



Environmental Risk Factors for Parkinson's Disease

A recent study by European researchers shows important evidence that exposure to pesticides increases the risk of Parkinson's disease. The results of this study highlight the importance of addressing the actual use phase of the pesticides' life-cycle in order to minimize human exposure and reduce the impacts on the environment.

Parkinson's disease (PD) is a degenerative disorder of the central nervous system that often impairs the sufferer's motor skills and speech. It is the second most common neurodegenerative disease after Alzheimer's disease. There is evidence that both genetic and environmental factors are important determinants, and a family history of the disease has been shown to be a risk. Different studies have investigated the relationship between PD and pesticide use. Some of them, but not all, have found an association but to date no specific agent has been implicated consistently and the degree of pesticide exposure that might result in PD remains unknown.

As a part of the EU-funded research project Geoparkinson¹, European researchers, have recently investigated the relation between exposure to solvents, pesticides, iron, copper and manganese and the risk of PD. To this end, the authors undertook a case-control study of 959 prevalent cases of Parkinsonism (767 with Parkinson's disease) and 1989 controls in Scotland, Italy, Sweden, Romania, and Malta. Subjects completed an interviewer-administered questionnaire regarding lifetime occupational and hobby exposure to these substances. Lifetime and average annual exposures were estimated and statistical analysis was applied. The Geoparkinson project is one of the largest case-control studies to date of genetic, environmental, and occupational risk factors for Parkinson's disease or other degenerative Parkinsonian syndromes.

The researchers found that Parkinson's disease is associated with pesticide use. Previous studies have established an association but few had been able to establish an exposure-response relationship, perhaps due to small sample size or poor exposure assessment.

The results suggest that relatively low intensity exposure to pesticides may increase risks. On the other hand, they suggest that in general, risk from solvents and metals are less important in this respect.

Overall, the exposure-response relationship suggests that pesticide exposure may be a causative and potentially modifiable risk factor. This has implications for occupational and, perhaps, recreational users of these agents. Further research is needed to establish which pesticides are associated with this effect.

In this regard, in July 2006 the European Commission adopted a new strategy² aimed at improving the way pesticides are used across the EU. It complements existing EU legislation controlling which pesticides can actually be placed on the market. The strategy foresees measures such as national action plans, training for professional users and distributors, certification and control of application equipment, protection of the aquatic environment, and restricting or banning the use of pesticides in specific areas.

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²For more information on the Thematic strategy on the Sustainable Use of Pesticides, see <http://ec.europa.eu/environment/ppps/home.htm>

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