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**Proceedings of the  
Scientific Workshop on  
the Health Effects of  
Electric and Magnetic Fields  
on Workers**

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**Edited by:**

**PHILIP J. BIERBAUM, M.E.  
JOHN M. PETERS, M.D., Sc.D.**

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**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
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National Institute for Occupational Safety and Health**

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## **WORKSHOP PARTICIPANTS**

---

### **Program Chairs**

---

#### **Workshop Chair**

**Philip J. Bierbaum, M.E.**  
Director, Division of Physical  
Sciences and Engineering  
National Institute for Occupational  
Safety and Health, CDC

#### **Workshop Co-Chair**

**John M. Peters, M.D., Sc.D.**  
Professor and Director  
Division of Occupational and  
Environmental Medicine  
School of Medicine  
University of Southern California

---

### **Plenary Presenters**

---

#### **In Vitro/Cellular Mechanism Studies**

**Stephen F. Cleary, Ph.D.**  
Professor of Physiology and Biophysics  
Department of Physiology  
Medical College of Virginia  
Richmond, VA

#### **In Vivo Studies**

**Larry E. Anderson, Ph.D.**  
Bioelectromagnetics Program Manager  
Battelle Pacific Northwest Laboratory  
Richland, WA

#### **Epidemiologic Studies**

**Gilles P. Thériault, M.D., Dr. P.H.**  
Professor and Director  
School of Occupational Health  
McGill University  
Montreal, Quebec  
Canada

#### **Exposure Assessments**

**T. Dan Bracken, Ph.D.**  
President  
T. Dan Bracken, Inc.  
Portland, OR

#### **Methods for Reducing Exposures**

**William E. Feero**  
President  
Electric Research and Management,  
Inc.  
State College, PA

---

## ***IN VITRO/CELLULAR MECHANISM STUDIES***

---

### **Moderator**

***Janet C. Haartz, Ph.D.***  
Director, Division of Biomedical and  
Behavioral Science, NIOSH,CDC  
Cincinnati, OH

### **Rapporteur**

***Russell E. Savage, Jr., Ph.D.***  
Chief, Experimental Toxicology Branch,  
Division of Biomedical and Behavioral  
Science, NIOSH,CDC  
Cincinnati, OH

### **Presenter**

***Stephen F. Cleary, Ph.D.***  
Professor of Physiology and Biophysics  
Department of Physiology  
Medical College of Virginia  
Richmond, VA

### **Panel Members**

***W. Ross Adey, M.D.***  
Associate Chief of Staff for Research and  
Development  
Jerry L. Pettis Memorial Veterans Hospital  
Loma Linda, CA

***Carl F. Blackman, Ph.D.***  
Research Biologist  
U.S. Environmental Protection Agency  
Research Triangle Park, NC

***Vincent Castranova, Ph.D.***  
Chief, Biochemistry Section  
Division of Respiratory Disease Studies  
NIOSH, CDC  
Morgantown, WV

***Abraham R. Liboff, Ph.D.***  
Professor of Physics and Director of Medical  
Physics  
Oakland University  
Rochester, MI

***Richard A Luben, Ph.D.***  
Associate Professor of Biomedical Sciences  
and Biochemistry  
Division of Biomedical Sciences  
University of California, Riverside  
Riverside, CA

***Karel Marha, Ph.D.***  
Manager, Physical Hazards Group  
Canadian Centre for Occupational Health  
and Safety  
Hamilton, Ontario, Canada

***Mayes L. Swicord, Ph.D.***  
Chief, Radiation Biology Branch  
Center for Devices and Radiological Health  
U.S. Food and Drug Administration  
Rockville, MD

***Mark Tomason, Ph.D.***  
Chief, Cellular Toxicology Section  
Experimental Toxicology Branch  
Division of Biomedical and Behavioral  
Science, NIOSH,CDC  
Cincinnati, OH

---

## IN VIVO STUDIES

---

### Moderator

**Richard W. Niemeier, Ph.D.**  
Director, Division of Standards Development  
and Technology Transfer, NIOSH, CDC  
Cincinnati, OH

