

# Do EMFs Pose Breast Cancer Risk?

Women employed in the electrical trades run a 38 percent greater risk of dying from breast cancer than other working women, says a new study. These findings will most likely fuel the debate about whether exposure to low-frequency electromagnetic fields (EMFs) boosts the risk of developing certain malignancies, such as leukemia, brain cancer, and breast cancer.

A look at previous research reveals a raft of conflicting results. One investigation showed that men in electrical occupations had more than six times the breast cancer risk of men in the general population (SN: 9/28/91, p. 202). Yet other scientists failed to demonstrate any elevated risk for men. Epidemiologists searching for a link between exposure to EMFs and breast cancer in women came up empty-handed — until now, that is.

Epidemiologist Dana P. Loomis of the University of North Carolina in Chapel Hill and his colleagues began their study by combing through U.S. death records for 1985 through 1989. Among women who had been employed as electrical workers, the team identified 68 who had died of breast cancer and 199 who had died of other causes. Included in the sample were electrical engineers, electricians, telephone repairers, and power-line workers. The researchers then turned to a control group — women who had been

employed outside the home but not in the electrical trades. They found 27,814 women who had died of breast cancer and 110,750 who had died of other causes.

Statistical analysis indicated that women who work in electrical occupations face a greater threat of death from breast cancer than other employed women. People in such jobs sustain much higher levels of exposure to EMFs than the average person, Loomis notes.

Certain groups had substantially higher risks than their peers. For example, women who were electrical engineers had a 73 percent greater risk of dying from breast cancer. For telephone installers, repairwomen, and line workers, that heightened risk jumped to 200 percent.

The research team did not find a higher risk of breast cancer death among women in seven occupations that may also involve elevated exposure to EMFs. For example, women who worked as telephone operators, data keyers, or computer operators did not appear to show the same surge in mortality rates. The team describes its results in the June 15 *JOURNAL OF THE NATIONAL CANCER INSTITUTE*.

Epidemiologist Dimitrios Trichopoulos of the Harvard School of Public Health in Boston notes that the researchers didn't measure electromagnetic exposure directly. Instead, they relied on each

woman's stated occupation as a crude marker of exposure. "The authors did a very good job in the analysis," Trichopoulos told *SCIENCE NEWS*. "But it's really a weak database." Trichopoulos wrote an editorial that accompanied the article.

Even critics such as Trichopoulos don't discount the notion that EMFs may increase the risk of cancer. Here's why.

The new findings fit with a theory that exposure to such fields can reduce the pineal gland's nighttime production of an anticancer hormone called melatonin (SN: 7/3/93, p.10). Reduced concentrations of melatonin in the blood spur the growth of breast cancer cells, suggests Richard G. Stevens of the Pacific Northwest Laboratory in Richland, Wash.

Stevens, Loomis, and other researchers believe that further research must address the question of whether EMFs increase the risk of breast cancer for all women, not just those in the electrical trades. Electromagnetic fields are generated by wiring and such household appliances as microwave ovens, televisions, and hair dryers.

"At this point, there's nothing [definite] to be said about the risk to people," Stevens cautions. However, he believes that ongoing studies of EMF exposure and breast cancer will yield some answers soon. — K.A. Fackelmann

## Therapeutic vaccine fights herpes

Typically, vaccines help people ward off microbial threats. Now, researchers have developed a vaccine that may be useful for treating people already infected.

The new, therapeutic vaccine reduces the frequency with which genital sores appear in patients infected with the herpesvirus. While it fails to outperform the existing antiherpes drug, acyclovir, it sets the stage for a more effective treatment in the future, scientists report in the June 11 *LANCET*. Over 25 million people in the United States are infected with the virus, which stays in the body for life.

"The ability to influence the frequency of genital herpes outbreaks with this vaccine inspires optimism that similar successes may be possible with other chronic viral diseases, such as AIDS," assert Stephen E. Straus of the National Institute of Allergy and Infectious Diseases (NIAID) in Bethesda, Md., and his colleagues.

"It's unbelievably exciting," says Lawrence R. Stanberry of the University of

Cincinnati College of Medicine. These findings may help researchers treat other diseases with long incubation periods, he adds.

Other investigators have claimed to develop therapeutic vaccines, but their products have not withstood carefully controlled studies, Straus says.

Researchers at the University of Washington in Seattle and at NIAID injected either the vaccine or a placebo into 98 men and women age 18 to 55 who annually experienced 4 to 14 outbreaks of herpes simplex virus type 2 (HSV-2). They gave the shots at the beginning of the study and again 2 months later.

The vaccine is a combination of alum and a genetically engineered protein, glycoprotein D (gD2), which sits on the outside surface of HSV-2 and is targeted by the body's immune cells, Straus explains. The alum acts as an adjuvant, enhancing the body's defensive mechanisms. Alum also served as the placebo.

During the 1-year study, volunteers receiving gD2 had about one-third as

many herpes outbreaks as those getting the placebo. Also, vaccine recipients had a lower median number of annual recurrences — four versus six for those receiving alum alone. Overall, the placebo group had a total of 321 outbreaks, 74 more than the vaccine cohort.

The vaccine increases the body's production of antibodies to the herpes protein, the researchers note, whereas recurrence of genital herpes does not. "[The] vaccine boosted neutralizing antibodies to HSV-2 fourfold and gD2-specific titers sevenfold over baseline levels," they state. But the increases failed to explain the vaccine's success, since they did not seem to affect the frequency of outbreaks. Just how the vaccine helps remains unclear.

Limited use of acyclovir did not alter the vaccine's efficacy.

Straus' group is halfway through a follow-up study of additional patients, using a new vaccine "that we think may do a lot better," he says. It uses two recombinant proteins from the herpesvirus and a much more potent adjuvant. Straus expects the study will be completed in about 2 years. — T. Adler