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## Air, Water and Food Pollution Linked to Diabetes Risk

By Affirunisa Kankudti



### Diabetes

Genetics, sedentary lifestyle and eating habits are all well-known risk factors for diabetes type-2. A new study, however, says that there may be other factors that go unnoticed, like the pesticides present in the food, water and air that may increase the chances of being diagnosed with diabetes type-2.

According to researchers from the University of Granada, exposure to these pesticides or Persistent Organic Pollutants, or COPs in the environment raises the risk of diabetes independent of age, sex or body mass index of the person.

The research even explains why obese people are more likely to suffer from diabetes. They say that the higher the fat content in the body, the more pesticide is stored in the body, which increases the risk of diabetes type-2.

"Human adipose tissue (commonly known as "fat") acts as an energy reservoir and has an important metabolic function. However, adipose tissue can store potentially harmful substances, such as persistent organic pollutants (COPs)," said Juan Pedro Arrebola, researcher from University of Granada in a news release.

The study was based on more than 380 participants. Researchers assessed the test subjects' levels of pesticide exposure. Study results showed that people with high concentration of DDE present in pesticide DDT were at least four times more likely to be diagnosed with diabetes type-2. Also,  $\beta$ -HCH (beta-Hexachlorocyclohexane), was seen as increasing the risk for the condition.

Both DDT and  $\beta$ -HCH (beta-Hexachlorocyclohexane) were banned in the U.S. during the 1970s. However, some people still have measurable amounts of DDE in them as this chemical takes longer to break down, according to Centers for Disease Control and Prevention (CDC).  $\beta$ -HCH (beta-

Hexachlorocyclohexane) has previously been linked to increase in risk of Parkinson's Disease.

Although pesticides studied in the present research aren't used in the U.S., they - especially DDT - are widely used in other countries in agriculture and to fight mosquitoes. Experts have earlier warned against the use of DDT.

The study is published in the journal Environmental Research.

In the U.S., the number of people being diagnosed with diabetes has tripled from 5.6 million in 1980 to 26.9 million in 2010. At present, the U.S. economy pumps in \$117 billion dollars for the treatment of diabetes each year. According to CDC, by 2050, 1 in 3 U.S. adults will have diabetes. The condition is the leading cause of blindness, kidney failure and limb amputations not caused by an accident.

According to estimates by WHO, the number of people with diabetes is expected to increase from 170 million today to about 370 million in 2030, and a large number of the cases will be reported in the developing countries.

Researchers from the present study say that the pesticides may be affecting the way sugars are broken down in the body. However, they maintain that they can't pinpoint how the pesticides cause these changes.

"The mechanism of action by which COPs increases the risk of diabetes is still unknown. However, some researchers have suggested that COPs might cause an immunological response when they penetrate estrogen receptors in tissues associated with the metabolism of sugars," added Arrebola, according to the news release.