

## HIGH VOLTAGE POWER LINES, ALZHEIMER'S DISEASE AND DEMENTIA

### The Myth:

*Overhead high voltage power lines and associated electromagnetic fields (EMFs) have no impact on the incidence of Alzheimer's disease or dementia.*

### The Facts:

- Health data for workers exposed to above-normal EMFs in Helsinki Finland and Southern California were studied. The risk of Alzheimer's disease in these workers varied from 2.9 to 3.8 times the expected (Sobel et al. 1995). Based on a study of California workers exposed to EMFs, Sobel et al. (1996) found risks of Alzheimer's disease 3.9 times the expected for both sexes, 3.4 times the expected for women, and 4.9 times the expected for men.
- Qui et al. (2004) found that long-term occupational exposure to higher EMF levels may increase the risk of Alzheimer's disease and dementia in men. They reported a dose-response relation with risks of 2.4 times the expected for Alzheimer's disease, and 2.5 times the expected for dementia.
- Based on a systematic review of studies that explored Alzheimer's disease and occupational exposure to EMFs, Garcia et al. (2008) reported an association between the two. Pooled estimates from many studies showed consistently increased risks of Alzheimer's disease 2 times the expected.



- Huss et al. (2009) studied the relationship between magnetic exposure from living near 220-380kV power lines and the risk of mortality from neurodegenerative disease (loss of brain and spinal cord cells) among 4.7 million Swiss residents. There was a clear dose-response relation with respect to years of residence in the immediate vicinity of power lines and Alzheimer's disease. Persons living at least 5 years within 50m had a risk of 1.5 times the expected, increasing to 1.8 with at least 10 years, and to 2.0 with at least 15 years residency. The pattern was similar for senile dementia.
- Many population health and illness studies have reported that workers exposed to EMFs are at an increased risk of Alzheimer's disease, but they have not discussed how this may occur. Numerous recent studies have suggested that DNA strand breaking (Lai and Singh 1997) or significant increases in the release of certain amino acid compounds (Giudice et al. 2007) could explain the EMF-Alzheimer's disease association.



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