrey

A researcher from the Malaria Attack Rate Study taking a blood sample from a child to test for malaria in Ghana.

Myth "DDT is being denied to those who need it most."

Fact The few countries that still do need to use DDT to control malaria are able to obtain it. Eighteen of the fifty-four countries in Africa have requested an exemption under the Stockholm Convention for DDT use for malaria control, and an estimated eleven of these are currently using DDT.^{20,21} The Stockholm Convention calls for the ultimate elimination of DDT as soon as these countries are satisfied that alternatives are workable for their specific needs.²² This approach is supported by public health experts and governments around the world, together with those in the environmental, development and public interest communities in virtually all countries.

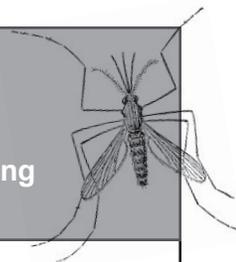
Myth "Millions of people will die without DDT."

Fact Millions of people are dying now and will continue to die without effective malaria control. In a handful of countries, this may still include spraying with DDT in the short term, until more effective controls are in place. The public health community learned long ago not to rely on any single solution in fighting this deadly disease, with failed reliance on DDT providing the original lesson.

Clearly, what the world needs now is not more DDT. If we're serious about fighting malaria, what we need is realistic long-term funding for community-based control strategies combined with improved housing, basic sanitation and effective policies to fight poverty. It's true that this more genuine solution is more complicated than spraying a "quick, cheap and dirty" silver bullet chemical from a bygone era. But it will also save more lives and provide long-term malaria control, which DDT cannot.

Who's Promoting DDT?

A handful of controversial advocates have mounted an aggressive campaign accusing environmental groups of racism and promoting widespread use of DDT in Africa, employing a campaign similar to the tobacco companies.¹ Who are they?



Congress on Racial Equality

(CORE): CORE, founded as an advocacy group for African-Americans, played an early leading role in the U.S. civil rights movement. In the late 1960s, CORE moved to the far right of the political spectrum.² CORE's 2005 Martin Luther King celebration honored "Green Revolution"³ scientist Norman Borlaug and Karl Rove, George W. Bush's election strategist. Hugh Grant, Chairman and CEO of Monsanto, the first producer of DDT in the U.S. and one of CORE's corporate partners,⁴ chaired the reception. Also in 2005, CORE produced a Monsanto-funded video called "Voice from Africa" promoting the use of genetically modified crops in Africa.

Africa Fighting Malaria (AFM):

Established in 2000 and based in Washington, D.C. and South Africa, AFM "seeks to educate people about the scourge of malaria and the political economy of malaria control." Its staff members have current or former links with a range of right-wing or free-market think tanks critical of the environmental movement, including the Competitive Enterprise Institute, American Enterprise Institute, Institute of Economic Affairs and Tech Central Station.^{5,6}

Paul Driessen: Driessen is Senior Policy Advisor for CORE and for the Center for the Defense of Free Enterprise, a "Wise Use" think tank that includes Ron Arnold—a man who has called publicly for the killing of environmentalists⁶ and has been a spokesman for Dow and Union Carbide.⁷ Driessen has consulted as Senior Fellow for several anti-environmental, corporate-funded think

tanks, including the Atlas Economic Research Foundation, the Committee for a Constructive Tomorrow and Frontiers of Freedom. He edited *Rules for Corporate Warriors* and authored *Eco-Imperialism: Green Power, Black Death*, a 2003 book asserting that environmentalists are responsible for poverty in developing countries. He has also received funding from ExxonMobil for his work as a climate change skeptic.⁸

Roy Innis: A member of CORE since 1963, Innis became national chairman in 1970 and his son Niger Innis currently serves as CORE's national spokesperson. In the 1980s he supported Reagan administration policies and was a vocal critic of Jesse Jackson.⁹ He is known for controversial stances on racial equality, including hailing as a "bold step" the deportation of 50,000 Asians from Uganda by president Idi Amin in the 1970s.^{10,11} Innis is a member of the Board of Directors of the National Rifle Association.¹²

Henry Miller: Miller is a research fellow at the conservative Hoover Institution. He has called for re-introduction of DDT in the U.S. to combat West Nile Virus.¹³ Miller is also on the Scientific Advisory Board of the George C. Marshall Institute, a Washington think tank focused on global warming supported in part by the Exxon Education Foundation and American Standard Company.¹⁴

Jon Entine: Entine is a frequent media commentator, American Enterprise Institute fellow, and author of *Scared to Death: Chemophobia Threatens Public Health*. He has taken money from the American Council on Science and Health to author

reports and promote pesticides like atrazine. He also advocates for crop genetic engineering through positions at ESG MediaMetrics and Statistical Assessment Service.^{15,16}

American Council on Science and Health (ACSH):

