

# Electrical Fields May Affect Man

By George Alexander  
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LOS ANGELES — Very weak electrical fields generated by the machinery and power lines surrounding us may be subtly affecting our brains and influencing our behavior, according to a University of California at Los Angeles scientist.

Dr. W. Ross Adey of the UCLA School of Medicine said the fields have to be of a certain strength and at particular frequencies to cause this effect. Stronger fields at higher frequencies do not seem to produce any behavioral changes.

Adey, along with Drs. Rochelle Medici, Suzanne Bawin and L. K. Kaczmarek, has been studying electrical fields at frequencies between 2 and 15 hertz (cycles per second).

Power lines can generate these fields out to a distance of hundreds of yards, he said, and so can certain types of very heavy machinery. But the average home or office, even with air conditioners, electric typewriters and computers, does not produce such fields or frequencies to any appreciable extent, according to Adey.

The frequencies between 2 and 15 hertz also occur naturally in the brain. In biofeedback training, for example, subjects are taught to recognize their own natural 8 hertz "alpha rhythm" and then consciously focus on this wave to produce feelings of serenity or calmness.

But not all frequencies are conducive to peace of mind. When test monkeys were exposed to weak electrical fields at 7 hertz, Adey said, they increased their estimate of the passage of time. Instead of performing a task every five seconds, as they had been trained to do with some precision to win a food pellet, the animals did

the task every 4½ seconds under the influence of electrical fields.

Whether humans respond in exactly the same way is not known for certain, Adey said, but similar tests conducted in Germany in the mid-1960s with human volunteers suggest that there is some effect. Some of the human subjects reported that their circadian rhythms—their 24-hour "biological clocks"—were reset to as much as 36 hours as a result of the tests.

As weak as they are, Adey said, the artificial fields seem to exert their influence by entrainment—that is, coupling their bit of energy to that normally present in the functioning brain. In some instances, the artificial and natural frequencies appear to add together to heighten brain activity; in others, they may cancel each other out and depress brain cell workings.

Adey and his group also have explored the biochemistry of the brain (using experimental cats) under the influence of weak fields and found that changes do occur. The process is complicated, he said, but involves changes in the distribution of electrical charges on the surface of the brain cells.

The research to date raises the question of whether we have a potential means of modifying behavior," Adey said. "This is purely speculative on my part, but weak electrical fields might be useful in treating such disorders as insomnia or menstrual irregularities."

As a step in that direction, Adey suggested that electric blankets of the future might be made to emit fields and frequencies which would induce sleep as well as keeping the individual warm.