

California Electric and Magnetic Fields Program

Progress Report: November 1999 Through November 2000

INTRODUCTION

In accordance with the California Public Utilities Commission (CPUC) Decision 93-11-013, the California Department of Health Services (CDHS) initiated a research and education program in March 1994 on the possible health effects of electric and magnetic fields created by the use of electricity. The purpose of this report is to summarize the progress of the California Electric and Magnetic Fields (EMF) Program between November 1999 and November 2000. Information on the Program's activities from its beginning through October 1999, along with a more detailed description of the Program's organization, can be found in the progress reports submitted in January of 1997 and December of 1999.

At the time the last formal progress report was submitted, the Program requested a no-cost extension to continue until December 31, 2001. This request was granted by the CPUC.

EMF PROGRAM GOAL

The California EMF Program's charge is to support research and provide education about whether exposure to EMF generated by the use of electricity can affect human health. Our goal is to foster a rational and fair approach to dealing with the potential hazards, if any, of exposure to EMF. We do this through research, policy analysis, education, and technical assistance.

PROGRAM ORGANIZATION

CDHS assigned Dr. Raymond Richard Neutra, of the Division of Environmental and Occupational Disease Control, to head the EMF Program. The Public Health Institute

(PHI), formerly the California Public Health Foundation, assists CDHS by handling the fiscal/administrative matters of the education program, overseeing the extramural research program and its subcontracts, and staffing the Stakeholders Advisory Consultants (SAC). The PHI staff work under the direction of the DHS Program Chief.

EMF Program Staff

CDHS Staff

Raymond Richard Neutra, M.D., Dr.P.H., Program Chief

Geraldine Lee, Ph.D., Head, Education and Technical Assistance Unit

Alvin Leonard, M.D., M.P.H., Public Health Medical Officer (part-time volunteer)

PHI Staff

Vincent del Pizzo, Ph.D., Research Director

John Collins, Administrator

Jessica Hecht, Health Educator

Myra Alcaide, Secretary/Administrative Assistant (part time)

Kimberly Merin, Health Education Assistant (part time)

Lilia Hristova, Ph.D., Programmer Analyst (part time)

STAKEHOLDERS ADVISORY CONSULTANTS

Role of the SAC

The overall direction of the Program has benefited from the advice of the SAC on the choice of projects conducted and the issues examined. In addition, SAC members provided detailed comments on the Program's policy-related projects. A properly constituted SAC continues to provide the Program with *relevance, balance, dissemination, credibility* and *respect*.

Representative Constituencies

The SAC is divided into two major components: (1) the core members, comprised of no more than 15 people, and (2) the ex-officio members, whose number varies. Both the core and the ex-officio members follow certain ground rules to help fulfill their roles. Interested members of the public and additional representatives of the organizations comprising the core membership also attend SAC meetings. The core SAC currently includes one representative from each of the following organizations:

- American Academy of Pediatrics
- California Parent Teachers Association
- Coalition for the Alliance of Utility Safety and Education (CAUSE)
- Citizens Concerned about EMF
- CPUC Division of Ratepayer Advocates
- Electric Power Research Institute
- International Brotherhood of Electrical Workers, AFL-CIO
- Investor-owned utilities
- Municipal utilities
- Port of Oakland (Industrial Hygienist)
- West County Toxics Coalition

EMF RESEARCH PROGRAM

The goal of the research program is to help answer the following questions faced by decision makers dealing with the EMF issue:

- Is there a health problem? (risk research)
- Where is the problem? (exposure assessment and analysis)
- What could be done about it? (mitigation research)
- What are the pros and cons of potential policy options? (policy analysis)

The Program's research priority areas are policy analysis, exposure assessment, epidemiology, and electrical engineering and mitigation.

Research Projects

Major research projects and their progress since November 1999:

School Exposure Assessment Survey: Completed. This project focused on identification and characterization of major internal and external sources of fields in schools and estimates of the cost of exposure mitigation. The final report was completed in January 2000.

Occupational Exposure Study: Completed. This project explores the feasibility of using exposure data associated with various occupational tasks as building blocks to reconstruct occupational exposure. The final project report has been revised based on peer reviewers' comments.

