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## Study Shows Link Between Pesticides, Parkinson's Disease

By *COSHANDRA DILLARD* Staff Writer

(September 17, 2008) — A joint effort between physicians and researchers at the University of Texas Health Science Center at Tyler and East Texas Medical Center has produced a groundbreaking effect in the study of Parkinson's disease. A recent study co-authored by UTHSCT's Dr. Amon Dhillon and ETMC's Dr. George Plotkin indicates that the use of pesticides such as rotenone may increase the risk of Parkinson's disease.

Pesticide use has long been linked to Parkinson's disease, but this is one of the first studies to show a possible correlation between a specific pesticide and Parkinson's disease in humans. "It shows what we all have been suspecting but had no proof of," Dr. Plotkin said. "It is an obvious connection that there are things in our environment that increase Parkinson's disease dramatically."

Dr. Plotkin is a renowned neurologist with a special interest in Parkinson's disease. He came to East Texas after completing fellowships at Harvard Medical School in 2001 to study why people in this part of the country have a greater risk for the disease. He manages about 1,400 patients with Parkinson's and helped conduct the study of 184 East Texans over 50 years old. The patients, who have resided in Smith and adjacent counties for at least five years, responded to a lengthy survey that asked about their habits, demographic information, occupational history and mental history.

In the study occurring over 18 months, 100 people had Parkinson's, while 84 people had other neurological diseases. The people with Parkinson's were 10 times more likely to have been exposed to rotenone than people in the control group. Dr. Dhillon said Parkinson's disease, a neurodegenerative syndrome, may be the result of two factors.

"Parkinson's is a disease that occurs from a combination of genetics and environmental exposure," he said. "You have some genes that make you more susceptible to Parkinson's disease and on top of that, there are things in the environment that will make it more pertinent."

There's a higher incidence of Parkinson's in certain industries, including farming and petroleum, particularly among people in the Midwest and the farm belt, Dr. Plotkin explained.

He said there are 1.5 million living with Parkinson's disease in the U.S., while there may be another 1.5 million who have not been diagnosed. Parkinson's affects about 4 percent of people in the 50 to 60 age group, he said. "One in 40 (in the U.S.) is at risk for developing Parkinson's disease," Dr. Plotkin said. "In our area, it's one in four."

Evidence of some diseases go back several centuries, but the fact that Parkinson's surfaced around 1817, at the peak of the industrial revolution, may indicate the link to the environment, Dr. Plotkin said.

Dr. Plotkin said Parkinson's may remain latent for about 10 years, but manifest as other conditions before you see symptoms such as tremors, rigidity and difficulty balancing. He said patients may have sleep disorders, nightmares, constipation, among other conditions, before developing the motor problems. "It's not just a motor disease," he said.

Rotenone comes from the roots of tropical plants and is highly toxic to fish and insects, but mildly toxic to warm-blooded animals and humans. It is used in home gardens and in fisheries to remove unwanted fish species.

"I don't think there is any chemical that is safe but general measures such as washing and cooking food properly are necessary precautions," Dr. Dhillon said. "But I would not be overly concerned until we have more substantial evidence. This study is the first step. I think we will have to have more substantial research before we can make any conclusions."

Dr. Plotkin said while some harmful pesticides may still be available on store shelves, we can avoid exposure by using care.

"Life has to go on but we have to understand right now the way we handle these pesticides," he said. He recommends wearing masks and gloves when handling products with those pesticides.

The study also revealed links between other pesticides and Parkinson's disease. People in the study with Parkinson's disease were twice as likely to have used pesticides with chlorpyrifos, such as Dursban, than those in the control group. Dursban and similar pesticides were banned by the U.S. Environmental Protection Agency in 2000 because they may potentially harm the developing brain and nervous system in children. The studies are just a beginning in the search for the cause of Parkinson's disease, both doctors noted.

"The next step is to do genetic testing to understand if people are genetically predisposed," Dr. Plotkin said. "But if this is something we are bringing on ourselves, we need to do something about it."