Factor Fiction?



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DDT, Part 1

he greatest killer in Africa is not AIDS or sleeping sickness, but malaria which kills an estimated two million children each year."¹ Did you know?

- DDT has saved more lives in the past 50 years than have antibiotics as a group. The banning of DDT is probably the largest act of genocide in human history. The National Academy of Sciences estimated that DDT saved 500 million lives before it was banned.²
- Since DDT was banned, the incidence of malaria has increased enormously worldwide, and the disease has again become a leading cause of death. Every 12 seconds, a child dies of malaria.³
- There is evidence suggesting that DDT is an anti-carcinogen.⁴
- DDT's "cousin," DDD, is an anticancer drug used against inoperable adrenal-gland cancer.^{4,5}

My guess is that most of you hadn't heard the above facts. Rather, what you've heard or read is that DDT is toxic, has caused eggshell thinning in birds, accumulates in fat tissues in our bodies and is still found in the environment. The facts are that DDT was given a bad rap in 1972 when it was banned from usage, and more than 25 years later many people are still unaware of the truth.

Let's look at some of the facts. Early in this century, the only effective way to control malaria was to eliminate stagnant water, such as swamps and landfills, where Anopheles mosquitoes bred. Then beginning in 1943, the organochlorine pesticide DDT became available and this proved to be a godsend in the Third World, curtailing the disease dramatically. In India, by the early 1960s, the annual incidence of malaria had declined from one million to 100,000.⁶ In Sri Lanka, the number of cases dropped from more than two million to 17.⁷ In 1942, DDT was shown to kill body lice without adverse effect on humans, and it was used by all Allied troops during World War II.

Thanks to DDT, a 1944 typhus epidemic in Naples was halted. No Allied soldier was stricken with typhus fever (carried by lice) for the first time in the history of warfare. In World War I, by contrast three million people died of typhus in Russia and Eastern Europe, and more soldiers died from typhus than from gunfire.

In 1962, Rachel Carson's best seller, Silent Spring, indicted DDT as a killer of birds, fish and wildlife.9 This eventually led to a seven-month federal hearing in 1972 on the risks and benefits of the material. The DDT hearings were ordered by then EPA administrator William Ruckelshaus, who appointed Judge Edmund Sweeney as the hearing examiner. Scientists were not the only ones to give exonerating testimony that DDT used properly presented little harm to man, beast or bird. The World Health Organization also pleaded at the EPA hearing that DDT was very beneficial in fighting malaria in many parts of the world and should not be banned.¹⁰ After 125 witnesses and 9,362 pages of testimony, Judge Sweeney's final conclusions were that:

- DDT is not a carcinogenic hazard to man.
- DDT is not a mutagenic or teratogenic hazard to man.

• The use of DDT under the registrations involved does not have a deleterious effect on fish, estuarine organisms, wild birds or other wildlife.^{7,10}

In a better world, this would have been good news. It was met instead with journalistic and environmental hysteria across the nation. Less than two months after the hearing, EPA administrator Ruckelshaus singlehandedly banned almost all DDT.8,10 This ban on DDT was considered the first major victory for the environmentalist movement in the U.S.¹¹ It gave credibility to pseudoscience and created an atmosphere in which scientific evidence can be pushed aside by emotion, hysteria and political pressure. This technique of making unsubstantiated charges, endlessly repeated, has since been used successfully against asbestos, PCBs, dioxin and Alar, to mention a few.7

DDT was soon replaced by lesspersistent organophosphates, such as parathion and malathion. These chemicals belong to the same chemical family as nerve gas and are far more dangerous than chlorinated hydrocarbons, such as DDT. They've caused serious poisoning, often fatal, among unsuspecting farm workers who had been accustomed to handling the relatively nontoxic DDT.⁶

The ban didn't help Third World people. Robert Gwadz, malaria expert at the National Institute of Health says, "The legacy of Rachel Carson was not altogether positive. The incidence of malaria in India is now back up to more than a million and more than 500,000 in Sri Lanka."⁶ In South America, where DDT spraying

Ranking Possible Carcinogenic Hazards*		
Possible hazard** HERP %	Daily human exposure	Human dose of rodent carcinogen
0.0003	DDE/DDT, daily dietary intake	DDE, 2.2 μg
0.001 0.1	Tap water, 1 L Mushroom, one raw	Chloroform, 83 µg Hydrazine mixtures
2.8 4.7	Beer, 354 mL Wine, 250 mL	Ethyl alcohol, 18 mL Ethyl alcohol, 30 mL
* From Ames and Gold ref 21 (Science 236 271 [April 17, 1987])		

