

Alzheimer's & Parkinson's – Could the Cause be Radon?

PDF - Detailed Study Results

In a study conducted at the University of North Dakota, researchers discovered that the presence of radioactive radon daughters in the brains of non-smoking persons with Alzheimer's and Parkinson's disease was **10 times greater** than it was in the brains of persons with no previous evidence of neurological disorders. Professor Glenn Lykken and Dr. Berislav Momcilovic assert their study demonstrates that indoor radon gas has the capacity to irreversibly infest the brain with the poisonous progeny of radioactive heavy metals.

Recently revised EPA risks assessments estimate 21,000 Americans die annually from radon induced lung cancer, 150% higher than their 1994 estimate. However, scientists are increasingly suspicious that radon may be linked to disease in other parts of the body as well.

When inhaled, radon gas accumulates in lipid tissue throughout the body with the highest concentration in the brain, bone marrow, and nervous system. Additionally, one-third of the inhaled radon decay products (radioactive particles produced when the gas decays) pass from the lungs into the blood stream indicating that the gas does not flow quickly in and out of the lungs, but lingers in the body.

Previous study at UND determined that once radon is rapidly absorbed into the body from the lung, it accumulates in the cranium resulting in increased gamma ray emissions from bismuth-214 (one of the radioactive radon decay products) and altered EEG signals.

While radon is a lipid-soluble gas that can move freely in and out of the brain despite the blood-brain barrier, none of the transmuted heavy metal radon daughters are soluble in the lipids, meaning they remain trapped in the brain where they emit gamma radiation and alpha particles resulting in both radiation and chemical injury to the brain cells.

Of keen interest was the unexpected discovery that the radioactivity selectively accrues to the brain *proteins* in the Alzheimer's victims and to the brain *lipids* in the Parkinson's victims. This pathognomonic distribution was inferred to reflect the increase of local chlorine availability to which the radon daughters bound selectively.

Once present, the most likely candidate for radiation injury appears to be the highly radiosensitive astrocytes rather than the more radioresistant neurons, which do not divide. Other studies have indicated the astrocytes may be involved in Alzheimer disease and the amyloid deposits and neurofibrillary tangling observed with Alzheimer's may well reflect the response to radiation injury of the astrocytes.

Interestingly enough, the geographic distribution of Parkinson's disease mortality is considerably higher in states with a greater radon potential, according to research by D.J. Lansak of the University of Kentucky and published in the Journal of Neurological Sciences.

University of North Dakota researchers are looking for more funding to continue their research. To access the study in its entirety, please go to www.radonnews.org or the Alzheimer Disease and Associated Disorders Magazine. Contact: Professor G.I. Lykken at UND at (701) 777 – 3519.