OFFICE OF POWER TECHNOLOGIES

Success Stories

Four National Magnetic Field Exposure Facilities

National Exposure Facilities are key to credible research on whether exposure to electric and magnetic fields affects human health

The Office of Power Technologies is part of the Office of Energy Efficiency and Renewable Energy

What better way is there to address a scientific issue plagued with nonreproducible studies than to have the recognized experts build four identical facilities for laboratory research? The possibility that electric and magnetic fields (EMF) generated by transmission lines, household appliances, or workplace machinery cause adverse health impacts has created scientific dispute, as well as strong emotions.

The U.S. Department of Energy (DOE) has been conducting highly regarded research on EMF for more than 15 years. Since 1993, DOE has spearheaded a multi-agency effort to further enhance the credibility of EMF research nationally. Conducting solid laboratory research on EMF requires the ability to carefully control and measure the fields generated, as well as to assess biological impacts. Until recently, few facilities had both the physics and the biology capabilities needed.

In response to a Congressional mandate in the Energy Policy Act of 1992, DOE is collaborating with the National Institute of Environmental Health Sciences (NIEHS) to develop a base of high-quality laboratory research on the possible effects of EMF on human health. In addition to being dependable and replicable, this research explores possible mechanisms for the potential health impacts being evaluated. To further this effort, DOE designed and built four state-of-the-art exposure systems for conducting EMF laboratory studies. These National Magnetic Field Exposure Facilities have been established at four different federal laboratories operated by either DOE or the

Highlights

- *Four state-of-the-art exposure systems built*
- *Credible, replicable research on possible health impacts of exposure to EMF*
- *Improved methodology for experiments established*
- *Internationally regarded as the standard of excellence for EMF research*
- *Research results compiled into a 1998 report to the U.S. Congress.*

NREL/PIX01417

This magnetic field exposure facility at DOE's Pacific Northwest National Laboratory is one of four built by DOE to allow federal laboratories to conduct credible, reproducible laboratory research on the biological effects of electric and magnetic fields.

Four National Magnetic Field Exposure Facilities

Project Partners

U.S. Department of Energy

National Institute of Environmental Health Sciences

National Institute of Occupational Safety and Health

National Institute of Standards and Technology

Organizations Matching Government Funds for the RAPID Program:

American Public Power Association

Edison Electric Institute

Electric Power Research Institute

Empire State Electric Energy Corporation

National American Rural Electric Cooperative Association

National Electric Manufacturers Association

National Institutes of Health:

- Food and Drug Administration, Rockville, Maryland
- National Institute of Occupational Safety and Health, Cincinnati, Ohio
- Oak Ridge National Laboratory, Oak Ridge, Tennessee
- Pacific Northwest National Laboratory, Richland, Washington.

The four exposure systems provide all the control features necessary for accurate replication of research. The computer-operated systems precisely control both environmental conditions and electromagnetic field strengths. Each system includes two identical chambers, of which one is randomly chosen to be active, while the other serves as a control. By running the experiments in this blinded manner, the possibility of experimental artifacts is substantially reduced. Experiments to be conducted at each facility are selected by a steering committee with members from NIEHS and DOE. The facilities are open to visiting scientists from the research community at large. DOE evaluates all NIEHS-funded research and assists the research teams in correcting problems with experimental design and EMF exposure.

The National Magnetic Field Exposure Facilities program is regarded internationally as the standard of excellence for EMF research. Results of research conducted with the four exposure systems have been included in a 1998 report to Congress. The program has already produced a steady improvement of exposure systems and methodology for EMF experiments.

The National Magnetic Field Exposure Facilities program is just one part of the five-year, $44 million Research and Public Information Dissemination (RAPID) Program authorized by Congress in 1992 to supplement ongoing EMF research efforts and accelerate public awareness about EMF. Half of the money for the DOE-administered RAPID Program is contributed by the utility and manufacturing organizations listed at the left. DOE does the engineering research; NIEHS does the health research; and the two agencies combine efforts to communicate with the public.

For More Information:

Visit the National Magnetic Field Exposure Facilities Web site at:
http://www.niehs.nih.gov/emfrapid/html/regfac.htm

or call the EMF Infoline:
(800)-363-2383

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U.S. Department of Energy and National Institute of Environmental Health Sciences. *EMF RAPID: Annual Report for Fiscal Year 1996.* DOE/EE-0130, 1997.
www.niehs.nih.gov/emfrapid/reptocongress/ANN.REP96.html

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