# DDT linked to higher risk of diabetes among Asian Indian immigrants to US

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Previous exposure to the pollutant DDT (dichlorodiphenyltrichloroethane) may contribute to the risk of diabetes among Asian Indian immigrants to the United States, according to a

study from the University of California, Davis.

The study, published today in the American Chemical Society's journal *Environmental Science & Technology*, linked high levels of DDT, or dichlorodiphenyltrichloroethane, in Indian immigrants with risk factors for metabolic disease.

"Our findings evoke a new interpretation of Rachel Carson's famous book Silent Spring, in that the high DDT exposures of South Asian immigrants in the U.S. currently fall on deaf ears in the U.S.," said lead author Michele La Merrill, an associate professor in the UC Davis Department of Environmental Toxicology. "Although DDT remains in use in other nations and migration globalizes these exposures, people in the U.S. often mistakenly regard DDT exposure as no longer relevant to our society due to its ban in this country nearly 50 years ago."

La Merrill said that high exposure levels in these immigrants may be causing their increased risk of obesity and other metabolic diseases, but medical doctors are often not aware of that possible link.

## Diabetes and DDT

Asian Indians have a higher risk of diabetes than other populations, and this risk extends to Indian immigrants in the U.S., Europe and elsewhere.

In 2004, the United Nations Stockholm Convention banned the production and use of many persistent organic pollutants, or POPs, such as DDT and polychlorinated biphenyls, or PCBs. However, POP production and use continue in some nations that did not ratify the treaty, including India and other South Asian countries. Previous studies have found DDT in samples taken from the environment, food and people of the Indian subcontinent.

La Merrill and colleagues wondered whether prior exposure to DDT and other POPs could influence Asian Indians' diabetes risk, even after they had immigrated to the U.S. Based on results from animal studies, the researchers hypothesized that POPs could contribute to diabetes by causing excess fat deposition in the liver, which in turn can lead to insulin resistance.

## POP test

To test their hypothesis, the researchers examined the levels of 30 environmental pollutants in blood plasma samples from 147 Asian Indian participants, 45 to 84 years old, living in the San Francisco Bay Area. The researchers detected levels of numerous POPs that were much higher than levels previously found in other U.S. populations.

In particular, people with higher levels of DDT in their blood were more likely to be obese, store excess fat in their livers and show increased insulin resistance compared to people with lower levels.

Although more research is needed to establish a causal relationship, these findings could help explain the increased diabetes risk for Indian immigrants and have public health implications for the approximately 1.8 billion South Asians throughout the world, the researchers said.

**More information:** Michele A. La Merrill et al. Exposure to Persistent Organic Pollutants (POPs) and Their Relationship to Hepatic Fat and Insulin Insensitivity among Asian Indian Immigrants in the United States, *Environmental Science & Technology* (2019). pubs.acs.org/doi/abs/10.1021/acs.est.9b03373

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