ACSH was founded in 1978 by Elizabeth Whelan, who used the debate over new food protection laws, then the Delaney Clause, and later the Alar scare of 1989 to downplay the risks of chemicals like dioxin, DDT and asbestos through a concerted public relations effort. Congressional Quarterly reported that over 75% of ACSH's funding comes from chemical and pharmaceutical companies that benefit economically from the views promoted by ACSH, despite purported scientific independence. ACSH recently enlisted Allan Felsot at Washington University to promote reports like *Pesticides & Health: Myths vs. Realities* that downplays the risk of DDT.^{17,18}

Roger Bate: Bate is a founding board member of Africa Fighting Malaria, an adjunct fellow at the Competitive Enterprise Institute and a resident fellow at the American Enterprise Institute. An economist by training, Bate has been deeply involved in anti-regulatory efforts in both the U.S. and Europe. He worked as a consultant for the tobacco industry, and in 1998 sought funding from Philip Morris for a "Malaria Strategy," designed to use the issue of DDT and malaria to promote a broader anti-regulatory agenda. Bate has authored numerous articles calling for DDT use to combat malaria, including *When Politics Kills: Malaria and the DDT Story* published by the Competitive Enterprise Institute.^{19,20,21,22}

see Box Notes on page 4

Notes

1. Smith, Wesley J. "Malaria Drug Failing – Bring out the DDT!" First Things. April 6, 2012. See <http://www.firstthings.com/blogs/secondhandsmoke/2012/04/06/malaria-drug-failing-bring-out-the-ddt/>
2. "Toxicological Profile for DDT, DDE, DDD: Draft for Public Comment" (Atlanta, GA: Agency for Toxic Substances and Disease Registry, September 2000). <http://atsdr1.atsdr.cdc.gov/toxprofiles/tp35.html>. Also Orris, et al., 2000. Persistent Organic Pollutants and Human Health (World Federation of Public Health Associations, USA). May; DeJager, et.al. Jan/Feb 2006. Reduced Seminal Parameters Associated With Environmental DDT Exposure and p,p1-DDE Concentrations in Men in Chiapas, Mexico: A Cross-Sectional Study. *Journal of Andrology*, Vol. 27, No. 1; Venners, S.A. et.al. 2005. Preconception Serum DDT and Pregnancy Loss: A Prospective Study Using a Biomarker of Pregnancy. *American Journal of Epidemiology*. August 2005. Vol. 162, No. 8.
3. B. Eskenazi et al. "In Utero Exposure to Dichlorodiphenyltrichloroethane (DDT) and Dichlorodiphenyldichloroethylene (DDE) and Neurodevelopment Among Young Mexican American Children" *Pediatrics* Vol 118, No. 1, July 2006.
4. BC Gladen and WJ Rogan, "DDE and Shortened Duration of Lactation in a Northern Mexican Town," *Am J Public Health* 85(1995): 504-08.
5. Longnecker, et al., "Association between maternal serum concentration of the DDT metabolite DDE and preterm and small-for-gestational-age babies at birth," *The Lancet*, vol. 358: 110-114 (2001). See also Rogan & Chen, "Health Risks and Benefits of DDT". *Lancet* 2005. 366: 763-73.
6. For a comprehensive overview of studies finding DDT in breastmilk, see www.nrdc.org/breastmilk. See also Centers for Disease Control and Prevention. Third National Report on Human Exposure to Environmental Chemicals. July 2005. See <http://www.cdc.gov/exposurereport/>.
7. DDT is classified as "reasonably anticipated to be a human carcinogen" Ninth Report on Carcinogens (U.S. Dept. of Health & Human Services, Public Health Service, National Toxicology Program, Jan. 2001) available at <http://ehp.niehs.nih.gov/tox/ninth/rahc/ddt.pdf>; DDT falls into Group 2B ("possibly carcinogenic to humans") under the IARC Carcinogenicity Classification scheme in Overall Evaluations of Carcinogenicity to Humans, compiled from IARC Monographs Vol. 1-79, available online at <http://193.51.164.11/monoeval/crthall.html>.
8. M. Berenbaum, "If Malaria's the Problem, DDT's Not the Only Answer" *Washington Post*, Jun 5, '05. <http://www.washingtonpost.com/wp-dyn/content/article/2005/06/04/AR2005060400130.html>.
9. F. Bejarano González, "The Phasing Out of DDT in Mexico," *Pesticide Safety News*, 2001 Milan, Italy, International Center for Pesticide Safety, vol. 5, num. 2, 2001, p.5; and Situación actual de la malaria y uso del DDT in Mexico. Centro Nacional de Salud Ambiental. Centro de Vigilancia Epidemiológica. Secretaría de Salud. Diciembre 2000; and Participación ciudadana y alternativas al DDT para el control del la malaria. Memorias. RAPAM. World Wildlife Fund. Julio 1998. Texcoco, México.
10. U.S CDC, The History of Malaria, an Ancient Disease. April 2004. <http://www.cdc.gov/malaria/history/index.htm>.
11. The New Deal Network. The Tennessee Valley Authority: Electricity for All. 2003. See <http://newdeal.feri.org/tva/>.
12. Shah, Sonia "Don't Blame Environmentalists for Malaria," *The Nation*. April 2006. <http://www.thenation.com/doc/20060417/shah>.
13. Waliszewski, et al. "Organochlorine pesticide residues in human breast milk from tropical areas in Mexico," *Bull Environ Contam Toxicol* 57:22-28 (1996)
14. Ibid.
15. FAO. Prevention and Disposal of Obsolete Pesticides. Website. April 16, 2012. See <http://www.fao.org/agriculture/crops/obsolete-pesticides/where-stocks/africa-stocks/en/>
16. WHO. A Story to be Shared: The Successful Fight Against Malaria in Vietnam. 2000. See <http://www.afronets.org/files/malaria.pdf>.
17. International Development Research Center. Malaria and Agriculture in Kenya: A New Perspective with Links between Health and Ecosystems. Case Study: Health and Ecosystem Approach. 2003. See http://www.idrc.ca/uploads/user-S/10530071320Ecohealth_2_Kenya_e.pdf.
18. World Wildlife Fund. Resolving the DDT Dilemma: Protecting Biodiversity and Human Health. 1998. See <http://assets.panda.org/downloads/resolvingddt.pdf>.
19. National Malaria Control Program 1999, Country Scenario. Govt. of India; and P.C. Matteson, "The Philippine National Malaria Control Program," in P.C. Matteson, ed. *Disease Vector Management for Public Health and Conservation* (Washington, DC: World Wildlife Fund, 1998).
20. Daniel Karibwije, "Uganda: Traders' Chief Warns on DDT Use," *East Africa Business Week*. May 22, 2006. <http://allafrica.com/stories/200605240305.html>.
21. UNEP, "Revised List of Requests for Specific Exemptions in Annex A and Annex B and Acceptable Purposes in Annex B Received by the Secretariat Prior to the Commencement of the Conference of the Plenipotentiaries on 22 May 2001," UNEP/POPS/CONF/INF/1/Rev.3. See <http://www.pops.int/documents/meetings/dipcon/25june2001/inf1rev3/k0122169.doc>.
22. Stockholm Convention on Persistent Organic Pollutants (POPs), Annex B (Restriction), Part II, para. 1-7. Treaty text available online at www.pops.int.