Prospective Miscarriage Study: Submitted for publication. This epidemiology study of spontaneous abortion measured the EMF exposure of 1,000 women in early pregnancy and tracked their pregnancy outcomes. The contractor compared the exposure of women who miscarried with that of those who experienced a normal delivery. The final report of this project has been written and peer reviewed by the Program's epidemiology peer review panel, and a journal article has been submitted for publication.

Epidemiology Workshop: In Progress. This meeting in which leading EMF epidemiologists summarized and discussed the epidemiological evidence on EMF took place in January 1999. A special issue of the journal *Bioelectromagnetics* containing the proceedings of this workshop is currently in press.

Policy Projects: In Progress. The School and Power Grid/Land-Use Policy Projects are nearing completion. The final product of each project will consist of an interpretive report and a software model and accompanying narrative for use as a decision-making tool to allow stakeholders to explore the impact of assumptions made and cost numbers used in the interpretive report. The reports will also explain the assumptions and limitations of the models, as well as some general insights drawn from their use.

The Power Grid and Land Use Policy Project draft report was released in September 1999. After the public comment period ended in November 1999, these comments were assessed and the report was revised accordingly. The Program's policy peer review panel reviewed the revised draft and their comments are being incorporated into the final report.

The Program released a draft of the School Policy Project for public comment in spring 2000. This report has been revised based on the public comments received, and has been submitted to the Program's policy peer review panel.

Program Synthesis Projects

Risk Evaluation Guidelines: Completed. These guidelines for systematically summarizing and evaluating the cellular, animal, and human evidence for possible health effects of EMF, while taking into account uncertainty, are being used to guide the CDHS Risk Evaluation. The Program's Science Advisory Panel (SAP) approved the final version of these guidelines in February 2000.

DHS Risk Evaluation: In progress. This project is a systematic summary and evaluation of the cellular, animal, and human evidence for possible health effects of EMF. A core team of reviewers has studied the EMF literature, considered previous reviews (particularly the National Research Council and National Institute of Environmental Health Sciences reports) and formulated a comprehensive series of arguments in favor of and against the hypothesis of an EMF health risk. These were used to guide the process of evaluation of the evidence. A first draft was reviewed by a group of CDHS scientists, who then offered their comments and suggestions in the course of a three-day workshop. A revised draft that takes these comments into consideration was sent to the Program's SAP for review on November 13, 2000. Comments from the SAP are due on December 22, 2000. A revised draft will be sent to the Director of CDHS for approval to release the draft for public comment.

Policy Integration: In progress. This critical overview of the policy implications of the Risk Evaluation, policy analysis projects, and exposure survey projects is intended to make the results of these projects more readily usable by decision makers and stakeholders advocates. This project is now underway.

Related State Activities

CDHS study of electric bed-heating devices and spontaneous abortion: Completed. The article was published in the journal *Epidemiology*. Reference: GM Lee, et al. (2000) The use of electric bed heaters and the risk of clinically recognized spontaneous abortion. *Epidemiology*. 11:406-415.

CDHS case-control study of EMF exposure and spontaneous abortion: In progress. A manuscript has been submitted to the journal *Epidemiology*.

CDHS study of teachers' EMF exposure: In progress. The manuscript is nearly complete and will be submitted to the journal *Bioelectromagnetics*.

EMF EDUCATION AND TECHNICAL ASSISTANCE PROGRAM

The goals of the Education and Technical Assistance program are to:

- Provide a trustworthy and balanced source of information about potential EMF health risks and mitigation options.
- Provide technical and consultative services to state and local officials, professional organizations, and the public about EMF exposures and health risks thought to be related to EMF.
- Facilitate and maximize opportunities for public and stakeholder input into program projects and goals, and provide support and training to enable stakeholders to use and/or be informed about the research program results.
- Coordinate actions within CDHS, with other California state and local agencies, and with programs sponsored by the Federal Government, other states, and investor-owned and municipal utilities.
- Act as liaison between the Program's SAC and staff by organizing and facilitating meetings and preparing and distributing meeting minutes.
- Provide education and support for stakeholders and the public through the program newsletter and the preparation and distribution of important program materials.

