

The State University of New York, Albany, in collaboration with St. Regis Mohawk Health Services, intends to design community-based strategies for environmental health education, outreach, and training in the Akwesasne Mohawk community, which is adjacent to a Superfund site in the Great Lakes Basin—St. Lawrence River watershed. Environmental hazards have resulted from the rapid transition from an agricultural to an industrial environment. Industry appears to have produced high levels of polychlorinated biphenyls (PCBs) from manufacture of hydraulic fluids until 1973. Sludge containing PCBs was placed in disposal pits adjacent to the Akwesasne community and has been found in water and soil in the area. Sediments have been found in the St. Lawrence River, which serves as a major source of fish, a protein staple in the Mohawk diet. Contaminants have been found in human breast milk, and a number of symptom-related health effects have been experienced by residents. Chronic fluoride poisoning has been observed in cattle, resulting from smokestack emissions of a metal smelter. Lethal levels of organochlorines have been found in tissues of some animals in the immediate environment. This project is led and directed by members of the target community. It is implemented, evaluated, and disseminated explicitly through community members. The project team has worked together extensively and has nine years of experience in communicating information on health risks to the community.

A third grant funded under this initiative was awarded to a community organization, Citizens for a Better Environment. This group, in collaboration with the Labor Occupational Safety and Health Program and the Center for Occupational and Environmental Health at UCLA and the Community Health Foundation, aims to educate community members and health care providers, promote adoption of pollution prevention measures, and establish a community-based strategy for reducing community and worker exposure to environmental pollutants in southeast Los Angeles, a highly industrialized area home to a low-income population, approximately 90% Hispanic/Latino. Pollution sources include large, highly industrialized tracts where chemicals are routinely or accidentally released, severe urban smog, occupational exposures, and lead exposures. The zip code area which includes southeast Los Angeles was identified as the dirtiest subregion within the state of California by the EPA. About 70 manufacturing firms in South East Los Angeles reported releases of 1.4 million pounds of toxic chemicals into the air in 1992. A major objective of this

project is analysis of data to affirm the list of environmental pollutants already known and to determine whether gaps exist in the data. Environmental health issues of priority to the community will be determined and addressed. CBE has already received invitations from mayors and council members to help reduce community toxics exposure. CBE helped to develop LA CAUSE (Los Angeles Communities Assembled and United for a Sustainable Environment), a community education project that seeks to promote environmentally friendly jobs. LA CAUSE will involve and educate community members and has a history of reaching residents and workers from the region. Sources of health hazards will be identified, and strategies will be developed to attempt exposure reduction.

Book Addresses Parents' Concerns about Toxins

"Everything causes cancer," according to the old cliché. Now parents, pediatricians, social workers, and others concerned about children's health have a concise guide, *Raising Children Toxic Free*, to help them identify the real toxic hazards and adopt practical, simple precautions to protect children and themselves.

The book covers toxins that impact reproduction, behavior, development, environmental neurotoxins, and cancer. Agents discussed specifically include lead, mercury, asbestos, pesticides, radiation, tobacco, solvents and PCBs, and air pollution. The book was written by Herbert L. Needleman, professor of psychiatry and pediatrics at the University of Pittsburgh School of Medicine, and Philip J. Landrigan, professor of pediatrics and chair of community medicine and director of the NIEHS Environmental Health Sciences Center at Mount Sinai School of Medicine in New York City. The publisher is Farrar, Straus and Giroux, New York.

While some of the remedies suggested require community and political action (asbestos in the schools), other remedial action is quite direct. For example, parents can air clothes just back from the drycleaners outdoors to reduce exposure to perchloroethylene fumes in the home. Avoiding fruits and vegetables imported from outside the United States, where pes-

ticides may not be properly used, is another simple step.

NIEHS Awards Grants for EMF Research

NIEHS and the Department of Energy are coordinating the implementation of the 1992 Energy Policy Act (Section 2118 of Public Law 102-486), which was signed in October 1992. This is a five-year federally coordinated effort to evaluate developing technologies and research related to the effects on biological systems of exposure to electric and magnetic fields produced by the generation, transmission, and use of electric energy.

The Department of Energy is responsible for developing technologies to characterize and mitigate these fields, while NIEHS is responsible for coordinating and conducting studies to evaluate the possible adverse health effects related to exposures to these fields and for communicating of these findings to policymakers and the public.

The NIEHS has a long history of funding research in this area. In August 1994, the National Toxicology Program began two-year rodent studies of the effects of magnetic fields, rather than electric, are being evaluated because epidemiological

studies are most consistent for an association of cancer with magnetic fields. New grants administered through the NIEHS Division of Extramural Research and Training, funded by the Energy Policy Act of 1992 (Section 2118 of Public Law 102-486) have further broadened NIEHS research on electromagnetic fields. Newly awarded grants funded by the Energy Policy act are:

- Dean Astumian, University of Chicago: Interactions between low-frequency AC electric fields and yeast membrane proteins;
- Elizabeth Balcer-Kubiczek, University of Maryland, Baltimore: Effects of 60 Hz EMFs on the expression of genes associated with cancer in human cell lines, HL-60 and MCF-7;
- David Binninger, Florida Atlantic University, Boca Raton: Molecular basis for the effects of 60 Hz EMFs on gene expression (transcription) in yeast;
- Craig Byus, University of California,