* From Ames and Gold, ref. 21, (*Science* **236**, 271 [April 17, 1987]) ** U.S. EPA's one-in-a-million hypothetical risk is 0.000015 on the HERP scale, or about 400,000 times below the level that would cause cancer in a rat.

has been continued until more recent times, data from 1993 to 1995 showed that countries that recently discontinued their spray programs are reporting large increases in malaria incidence. The only country in South America reporting a large reduction in malaria rates (61%) is Ecuador, which has increased use of DDT since 1993.^{12,13}

The allegations against DDT have been repeated so often and stated with such passion that more than 25 years later the public remains convinced of their validity.¹⁴ In fact, that is the reason for this article. Recently, I heard a naturalist talk about DDT and then heard similar words on a TV travelogue. Both were highly negative. They were either ignorant of the true facts or chose to ignore them.

Let's look at some of the charges that have been repeated so often they are widely believed.

Toxicity of DDT

DDT is known to be safe to humans. It has never caused death-even in persons attempting suicide.15 Farm workers were sometimes poisoned by organophosphate insecticides, such as the parathions, which are hundreds of times more toxic to man than DDT and were touted as superior substitutes to DDT.¹⁵ It is known from controlled studies in human volunteers that experimental ingestion of 35 mg of DDT per kg of body weight per day, for a period of two years, produced no adverse effects, acute or chronic, in any of the subjects.^{5,7} Doses of five grams of DDT (and even more) have been administered to human beings in the successful treatment of barbiturate poisoning,

according to Walter Ebeling of UCLA. And, notes Ebeling, five grams of DDT are roughly four times as much as the average American will assimilate in a 70-year lifetime.¹⁶ A study of workers at the Montrose Chemical Company, who accumulated 38 to 647 ppm of DDT residues in their fatty tissues, revealed no cases of cancer in 1,300 man-years of exposure—a statistically improbable event.¹⁷

One of the more interesting examples verifying the non-toxicity to humans is the experience of J.G. Edwards, professor of biology at San Jose State University. Says Edwards, "After remembering my own days of dusting hundreds of civilians during the war in Europe with 10% DDT to kill lice and help prevent millions of cases of deadly typhus, I thought I should try to convince people that the environmental extremists were wrong. Thereafter, at the beginning of each DDT speech I made, I would publicly eat a tablespoon of DDT powder. I believe it was a successful effort. It resulted in a full page photograph of me doing that in *Esquire* magazine (Sept. 1971). The caption stated that I was eating 200 times the normal intake of DDT to show it's not as bad as people think."18

Today, as Edwards approaches his 80th birthday, he is still as adamantly opposed to the anti-DDT propaganda as he was 26 years ago. Edwards, an avid climber, continues to conquer peaks greater than 10,000 feet. DDT exposure surely hasn't hurt him.

In 1969, rodent studies suggested DDT was a carcinogen. These results, however, were refuted by a 1978 National Cancer Institute report that concluded, after two years of testing on several different strains of cancerprone mice and rats, that DDT was not carcinogenic.¹¹ In a 1994 study in the Journal of the National Cancer Institute, researchers concluded that their data did not support an association between DDT and breast cancer.¹⁹ Very recently, Robert Golden, a PhD toxicologist in Potomac, MD, stated, "the one endocrine modulator environmentalists love to hate-the pesticide DDT-would cause no endocrine effect in a fetus exposed to more than a pound of DDT over the course of a pregnancy."20

Bruce Ames and his colleagues at the University of California. Berkeley, have developed a method of ranking possible carcinogenic hazards.²¹ They call this a HERP (human exposure over rat potency) Index. A value of 100 on this scale means that people are getting the same dose in mg/kg that caused cancer in half the tested rats. The table shows that the average U.S. daily intake of DDE[†] from DDT (HERP = 0.0003%) is less than the HERP from chloroform in a glass of tap water, and so it appears to be insignificant compared to the background of natural carcinogens in our diet. Even daily consumption of 100 times the average intake of DDE/DDT would produce a possible hazard that is small compared to other common exposures, such as mushrooms, coffee, beer and wine (see table). Further support is provided by Stephen Safe, a toxicologist at Texas A&M, who tested the effects of organochlorine compounds in the average human diet. He concluded that the total estrogenic activity of these compounds is 40-million-fold lower than that from the natural components of vegetables and other foods consumed daily, such as soybeans, barley, cabbage and corn.^{20,22}

(Note: All references will appear next month in "DDT, Part 2.")

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[†]DDT has three major breakdown products: DDA, DDE and DDD.¹⁸