

# Head injury + pesticide exposure = Triple the risk of Parkinson's disease

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A new study shows that people who have had a head injury and have lived or worked near areas where the pesticide paraquat was used may be three times more likely to develop Parkinson's disease. The study is published in the November 13, 2012, print issue of *Neurology*, the medical journal of the American Academy of Neurology. Paraquat is a herbicide commonly used on crops to control weeds. It can be deadly to humans and animals.

"While each of these two factors is associated with an increased risk of Parkinson's on their own, the combination is associated with greater risk than just adding the two factors together," said study author Beate Ritz, MD, PhD, of UCLA's Fielding School of Public Health. "This study suggests that the physiological process that is triggered by a head injury may increase [brain cells'](#) vulnerability to attacks from pesticides that can be toxic to the brain or the other way around, for example, chronic low dose exposure to pesticides may increase the risk of Parkinson's after a head injury."

The study involved 357 people with Parkinson's disease and 754 people without the disease, all of whom lived in an [agricultural area](#) in central California. The participants reported any [head injuries](#) they had ever received with a loss of consciousness for more than five minutes.

The researchers determined participants' exposure to the [weed killer](#) based on a 500-meter area around their home and work addresses, using a geographic information system (GIS) that combined data on paraquat use collected by the state of California's [Pesticide Use](#) Reporting system with land use maps.

People with Parkinson's disease were twice as likely to have had a head injury with [loss of consciousness](#) for more than five minutes as people who did not have the disease. Of the 357 people with Parkinson's disease, 42, or 12 percent,

reported ever having had such a head injury, compared to 50 of the 754 people without the disease, or 7 percent.

People with Parkinson's disease were 36 percent more likely to have exposure to paraquat than those who did not have the disease. Of those with Parkinson's, 169 had exposure to the weed killer, or 47 percent, compared to 291 of those without the disease, or 39 percent.

Provided by American Academy of Neurology

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