### Rapporteur

**Robert W. Mason, Ph.D.**  
Biologist, Document Development Branch  
Division of Standards Development and  
Technology Transfer, NIOSH, CDC  
Cincinnati, OH

### Presenter

**Larry E. Anderson, Ph.D.**  
Bioelectromagnetics Program Manager  
Battelle Pacific Northwest Laboratory  
Richland, WA

### Panel Members

**Charles Graham, Ph.D.**  
Research Psychologist  
Midwest Research Institute  
Kansas City, MO

**Bo Holmberg, Ph.D.**  
Professor  
Department of Toxicology  
National Institute of Occupational Health  
Solna, Sweden

**Joseph M. Lary, III, Ph.D.**  
Research Grants Program Officer  
Office of the Director  
NIOSH, CDC  
Atlanta, GA

**Russel J. Reiter, Ph.D., D. Med. (Hon.)**  
Professor of Neuroendocrinology  
Department of Cellular and Structural Biology  
University of Texas Health Science Center  
San Antonio, TX

**Walter R. Rogers, Ph.D., D.A.B.T.**  
Manager, Biosciences  
Southwest Research Institute  
San Antonio, TX

**Bernard A. Schwetz, D.V.M., Ph.D.**  
Chief, Systems Toxicology Branch  
Division of Toxicology Research and Testing  
National Institute of Environmental Health  
Sciences  
Research Triangle Park, NC

**Thomas S. Tenforde, Ph.D.**  
Chief Scientist  
Life Sciences Center  
Battelle Pacific Northwest Laboratory  
Richland, WA

**Kenneth C. Weber, Ph.D.**  
Chief, Laboratory Investigations Branch  
Division of Respiratory Disease Studies  
NIOSH, CDC  
Morgantown, WV

**Bary W. Wilson, Ph.D.**  
Program Development Manager  
Materials and Chemical Sciences Center  
Battelle Pacific Northwest Laboratory  
Richland, WA

---

## EPIDEMIOLOGIC STUDIES

---

### Moderator

**Gregory R. Wagner, M.D.**  
Director, Division of Respiratory Disease  
Studies, NIOSH, CDC  
Morgantown, WV

### Rapporteur

**David P. Brown, M.P.H.**  
Assistant Chief, Industrywide Studies Branch  
Division of Surveillance, Hazard Evaluations  
and Field Studies, NIOSH, CDC  
Cincinnati, OH

### Presenter

**Gilles P. Thériault, M.D., Dr. P.H.**  
Professor and Director  
School of Occupational Health  
McGill University  
Montreal, Quebec, Canada

### Panel Members

**Patricia Buffler, Ph.D, M.P.H.**  
Ashbel Smith Professor and Center Director  
Southwest Center for Occupational Health  
and Safety  
School of Public Health  
University of Texas  
Houston, TX

**Bonnie Richter, Ph.D**  
Office of Energy Research  
U.S. Department of Energy  
Washington, DC

**Daniel Hoffman, Ph.D.**  
Assistant Director for Science  
Center for Environmental Health and Injury  
Control, CDC  
Atlanta, GA

**Leeka Kheifets, Ph.D.**  
Project Manager of Epidemiology  
Electric Power Research Institute  
Palo Alto, CA

**Genevieve Matanoski, M.D., Dr. P.H.**  
Professor of Epidemiology  
Johns Hopkins University  
Baltimore, MD

**Samuel Milham, Jr., M.D., M.P.H.**  
Section Head  
Chronic Disease - Epidemiology  
Washington State Department of Health  
Olympia, WA

**David A. Savitz, Ph.D**  
Associate Professor  
School of Public Health  
University of North Carolina  
Chapel Hill, NC

**Teresa Schnorr, Ph.D.**  
Chief, Epidemiology 1 Section  
Industrywide Studies Branch  
Division of Surveillance, Hazard Evaluations  
and Field Studies, NIOSH, CDC  
Cincinnati, OH

