

What is DDT? And How Was DDT Used in the Canal Zone?

Tony Farrell, June 25, 2024

Dichlorodiphenyltrichloroethane (DDT) is a synthetic insecticide that was used extensively during and after World War II. It was later discovered to be toxic to animals which feed on affected insects, as populations of certain birds were observed to have rapidly declined. As awareness of the effects increased in the 1960s, use of the insecticide on crops declined (especially after it was found in human food supply, esp. dairy milk and meat) until it was banned in the 1970s in many countries.ⁱ DDT production and export continued through the 1980s. By the 1990s, DDT was still manufactured by China, India, Indonesia, and Italy.ⁱⁱ DDT is well retained by soils and may be able to leach into groundwater because it is nearly insoluble in water.ⁱⁱⁱ In the US, DDT could still be found as a residue in food products (esp. meal, fish, poultry, and dairy) as of the early 2000s.^{iv}

DDT was used extensively in the Canal Zone to fight sand fleas, termites, mosquitos and other pests. The chemical was applied to building materials, buried around the perimeters of buildings and quarters, sprayed on screens over windows, and even sprayed around the interiors of quarters when malaria was a significant threat on the isthmus (use of DDT for malaria control remained relatively stable despite decline in agricultural uses^v). DDT was also regularly mixed with petroleum-based liquids and sprayed as a fog from trucks in the evenings to disrupt especially mosquito populations.^{vi vii viii ix x xi xii}

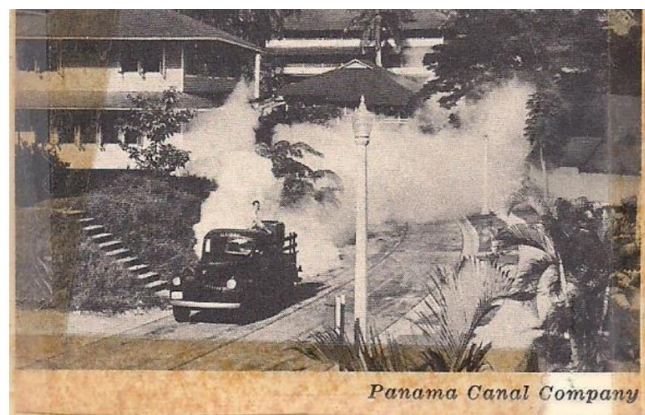


Figure 1. DDT Truck fogging in Quarry Heights. Photo credit: Panama Canal Company.

DDT attacks the nervous and endocrine systems in animals and humans. It has no relationship to 2,4,5-T, or Agent Orange, which contain dioxin TCDD and attack the endocrine system. Chronic exposure can affect reproductive capabilities, embryo or fetus, and promote breast cancer.^{xiii} A 2021 Sierra Club report suggested DDT exposure in pregnant females between 1959 and 1967 produced higher risks of obesity, earlier menstruation and testicular cancer in their *grandchildren*.^{xiv xv}

ⁱ Britannica, The Editors of Encyclopaedia. "DDT". Encyclopedia Britannica, 21 Jun. 2024, <https://www.britannica.com/science/DDT>. Accessed 25 June 2024.

ⁱⁱ IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Occupational Exposures in Insecticide Application, and Some Pesticides. Lyon (FR): International Agency for Research on Cancer; 1991. (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, No. 53.) DDT and associated Compounds. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK499664/>

ⁱⁱⁱ Blaylock, [*Encyclopedia of Toxicology \(Second Edition\)*](#), 2005.

^{iv} Rosenfeld, et. AL., Risks of Hazardous Wastes, 2011.

^v IARC Working Group, *ob. Cit.*

^{vi} CZ Communities Are In A Fog When Spray Truck Makes Rounds, The Panama Canal Review, 2 July 1954, p.13

^{vii} Exposure Scenario Characterization for Human Health Risk Assessment due to Pesticide Contamination in the Canal Area. Ing. Scott A. Muller, 2 Sep 1999.

^{viii} Panama Canal Review. "Houses Termite Proofed." Volume 3, Number 6, 2 Jan 1953, p.11. <https://archive.org/details/panamacanalr3619532pana>

^{ix} Panama Canal Review. "Malaria and Mosquitoes, They're Still With Us" Volume 3, Number 9, 3 Apr 1953, p.4. <https://archive.org/details/panamacanalr3919533pana>

^x Panama Canal Review. "Alert Control, Constant Fight Drive Malaria to New Low" Volume 14, Number 7, Feb 1964, pp.4-5. <https://archive.org/details/panamacanalrevie147pana>

^{xi} STAGE, H H. "Mosquitoes and other insects killed by aerial spraying with DDT in Panama." Mosquito news vol. 6 (1946): 12.

^{xii} Blanton, Franklin S., et. al., "Notes on *Culicoides furens* (Poey) at Fort Kobbe, Canal Zone." Mosquito news. March, 1955: 13.

^{xiii} Thakur, et. AL. [*Abatement of Environmental Pollutants*](#), 2020.

^{xiv} Gillam, Carey. "Long-Lasting Health Impacts of DDT Highlighted in New Study." Sierra, The Sierra Club, 23 Apr. 2021, www.sierraclub.org/sierra/long-lasting-health-impacts-ddt-highlighted-new-study. Accessed 25 June 2024.

^{xv} Arnold, Carrie. "Consequences of DDT Exposure Could Last Generations." Scientific American, 20 Feb. 2024, www.scientificamerican.com/article/consequences-of-ddt-exposure-could-last-generations.