



Can herbicides increase pancreatic cancer risk?

There is only a small chance of recovering from pancreatic cancer. This type of cancer has been linked to a number of risk factors, including smoking, but a new study suggests that pancreatic cancer may also be associated with exposure to certain herbicides.

Other risk factors, in addition to smoking, that have been associated with a greater chance of developing pancreatic cancer include diabetes, obesity, race (with Afro-Caribbean people more susceptible), chronic inflammation of the pancreas and a family history of pancreatic cancer. Some scientists add exposure to certain pesticides to this list.

In order to understand the relationship between commonly used pesticides and pancreatic cancer, researchers have analysed data from the Agricultural Health Study (AHS)¹. This is one of the largest long-term health studies with over 89,000 participants from the states of Iowa and North Carolina in the United States. Participants included agricultural workers who apply pesticides and their spouses. Spouses often help their partners on the farm and can therefore be exposed to low levels of pesticides. Participants completed questionnaires about their health, lifestyle and pesticide use. The researchers examined their exposure to 24 different pesticides, including both herbicides and insecticides. Thirteen of them were analysed in greater depth as these pesticides are used more intensively.

The study suggests there is a significant association between the risk of developing pancreatic cancer and exposure to two herbicides, pendimethalin and EPTC. Both herbicides are used to control weed growth, for example, in cultivated crops, such as beans, carrots and onions.

In this study, no association was found between organochlorine insecticides and pancreatic cancer. This is in contrast with results from previous studies. One explanation is that only certain populations with higher exposure might be susceptible.

Associations were found between age, smoking and diabetes and the incidence of pancreatic cancer for workers and their spouses. After adjusting for these risk factors, the researchers calculated that the risk of developing pancreatic cancer for workers exposed to low doses of pendimethalin increased by almost one and a half times. The risk for those who had had a high exposure to the herbicide was 3 times greater. For EPTC, the risk to low users almost doubled and the risk was two and half times greater in high users, compared with non-users of the herbicide.

Pendimethalin is classified as a possible human cancer-causing agent by the United States Environmental Protection Agency and there has been a recent proposal² to withdraw pendimethalin from the list of pesticides approved for use in the EU.

EPTC is classified as a herbicide that is unlikely to cause cancer, but in the AHS it was associated with an increased risk of colon and prostate cancer. Both of these herbicides are able to form 'N-nitroso-compounds', which have been implicated as significant causes of cancer, including pancreatic cancer.

1. See: <http://aghealth.nci.nih.gov/>

2. http://www.europarl.europa.eu/meetdocs/2004_2009/documents/pr/740/740972/740972en.pdf

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