

**Article # 1 (of several)**



[News](#) - June 26, 2006

**Study Bolsters Link between Pesticides and Parkinson's**

By Karen Schrock

People who have been exposed to pesticides are 70 percent more likely to develop Parkinson's disease than those who haven't, according to a new study. The results suggest that any pesticide exposure, whether occupationally related or not, will increase a person's risk of the disease. This means that using pesticides in the home or garden may have similarly harmful effects as working with the chemicals on a farm or as a pest controller.

The research, published in the July issue of *Annals of Neurology*, provides the strongest evidence to date of the link between pesticide exposure and Parkinson's. The study included over 143,000 men and women who completed extensive lifestyle questionnaires beginning in 1982, and follow-up surveys through 2001. All subjects were symptom-free at the beginning of the project, when they were asked about their occupation and exposure to potentially hazardous materials. Since then, 413 of them have developed confirmed cases of Parkinson's, with a greater incidence of the disease in those who spent time around pesticides. "Low-dose pesticide exposure was associated with a significant increase in risk for Parkinson's disease," says lead author Alberto Ascherio of the Harvard School for Public Health. "I think this is one reason to be careful about using pesticides in general."

Although the causes of Parkinson's are not well understood, it has long been suspected that environmental factors play a large role. Animal studies have shown that chemical compounds commonly used as pesticides can cause a degeneration of dopamine-producing neurons. In Parkinson's, a shortage of dopamine causes the disease's characteristic motor abnormalities, including muscle tremors and muscle rigidity. Previous small-scale human studies had suggested a link between pesticides and Parkinson's, but this new study is the first to establish a clear correlation in a large patient population.

The researchers also looked for links between Parkinson's and other environmental contaminants, including asbestos, coal dust, exhaust, formaldehyde and radioactive material. They found no correlation between the disease and any of the materials besides pesticides, however. Because of the design of the questionnaires, the study was not able to determine how the frequency, duration, or intensity of pesticide exposure affected the incidence of Parkinson's. The next step, according to Ascherio, is to figure out which class of chemicals is actually causing the disease, so that people can reduce their exposure.

## Article # II of several linking toxins to disease

### Parkinson's Linked to Pesticides

Date Published: Monday, April 20th, 2009

Researchers have found a link between **pesticide exposure** and some cases of Parkinson's disease. The Los Angeles Times reported that University of California researchers said that "strong new evidence" has found an association between the neurodegenerative disorder and pesticides. Duke University researchers said, "Further investigation of these specific pesticides and others may lead to identification of pertinent biological pathways influencing Parkinson's disease development," reported Reuters.

According to the LA Times, the researchers have long believed that pesticides may cause Parkinson's disease. Now, experiments prove that chemicals—specifically maneb, a fungicide and paraquat, an herbicide—cause Parkinson's-like symptoms in animals. The LA Times explained that Parkinson's is a central nervous system disorder that typically affects motor skills and speech, among other functions. While Parkinson's is not fatal, complications arising from the disease can be deadly, said the LA Times, noting that about 180 in every 100,000 Americans are diagnosed with the disease.

The LA Times said that the California researchers reported in the current issue of the American Journal of Epidemiology and looked at people residing near fields where maneb or paraquat had been sprayed and found that residents were 75 percent likelier—on average—to develop Parkinson's. The researchers also found that patients who developed early-onset Parkinson's (prior to age 60), experienced twice the risk for the disease if exposed to either chemical alone, and four times the risk if exposed to both chemicals, reported the LA Times, adding that—generally, the disease followed chemical exposure.

The California research involved epidemiologist Beate Ritz of UCLA and her graduate student Sadie Costello, now at UC Berkeley, who reviewed the public records of pesticide applications in California's Central Valley from 1974 to 1999. In collaboration with Myles Cockburn of the University of Southern California, the group developed a tool to estimate pesticide exposure and identified 368 longtime residents who lived within 500 yards of the fields, said the LA Times. The team compared the residents with 341 "carefully matched controls who did not live near the fields," said the LA Times. "The results confirmed two previous observations from animal studies. One, that exposure to multiple chemicals may increase the effect of each chemical. That's important, since humans are often exposed to more than one pesticide in the environment. And second, that the timing of the exposure is also important," said Ritz, quoted the LA Times.

Meanwhile, Reuters also reported that the results of a "family-based, 'case control'" study of 319 Parkinson's patients and 200 non-Parkinson's-affected relatives found that people diagnosed with Parkinson's disease are more than two times likelier to report pesticide exposure over people not diagnosed with the disease. Dr. Dana Hancock from Duke University, Durham, North

Carolina and colleagues concluded that Parkinson's patients were 61 percent likelier to report direct pesticide application than healthy relatives.

Reuters reported that insecticides and herbicides—specifically citing organochlorines, organophosphorus compounds, chlorophenoxy acids/esters, and botanicals—were responsible for increased risk of developing Parkinson's; study results appear in the online journal BioMedCentral (BMC) Neurology.

The Duke University researchers wrote that, “the strongest associations between Parkinson's disease and pesticides were obtained in families with no history of Parkinson's. This finding suggests that sporadic Parkinson's cases may be particularly vulnerable to the toxic effects of pesticides, but the possibility of pesticides influencing risk of Parkinson's in individuals from families with a history of PD cannot be ruled out,” quoted Reuters.