

Links Between Certain Fungicides And Parkinsons Disease

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Several years ago, we reported on a study raising concerns about chronic exposure to certain pesticides and Parkinson disease¹. Parkinson disease is a progressive neurological disease that causes tremors, impaired balance, and other symptoms. Previous research has raised concerns about the fungicide maneb and the herbicide paraquat. Maneb is the active ingredient in products such as Maneb® and Manex®. Paraquat is found in a variety of herbicidal products, including Gramoxone®.

A new study raises concerns about another fungicide widely used in the past: benomyl. Benomyl was the active ingredient in Benlate®, previously labeled for use on many horticultural crops, including fruits, vegetables, turfgrasses, and ornamentals. Benomyl was present in several commercial products, and EPA registrations for those products were cancelled during the period 2001-2002.

Key Findings

This new study presents two lines of evidence for concern about exposure to benomyl and Parkinson disease.

1. Epidemiological evidence. The study compared Parkinson incidence among people with no, low, or high occupational exposure to treated fields. Those in the “low” category had no increased risk of disease, but the “high exposure” group had a 67 percent higher risk of the disease. In this study, residential exposure to benomyl did not present an increased risk of Parkinson disease; only high occupational exposure did.

2. Biochemical evidence. Laboratory studies were conducted, as well. Like all complex organic molecules, benomyl natural breaks down in living cells into other chemicals, (called metabolites). In this new paper, the authors reported that certain metabolites of benomyl interfered with an important human enzyme abbreviated ALDH. Disruption of ALDH activity

in nerve cells may be involved in the development of Parkinson disease.

Significance

Although over a decade has passed since the cancellation of benomyl uses in the USA, this new study raises a cautionary note about pesticide use. It serves as a reminder to:

- Minimize worker exposure when using pesticides. Use appropriate protective clothing, wash/shower after applying pesticides, and employ all the other safety practices recommended during pesticide applicator training.
- Minimize pesticide use where possible, by using all appropriate means to manage pests, diseases, and weeds (the IPM philosophy).

There is one aspect about this new research that we are grateful for: There is no indication (at least so far) that fungicides related to benomyl pose a similar risk. In particular, thiophanate-methyl is a widely used fungicide for disease control on many crops. It has been sold in Kentucky under trade names such as Cleary’s 3336, Incognito, T-Methyl, Topsin-M, and Transom. Thiophanate-methyl is in the same fungicide family as benomyl, and upon degradation, some of the same metabolites are produced as by benomyl. However, none of the metabolites produced by thiophanate-methyl were reported to pose a risk in the new study. So there is no reason at this time to “wave a red flag” over the use of thiophanate- methyl. However, keep in mind that further study may raise concerns over thiophanate-methyl. While we appreciate the role that pesticides play in sustainable intensification of agricultural productivity, our advice is to be careful with the use of all pesticides, so that we have no reason to look back with regret. Δ

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