---

## EXPOSURE ASSESSMENT STUDIES

---

### Moderator

**Lawrence J. Fine, M.D., Dr.P.H.**  
Director, Division of Surveillance, Hazard  
Evaluations and Field Studies, NIOSH,  
CDC  
Cincinnati, OH

### Rapporteur

**William E. Murray, Jr., M.S.**  
Chief, Radiation Section,  
Physical Agents Effects Branch,  
Division of Biomedical and Behavioral  
Science, NIOSH, CDC  
Cincinnati, OH

### Presenter

**T. Dan Bracken, Ph.D.**  
President  
T. Dan Bracken, Inc.  
Portland, OR

### Panel Members

**Joseph A. Bowman, Ph.D.**  
Research Chemist, Radiation Section  
Physical Agents Effects Branch  
Division of Biomedical and Behavioral  
Science, NIOSH, CDC  
Cincinnati, OH

**Maria A. Stuchly, Ph.D.**  
Research Scientist  
Bureau of Radiation and Medical Devices  
Health & Welfare, Canada  
Ottawa, Canada

**Om P. Gandhi, Ph.D.**  
Professor  
Department of Electrical Engineering  
University of Utah  
Salt Lake City, UT

**James M. Smith, Ph.D.**  
Chief, Radiation Studies Branch  
Division of Environmental Hazards and  
Health Effects  
Center for Environmental Health and Injury  
Control, CDC  
Atlanta, GA

**Maija Hietanen, Ph.D.**  
Research Physicist  
Laboratory of Physics  
Institute of Occupational Health  
Helsinki, Finland

**Stanley S. Sussman, Ph.D.**  
Subprogram Manager  
Radiation Studies Program  
Electric Power Research Institute  
Palo Alto, CA

**Kjell Hansson Mild, Ph.D.**  
Researcher  
Division of Occupational Medicine  
National Institute for Occupational  
Health  
Umea, Sweden

**Richard A. Tell, M.S.**  
President  
Richard Tell Associates  
Las Vegas, NV

**Robert M. Patterson, Sc.D.**  
Associate Professor  
Environmental Health Engineering  
Temple University  
Philadelphia, PA

---

## ***METHODS FOR REDUCING EXPOSURES***

---

### **Moderator**

***Laurence J. Doemeny, Ph.D.***  
Deputy Director, Division of Physical  
Sciences and Engineering, NIOSH, CDC  
Cincinnati, OH

### **Rapporteur**

***Alfred A. Amendola, Ph.D., P.E.***  
Deputy Director, Division of Safety  
Research, NIOSH, CDC  
Morgantown, WV

### **Presenter**

***William E. Feero***  
President  
Electric Research and Management, Inc.  
State College, PA

### **Panel Members**

***Howard I. Bassen, Ph.D.***  
Senior Scientist, Electrophysics Branch  
Center for Devices and Radiological Health  
U.S. Food and Drug Administration  
Rockville, MD

***John Bergeron, Ph.D.***  
Physiologist  
Corporate Research and Development  
General Electric  
Schenectady, NY

***James Hoburg, Ph.D.***  
Professor  
Electrical & Computer Engineering  
Carnegie-Mellon University  
Pittsburgh, PA

***David LeGrande***  
Director of Occupational Safety and Health  
Communication Workers of America  
Washington, DC

***Mark A. McClanahan, Ph.D.***  
Health Scientist  
Health Studies Branch  
Center for Environmental Health and Injury  
Control, CDC  
Atlanta, GA

***Tom McDermott***  
Senior Electrical Engineer  
New York Power Authority  
White Plains, NY

***Harley V. Piltingsrud***  
Senior Research Physicist  
Division of Physical Sciences and  
Engineering, NIOSH, CDC  
Cincinnati, OH