Education and Technical Assistance projects and activities undertaken to achieve these goals are:

- Preparation and distribution of a bimonthly newsletter to inform the SAC and other interested parties of program activities.
- Development and maintenance of a website at <http://www.dnai.com/~emf/> containing fact sheets, project reports, and summaries of the program's activities. This site is being integrated with the CDHS Web site.
- Coordination among the Program, EMF consultant Karl Riley, Southern California Edison, and the California Department of Education for the release of a video and written information about a potential electrical safety issue discovered during the School Exposure Assessment Survey. Southern California Edison donated 1,000 copies of the video to the California Department of Education, which distributed one to each of the state's 1,000 school districts.
- Contribution of information about no-cost and low-cost EMF avoidance (based on the program-supported booklet *EMF Checklist for School Buildings and Grounds Construction*) to the Collaboration for High Performance Schools best practices manual.
- Participation in the California Coalition for Adequate School Housing conference to disseminate information about EMF and the Program.

- Consultation with the CPUC and California utilities on the annual EMF bill staffer.
- Response to public questions about possible EMF health effects. In the year 2000, program staff responded to approximately 600 inquiries, representing about 500 hours of staff time.
- Preparation and updating of fact sheets and other educational materials. Current and planned fact sheets include:
 - short general fact sheet on EMF (completed and updated)
 - long general fact sheet on EMF (completed, update in progress)
 - list of non-utility magnetic field measurement providers (completed)
 - fact sheet on interpreting measurements taken on school campuses (in draft form)
 - frequently asked questions fact sheet about EMF in residential settings (in draft form)
 - frequently asked questions fact sheet about EMF and reproductive outcomes (planned)
- Preparation of non-technical summaries of the various final research reports. Summaries currently in production include:
 - introduction to the video on electrical wiring in schools (in draft form)
 - School Exposure Assessment Survey summary (in draft form)
 - Risk Evaluation Guidelines summary (in draft form)

INCOME AND EXPENSE REPORT

The following two-page spreadsheet shows the financial standing of the California EMF Program. The report indicates both the Program's income and expenses through September 2000, and a budget for the remaining months of the Program.

The financial plan allows for the completion of the program's work by December 31, 2001, as required by the no-cost program extension granted by the CPUC in spring 2000. The report reflects CPUC decision 97-12-021, which allowed all aspects of the Program to be considered "research" starting on March 1, 1999. Because of this, the Education and Technical Assistance and Research funds in this budget have been combined. The budget figures for personnel and operational costs represent the total for both areas, while direct program costs for education and technical assistance are listed separately from other functions of the research program under the line item "Education & Technical Assistance Unit."

CONCLUSION

The project management Gantt chart on the preceding pages displays the process for completing the Program by December 31, 2001. Compared to the Gantt chart submitted with our last progress report, this chart reflects some delays in both the Risk Evaluation and the policy projects, but these delays will not affect our ability to complete the Program's work on time.

Though the production of the first draft of the Risk Evaluation took two months longer to complete than anticipated in our last schedule, that previous schedule left several months of extra time after the Risk Evaluation's completion but before December 2001 in case such delays occurred. For the policy projects, staff decided to take more time for some earlier steps in the revision process to do justice to public comments received, because this would allow the program to streamline future steps towards the projects' completion. For example, the extensive public comments we received on the policy projects required the program to allow more time than originally planned for the contractors to address those comments and modify the reports before sending them for peer review. This extra work before the peer review process saves time in future steps by improving the project drafts submitted to the reviewers, and shortening the time needed to integrate the peer reviewers' comments and finalize the reports. These projects should be completed by the middle of 2001.

Several projects discussed in detail in the Program's last progress report, including the Occupational Exposure Study, the School Exposure Assessment Survey, and the Risk Evaluation Guidelines, are now complete. Other projects, such as the production of the Epidemiology Workshop proceedings, are in press. The Program anticipates completing all research projects within the time and budget that remain.

In addition, we will continue to produce the educational materials needed to make these projects accessible to the general public. A major effort in the coming months will be preparing non-technical summaries of the Risk Evaluation Guidelines, the Power Grid and School Policy Analyses, the miscarriage studies, the School Exposure Assessment Survey, the Occupational Exposure Study, and the Risk Evaluation. We will not be able to complete these and at the same time respond to the many public inquiries that we receive. After consultation with the CPUC staff, the program announced to the stakeholders that we will significantly scale back our responses to telephone questions starting in spring 2001. On the basis of our experience next spring and summer, we will assess before the program ends the impact of not having this resource available. In any case, CDHS would not have had the resources to continue this public response after the program's termination. However, the Program will continue to maintain stakeholder and public involvement until the Program's end.