Box Notes

1. Oreskes, Naomi & Erik Conway. "Merchants of Doubt," New York: 2010.
2. GMWatch.org. <http://www.gmwatch.org/profile1.asp?PrId=174>.
3. Wikipedia Green Revolution strategies promoted heavy pesticide use. http://en.wikipedia.org/wiki/Green_revolution.
4. CORE home page. <http://www.core-online.org/newindex.html>.
5. Wikipedia. http://en.wikipedia.org/wiki/Africa_Fighting_Malaria.
6. Center for Media and Democracy. http://www.sourcewatch.org/index.php?title=Roger_Bate.
6. Interview, CNN May 30, 1993. http://www.clearproject.org/reports_cdfc.html.
7. Fairness and Accuracy in Reporting "Terrorists Attack Ski Lodges, Not Doctors" Update December 1998. See <http://www.fair.org/index.php?page=1441>.
8. EXXONSecrets.org. <http://www.exxonsecrets.org/html/personfactsheet.php?id=1038>.
9. Lobbywatch.org. <http://www.lobbywatch.org/profile1.asp?PrId=174&page=C>.
10. Ibid.
11. Center for Media & Democracy. http://www.sourcewatch.org/index.php?title=National_Center_for_Public_Policy_Research.
12. Meet the NRA Leadership. <http://www.meetthenra.org/nra-member/Roy%20Innis>
13. Miller, Henry. "While the Government Blunders, West Nile Virus Thrives: How Misguided Bureaucrats and Environmentalists Let a Mosquito-borne Disease Spread." *Hoover Digest*, No. 4, Fall 2003. See <http://www.hooverdigest.org/034/miller.html>.
14. <http://www.marshall.org/globalwarming.htm>.
15. Philpott, Tom. Mother Jones. <http://motherjones.com/tom-philpott/2012/02/atrazine-syngenta-tyrone-hayes-jon-entine>
16. Center for Media and Democracy/PR Watch. <http://www.prwatch.org/node/11277>
17. Center for Media and Democracy. <http://www.sourcewatch.org/index.php?title=ACSH>
18. American Council on Science on Health. Website. www.acsh.org
19. Center for Media and Democracy. http://www.sourcewatch.org/index.php?title=Roger_Bate
20. Competitive Enterprise Institute. http://www.cei.org/dyn/view_expert.cfm?expert=105
21. American Enterprise Institute. <http://www.aei.org/scholars/filter.all,scholarID.76,scholar.asp>
22. Sarvana, Adam. "Bate and Switch: How a free-market magician manipulated two decades of environmental science." *Natural Resource News Service*, June 2, 2009.

For more information on DDT and malaria, including contact information for experts in Africa, Asia and Latin America, visit PANNA's DDT & Malaria online resource center at www.panna.org/DDT or contact: Pesticide Action Network North America, 49 Powell Street, Suite 500, San Francisco, CA 94102, Phone (415) 981-1771, Fax (415) 981-1991, panna@panna.org