***Gregory B. Rauch***  
Project Manager  
Electric Power Research Institute  
Palo Alto, CA

***Ronald Spiegle, Ph.D.***  
Electronics Engineer  
U.S. Environmental Protection Agency  
Research Triangle Park, NC



## **PREFACE**

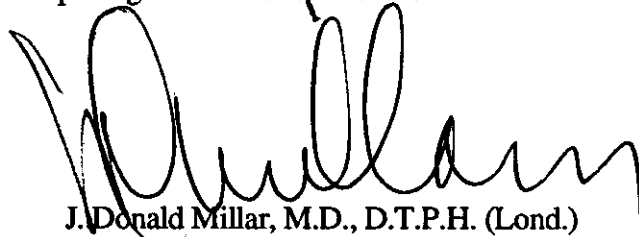
The possibility of adverse health effects from exposure to electric and magnetic fields (EMF) has generated a heated controversy in recent years, “debated” before the public through the national broadcast and print media. The American worker would justifiably be concerned and deserves a clear message on this issue. It is usually the case with environmental exposures that workers are exposed “first and worst,” as potentially hazardous chemicals, materials, and agents are introduced first for industrial purposes, and used in ways that expose workers to much higher concentrations than would generally occur in the community. This is true for EMF among certain occupations in utilities and other industries where frequent, persistent, or high exposures may occur.

The National Institute for Occupational Safety and Health (NIOSH) is the federal research agency charged with “assuring safe and healthful working conditions” for all workers. Towards this end, it is the responsibility of NIOSH to lead in the development of national scientific priorities. In January 1991, NIOSH convened a scientific workshop to develop a research agenda on the health effects of EMF and methods for reducing exposures.

At the workshop, we brought together leading scientists to discuss the relevant aspects of a research agenda and prevention strategies. We endeavored to clarify what is known, and to identify what is not known so as to plan a research agenda that will fill gaps in our current knowledge. In this way, we intend to push forward the availability of knowledge necessary for the protection of workers. We hope this coalescing of expertise will assist the progress of all partners in this field. We need to focus our efforts in evaluating the potential hazards of EMF until we understand the nature and extent of any effects and how to prevent them. Then, we will bring our findings to occupational safety and health professionals, employers, and employees.

This year, NIOSH marks its 20th anniversary. I am delighted that we started this anniversary year with this workshop. It is in the best tradition of the Institute. I hope you will find these Proceedings useful. For those who attended the workshop, this document will serve as a record of the excellent plenary papers presented. For those who were not able to attend, and for others wishing to gain insight into EMF research needs, we trust this text will serve as an excellent reference.

Finally, I wish to thank the Chair and Co-Chair of this workshop, Mr. Philip Bierbaum and Dr. John Peters. Dr. Peters was instrumental in the selection of presenters and the program content; Mr. Bierbaum was responsible for organizing it all. Of course, each of the individual plenary paper presenters, panel moderators and rapporteurs, and panel members made possible this text. I applaud all of these efforts in making the workshop the great success that it was.

A handwritten signature in black ink, appearing to read 'J. Donald Millar', written in a cursive style.

J. Donald Millar, M.D., D.T.P.H. (Lond.)  
Assistant Surgeon General  
Director, National Institute for  
Occupational Safety and Health

## **ACKNOWLEDGMENTS**

In addition to the plenary paper presenters, panel moderators and rapporteurs, and panel members, we wish to thank the following NIOSH employees for their diligent effort in the conduct of this workshop and the preparation of this document: Rosalynd J. Kendall, who served as our administrative coordinator for the workshop and who “did it all”; Maggie A. Ivory and Heather K. Houston, who served as Ms. Kendall’s assistants; Theodore F. Schoenborn, who served as the coordinator for the preparation of this document; Vivian K. Morgan, Janice M. Huy, Charlene B. Maloney, Shirley M. Carr and Thomas E. Zeigler, who served as team members for our printing and publication activities; and Heinz W. Ahlers, Rodger L. Tatken, Jerry W. Newman, Ronald L. Schuler and Rebecca W. Spry, who served as team members in developing the bibliography that was used for the workshop.

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