

Long-Hidden Dangers?

Early Exposure to DDT May Raise Risk of Breast Cancer

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A new study has found a significant link between women's exposure to DDT as young girls and the development of breast cancer later in life.

The results are something of a surprise, researchers said, because several previous studies have found no link between cancer and the insecticide, which was widely used during the 1950s and '60s but was banned in the United States in 1972.

The new work differs from all other studies, however, by focusing on the age at which women were exposed. Echoing the situation with some other breast cancer risks, such as radiation, it finds that DDT increases the risk of breast cancer in adulthood only if the exposure occurred at a young age, before the breasts were fully developed.

All told, girls who had the highest levels of the chemical in their blood during that crucial developmental period were five times more likely to get breast cancer years later than were girls who had the lowest levels. That fivefold increase is a bigger boost in risk than is now attributed to hormone replacement therapy or having a close relative with breast cancer.

Although there is nothing that women today can do about their DDT exposures decades ago, the results could influence an ongoing controversy about the extent to which the chemical should still be used around the world.

That question has haunted the [World Health Organization](#) because, despite its environmental and potential human health risks, DDT remains one of the most potent weapons against the mosquitoes that transmit malaria, a global scourge that kills about a million people every year, most of them children.

"This is a very important public health issue that calls for a balanced approach," said the leader of the new study, Barbara A. Cohn, director of Child Health and Development Studies, a nonprofit research initiative in [Oakland, Calif.](#)

Experts emphasized that the breast cancer findings must be considered preliminary until they can be replicated by others. But several who examined the study, published in the October issue of the journal *Environmental Health Perspectives*, said the results looked valid.

There is a growing recognition that "what happens in early life is really important for what happens decades later," especially for breast and other tissues that undergo developmental changes in childhood, said Ezra Susser, chairman of epidemiology at the Mailman School of Public Health at [Columbia University](#).

But for the connection between DDT and breast cancer, Susser said, "No one has really been able to test it until now."

Perhaps no other chemical has earned such a full spectrum of both accolades and notoriety as dichlorodiphenyltrichloroethane, or DDT.

First synthesized in the 19th century, the chemical came into widespread use to control mosquitoes and other insect pests after World War II. In the 1950s and '60s, when its popularity peaked, truck-sized foggers were repeatedly deployed in many U.S. neighborhoods, parks and summer camps, as well as on farms.

Around the same time, DDT brought near-miraculous declines in malaria in many developing countries around the world.

[Rachel Carson](#)'s seminal 1962 book, "Silent Spring," marked the beginning of the end of DDT's glory. It documented the persistence of DDT and its chemical byproducts in the environment and its devastating effects on some bird species.

By the early 1980s, in response to environmental concerns, virtually every developed country had banned it and the WHO backed off from its promotion of indoor spraying -- and malaria began to make a comeback, triggering a global policy debate that goes on to this day.

Though no one today advocates profligate spraying of DDT, the World Health Organization in September 2006 stirred controversy by endorsing the chemical's application in people's homes in malarial areas -- an approach that minimizes its contact with non-insect wildlife and presumes, on the basis of evidence available until now, that such exposures pose minimal risk to human health.

The new study took a fresh look at that presumption and focused on breast cancer -- a disease that DDT researchers have repeatedly come back to because, although more than a dozen studies have found no link, a few others have pointed to a possible connection.

Cohn and her co-workers, including Robert I. Sholtz and Mary S. Wolff of the [Mount Sinai School of Medicine](#) in [New York](#), knew that older studies had two weaknesses.

For one, most of those studies did not measure actual DDT levels in people's blood, assaying instead a metabolic byproduct of DDT called DDE, which stays in the body much longer than DDT. It was considered a simple marker for the amount of DDT to which a person had been exposed.

But it is a bad marker, many scientists agree. Much of the DDE in a person's body has been consumed directly as DDE, in meat and other foods where the chemical has persisted long after DDT was banned. Studies have shown that DDE does not pose a breast cancer risk.

The second shortcoming is that even the few studies that measured DDT itself did not stratify participants by age. Cohn's hypothesis was that age of exposure matters.

To find out, the team got access to frozen blood samples that had been drawn from American women between 1959 and 1967. At the time, most of those women ranged in age from 19 to 29.

Half of those samples -- 129 of them -- were selected because the women from whom they were drawn developed breast cancer by age 50. The other 129 were selected to match the first 129 by age, but those women did not have breast cancer.

The team measured DDT levels in the women's blood. (They all had at least some.) And by taking into account their ages, the team also got a measure of how old the women were when the first big U.S. wave of DDT exposures began, in the mid-1940s. Some were as young as 3 at the time, while others were 14 or older.

Among women who were exposed to DDT in their first 13 years, those who scored in the top one-third for DDT levels had more than five times the likelihood of getting breast cancer compared with those whose DDT levels were in the lowest third.

By contrast, women who were older than 14 when their DDT exposure began showed no differences in risk, whether they had high or low levels of DDT in their blood.

The results suggest that DDT can pose a serious breast cancer risk -- but only if it has a chance to work on breast tissues early.

Mark Maier, health policy leader for CropLife America, a trade organization for pesticide makers, emphasized that the study was small, that pesticide use in the United States is "highly regulated," and that any risks in the developing world must be balanced against those from malaria.

"Appropriate use of DDT today would not result in significant exposure," Maier said.

But Suzanne Snedeker, who studies environmental links to breast cancer at [Cornell University](#), said she has serious concerns about a DDT comeback in developing countries and would rather see funding for other approaches to malaria control.

"Certainly people will be exposed and it will enter the environment," she warned, adding that the next step is to learn how DDT may predispose young breast cells to later trouble.

Cohn, too, urged policymakers to watch the science carefully, noting that women who were exposed to DDT in their youth are just now entering the age range when most breast cancers are likely to emerge.

"We could change the risk of an entire generation of girls by what we do now," she said. Â¿

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