Riverside: Animal cancer studies using a mouse skin model on co-promotion by 60 Hz EMFs with the initiator dimethylbenzanthracene and the promoter 12-*O*-tetradecanoylphorbol-13-acetate;

- Charles Graham, Midwest Research Institute, Kansas City, Missouri: Human studies on the effects of nighttime EMF exposures on melatonin, other hormones, and the immune system;
- Sek Wen Hui, Roswell Park Cancer Institute, Buffalo, New York: Role of 60 Hz EMFs on gene expression, cancer promotion and signal transduction;
- Henry Lai, University of Washington, Seattle: Effects of ELF magnetic fields on neurological function and behavior in rats with emphasis on cholinergic activity;
- Robert Linburdy, University of California, Berkeley: Role of various AC/DC field combinations in calcium signaling and cell proliferation and viability—a test of the Lednev hypothesis;
- Richard Luben, University of California, Riverside: Biochemical mechanisms of 60 Hz magnetic field effects in signal transduction and on membrane receptors in mammalian cells;
- Rosemonde Mandeville, University of Quebec, Laval: Copromoting effects of 60 Hz magnetic fields and subthreshold doses of ethylnitrosourea on brain tumors in rats;
- David McCormick, IIT Research Institute, Chicago: Influence of EMFs on the proliferation of human breast epithelial cells and on the expression of cancer-associated genes;
- Kenneth McLeod, State University of New York, Stony Brook: Role of frequency, intensity and duration of EMF electric field exposures and cell characteristics on the modulation of cell behavior;
- Richard Miller, Columbia University, New York: Effects of 60 Hz EMFs on

the expression of oncogenes in cancer initiation and promotion in human and mouse cells;

- Steven Miller, SRI International, Menlo Park, California: Effects of 60 Hz EMFs on signal transduction *in vitro* and possible effects on reactive oxygen intermediates in tumor promotion;
- Richard Nuccitelli, University of California, Davis: Changes in expression of proteins associated with differentiation of human skin cells resulting from 60 Hz EMF exposures;
- Russel Reiter, University of Texas, San Antonio: Impact of sinusoidal magnetic fields on melatonin levels *in vivo*; search for critical exposure parameters and for role of pineal gland;
- Clifford Rinehart, University of North Carolina, Chapel Hill: Effects of 60 Hz EMFs on expression of oncogenes, transcription factors and enzymes related to malignant transformation in cells;
- Jeffrey Saffer, Battelle Pacific NW Labs, Richland, Washington: Gene expression studies on the role of various ELF fields in copromoting neoplastic transformation of JB-6 cells;
- Jerry Williams, Johns Hopkins Oncology Center, Baltimore, Maryland: Cellular studies on the effects of EMFs on *myc* oncogenes, growth enzymes, and carcinogenic and cocarcinogenic processes;
- Gayle Woloschak, Argonne National Laboratory, Argonne, Illinois: Identification of EMF-induced genes, the kinetics of their response and the mechanism of the modulation of gene expression;
- Steven Yellon, Loma Linda University, Loma Linda, California: Effects of mela-

tonin production and on reproductive development in the Djungarian hamster.

NIEHS Director's Update

In his third annual address to NIEHS employees on October 28, Director Kenneth Olden outlined the many challenges confronting the NIEHS as it responds to the increasing demands of the American public and celebrated the accomplishments of the institute during the last year. "This has been an outstanding year for NIEHS. We have made some truly remarkable changes, and have reached several milestones," said Olden.

Olden highlighted some of the institute's achievements and recognized NIEHS scientists for their work in isolating the breast cancer susceptibility gene and in developing the estrogen receptor knockout mouse, which will enable scientists to evaluate the different signaling pathways that influence estrogen activity. "I think we have created an environment where these kinds of discoveries will become commonplace," he said.

Olden remarked upon the unprecedented level of visibility of the research being conducted at the NIEHS, which he predicts will translate into additional funding by Congress for institute research. While acknowledging NIEHS accomplishments, Olden cautioned that the institute must maintain its position as a leader in the advancement of environmental policy. According to Olden, the opportunities for progress in environmental health sciences have never been better. As an example, he cited the role of government scientists in formulating a national health care plan. Said Olden, "We will not be able to provide every man, woman, and child with quality health care unless we make additional progress in disease prevention and intervention."

Olden concluded his address by mentioning several major NIEHS research programs that have been initiated or strengthened in the past three years. They include:

- Introduction of new and more effective animal models for predicting chemical toxicity,
- Development of toxicological assays that are less expensive and more efficient than rodent bioassays,
- Incorporation of mechanistic studies into disease prevention programs, including efforts to identify the molecular and genetic factors that influence disease susceptibility,
- Introduction of a large-scale clin-

Olden Elected to Institute of Medicine

Kenneth Olden, director of NIEHS and the National Toxicology Program, has been elected to membership in the Institute of Medicine of the National Academy of Sciences. The membership of the IOM is broadly based in the biomedical sciences, health professions, and related disciplines, and members conduct studies of specific issues and contribute to the formulation of recommendations, most of which relate to public policy. The distinguished panel is concerned with the protection and advancement of the health professions and sciences, the promotion of research and development pertinent to health, and the improvement of health care.



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