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Largest study finds evidence of association between EMFs and exposed worker suicide

By DAVID WILLIAMSON
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CHAPEL HILL -- A large and detailed study of the possible link between exposure to low frequency electromagnetic fields (EMFs) and suicide among electric utility workers has uncovered what appears to be a distinct association.

Electricians working for five U.S. power companies faced twice the expected risk of suicide, while linemen faced one-and-a-half times the expected risk, according to the University of North Carolina at Chapel Hill study. Suicides among power plant operators occurred at a rate slightly lower than expected, researchers found.

Younger people appeared to be at greater risk of suicide than older ones, and higher, more recent exposures also seemed to boost the chances that workers might take their own lives.

A report on the study, which began with a group of 138,905 male U.S. electric utility workers, appears today (March 15) in the April issue of Occupational and Environmental Medicine. Authors include doctoral student Edwin van Wijngaarden; Dr. David A. Savitz, professor and chair of epidemiology; Dr. Jianwen Cai, associate professor of biostatistics; and Dr. Dana Loomis, associate professor of epidemiology, all at the UNC-CH School of Public Health. Statistical programmer Dr. Robert C. Kleckner also contributed to the project.

"We believe this work is important because suicide is the eighth leading cause of death in the United States, and many people in this country are exposed to electromagnetic fields," van Wijngaarden said. "While these findings definitely do not prove EMFs cause suicide, they do indicate more research needs to be done on the effects of exposure on depression and suicide."

Using employment files, death certificates and other records, van Wijngaarden and colleagues found 536 suicides among current or former electric utility workers in the group between 1950 and 1986 and identified 5,348 non-suicides of the same race and age to serve as controls. Researchers also analyzed various job titles and duties and estimated occupational exposures to EMFs based on devices randomly selected workers wore to monitor exposures.

Why low frequency electromagnetic fields might contribute to suicide among chronically exposed workers is not known, van Wijngaarden said.

"One biologically plausible explanation is that EMFs depress production of melatonin, a hormone that’s important for sleep and mood," he said. "Decreases in melatonin can lead to depression, which in turn can lead to suicide."

Rats subjected to electromagnetic fields showed altered production and excretion of the hormone but comparable data on humans is limited and inconclusive, the scientist said. The possibility suggested by the new findings that EMFs could affect young workers more than older ones is entirely new, he added.

The Electric Power Research Institute of Palo Alto, Calif., supported the study. Cooperating electric utility companies were Carolina Power and Light Co., Pacific Gas and Electric, PECO Energy Co., Tennessee Valley Authority and Virginia Electric Power Co.

van Wijngaarden and colleagues did the new study because other work in the early 1980s found indications of an association between EMFs and suicide, but later studies could not replicate those findings.

Women were excluded because at the time they rarely worked as electricians, linemen or power plant operators. Researchers could not control for past mental health problems, addictions and family disturbances such as divorce since such information was not available.