HIGHLIGHTS

Electrical Work Again Linked to Cancer

Two new epidemiological studies have linked occupational exposures to electromagnetic (EM) fields to cancer. Maryland researchers have identified an increase in the relative risk of brain tumors among exposed workers and a UK study has found a rise in the incidence of eye cancer among male electrical and electronics workers in England and Wales.

There are now eleven reports from the US and Europe connecting low frequency EM radiation with cancer (mostly leukemia) or reproductive problems (see *MWN*, March, June and December 1983).

Brain Tumors in Maryland

In a paper presented at the *1984 Annual Meeting of the Society for Risk Analysis* in Knoxville, TN, on October 2, Dr. Ruey Lin announced that he had found an association between exposures to EM radiation and the development of brain tumors. In addition, those workers in electrical occupations with the highest exposure to EM fields died at a significantly younger age than those who were not exposed.

Lin and co-workers at the Maryland Department of Health and Mental Hygiene in Baltimore reviewed the death certificates of 951 white adults who died of brain tumors between 1969 and 1982. They found that compared to controls, who were matched on the basis of age and date of death and who died of causes other than malignancy, a significantly higher proportion of workers who died with a primary brain tumor had been employed in electrical occupations, such as electrician, electric or electronic engineers and utility company servicemen.

In a telephone interview following the risk analysis meeting, Lin told *Microwave News* that the new research "supports the theory that non-ionizing radiation may be a brain tumor promoting agent." He went on to add a note of caution, however, saying that there is still uncertainty due to the absence of exposure data. For instance, Lin said that he does not know whether the increased risk of brain tumors is related to magnetic or electric fields. In addition, he said that he could not rule out the possibility that other agents, such as polychlorinated biphenyls, solvents, or metal fumes are involved.

Lin recommended that additional epidemiological and animal studies are needed to explore the possible relationship between electrical occupations and cancer. A paper describing the results presented in Knoxville has been submitted for publication.

Cancer Among Electrical Workers

Dr. A.J. Swerdlow of the Department of Community Medicine at the University of Glasgow in Scotland, UK, has uncovered a significant increase in eye cancer among adult men (47 percent) and women (50 percent) in England and Wales, between 1962 and 1977. The increased incidence was "notably high" for male electrical and electronics workers, 15-74 years of age, between 1968-1975.

Swerdlow noted that the general increase was "unexpected," and he offered no explanation for the finding. He used cancer registration data as a measure of cancer incidence and believes that the higher registration rates "reflect a real rise in incidence of eye cancer, and therefore probably of eye melanoma, which accounts for the great majority of eye cancer."

Proportional registration ratios were also higher among three occupational groups in addition to electrical and electronics workers: administrators and managers, professional technical workers and artists. Generally, Swerdlow found that eye cancer incidence was "generally higher in the non-manual social classes than in the manual classes." He cautions that the occupational and social class results should be interpreted with caution because of the small sample size and the possibility of errors in occupational classification and in coding.

Nonetheless, Swerdlow concludes that "the high ratios found for electrical and electronics workers...would not have been expected from their social class and are of particular interest."

No gradient of incidence with geographical latitude was identified, in contrast to other reports of an association between skin melanoma and latitude. Swerdlow's paper appears in the *American Journal of Epidemiology, 118,* 294, 1983.

NY State Plans Replication of Winters's ELF Study

The New York State Power Lines Project will fund at least one replication study of Dr. Wendell Winters's experiments on the effects of 60 Hz fields on human tumor cells. Winters's finding that electromagnetic fields can enhance the growth of cells by up to 5.6 times the normal rate is the most startling result reported to date among the project's 16 studies and has generated considerable interest inside and outside the non-ionizing radiation community (see *MWN*, April and September 1984).

Because of the implications of Winters's findings, earlier this summer the project's scientific advisory panel asked Drs. Gordon Livingston of the University of Utah and Maimon Cohen of the University of Maryland to submit proposals for replication studies. Both researchers are already project participants.

Livingston's proposal has now won tentative approval from the panel. His study is expected to take about six months and cost approximately $30,000. Cohen, however, is not expected to respond to the panel's invitation until his own study is closer to completion.

The panel has also received two evaluations of Winters's work following site visits to his lab at the University of Texas Health Science Center in San Antonio this summer. A joint report by Drs. Jeffrey Trent of the University of Arizona and Ronald Buick of the University of Toronto, and another by panel chairman Dr. Michael Shelanski of New York University were sent to Winters for comment last month. (Trent, a cancer biologist, will be a consultant to