



THE INTERNATIONAL EMF PROJECT

PROGRESS REPORT 1999-2000

SUMMARY

This fifth progress report for the International EMF Project covers activities and outputs for the period August 1999 to October 2000. The report has been formatted according to scheduled EMF Project activities: scientific reviews; research co-ordination; health risk assessments; harmonization of EMF standards; risk perception and communication; and environmental impacts of EMF. Current details of the EMF Project, its activities and outputs can be found on the home page at: <http://www.who.int/emf/>

An important activity of the EMF Project during this report period was the scientific review of possible impacts of EMF on the environment at a joint WHO/ICNIRP international meeting in Munich 4-6 October 1999. The proceedings have been published by ICNIRP. A summary report is being prepared from the presentations and will be published in a scientific journal. This report will be particularly useful as a reference for environmental impact assessments for major EMF development projects. Research recommendations were made that will be promoted by the Project.

A follow-up scientific review meeting was held in Moscow (20-25 September 1999) to:

- allow a better understanding of studies published in Russian that are not widely available outside these countries;
- provide an opportunity to share the results of these studies more widely;
- discuss the results of studies conducted outside these countries with local scientists;
- better understand the rationale of national EMF standards;
- engage national scientists in the EMF Project's harmonization of EMF standards activities.

A follow-up international scientific meeting was held in China (Xi'an, October 23-26, 2000) for the same reasons as the meeting in Russia, but importantly to progress activities related to the EMF standards harmonization programme. China is in the process of redrafting its EMF standards and has asked WHO for assistance. China is also looking to move towards international standards.

A mid-term scientific review of biological and health effects from exposure to pulsed, low-level RF fields was held in Italy 21-25 November 1999. This meeting updated knowledge gained since the WHO/ICNIRP review in Munich in 1996. The proceedings are being compiled and a summary report is in preparation. The scientific report will concentrate on both the theoretical basis and research results for possible health effects from exposure to pulse modulated RF fields.

Following the recommendations of the International Workshop entitled "Exposure Metrics and Dosimetry for EMF Epidemiology" held 7-9 September 1998 and conducted at the National Radiological Protection Board (NRPB) in the UK, the proceedings were published in Radiation Protection Dosimetry (Vol 83 (1-2, 1999)). These proceedings will help future epidemiological studies ensure that one of their weakest components, exposure assessment, will be considerably

improved. Using the recommendations of this meeting, a WHO/EPRI meeting was held on Epidemiology Exposure Assessment (San Francisco, 14-17 March 2000) to identify the best available protocol for future ELF epidemiological studies. A report of this meeting is being prepared and will be distributed.

Formal health risk assessments by WHO/HQ and IARC have been scheduled over the period 2001 to 2004. The first IARC review to both identify and classify whether static and ELF fields are carcinogenic has been set for 19-26 June 2001. Results of these reviews will be published in the IARC monograph series.

During the period covered by this report, there has also been a concerted effort to define what cautionary approaches are available for mitigation of EMF fields. It has been important to ensure that the science was not undermined by these measures. As a result a WHO backgrounder was published in March 2000 to describe the various approaches and to allow discussion prior to a formal fact sheet being published. An article was also published in Science that expanded on this issue.

Below are more details on the EMF Project activities over the past year.

SCIENTIFIC REVIEWS

Scientific reviews of the literature are conducted for two main purposes: to provide a status report on current knowledge related to possible health effects of EMF; and to identify gaps in knowledge that need further research leading to better health risk assessments. Special meetings have been conducted in countries having large research programmes, but where most of the results are published in their own language (other than English) and so are not widely available for the scientific review process. These meetings also provide the opportunity to allow key scientists to summarize their results so that they can become part of WHO's world wide review process for determining possible EMF health risks.

These meetings also provide an opportunity to engage scientists and program managers involved in the development of standards to be involved in WHO's EMF standards harmonization program.

Eastern Europe

A second international seminar entitled "Problems of Electromagnetic Safety of Human Beings, Fundamental and Applied Research, Development of EMF Standards: Philosophy, Criteria and Harmonization" was held in Moscow from 20-25 September 1999, that allowed Eastern European scientists to discuss their work, particularly as they relate to the development of standards. The meeting also allowed the rationales for current EMF standards in Commonwealth of Independent States (CIS) countries to be further elaborated. The seminar was co-ordinated by the WHO EMF Project in collaboration with Professor Yuri Grigoriev from the Centre of Bioelectromagnetic Compatibility of the Institute of Biophysics (Moscow). Proceedings in both Russian and English have been published by the meeting organisers and are available from Prof. Grigoriev at Fax: +7 095 1903590 or by e-mail at: CEMS.1@g23.relcom.ru.

China

As a follow-up meeting to the very successful meeting held in Beijing, China 4-5 May 1999, a second International EMF Seminar on Electromagnetic Fields was held in Xi'an, China from October 23-26, 2000. This meeting provided further opportunity to discuss the results of Chinese

EMF research and existing standards. The Chinese Government is currently revising its EMF standards and needs an update on international and national standards. This meeting also provided an opportunity for the EMF Project to make closer contact with key scientists and to engage them in the standards harmonization process. The proceedings of the meeting have been published and are available from Dr Cao Zhaojin, Chinese Academy of Preventative Medicine, 7 Panjiayuan Nanli, Beijing, China 100021. Tel: +86 10 6771 9389, Fax: +86 10 6771 9392, e-mail: caozj@126.com. Further information can be obtained on their home page at: <http://www.emfhealth.com/english/>

Intermediate frequencies

The final scientific review of possible biological and health effects from exposure to EMF in the frequency range intermediate to the static and ELF and radiofrequency ranges, i.e. the range 300 Hz to 10 MHz, was held in Maastricht, The Netherlands, 7-8 June 1999. The International Seminar, entitled "Health Effects of Exposure to Electromagnetic Fields in the Frequency Range 300 Hz to 10 MHz", was followed by 2 days of working group meetings. Working groups finalized a summary report giving the current status of possible health effects from exposure to these fields and gaps in knowledge where further research is needed to make better health risk assessments. The summary report of the meeting has been submitted to a scientific journal for publication. The proceedings of all papers have been published jointly by WHO and ICNIRP, and are available from ICNIRP. Further information can be obtained on their home page at: <http://www.icnirp.de>. A fact sheet summarizing the results of this meeting is being prepared and will be published by WHO before the end of 2000.

Psychosocial effects

WHO is completing a fact sheet on hypersensitivity to EMF. This was based on a review of psychosocial consequences of exposure to EMF reviewed at an International Workshop entitled "Electromagnetic Fields and Non-Specific Symptoms" in Graz, Austria 19-20 September 1998 and the results of a European Commission report (Possible health implications of subjective symptoms and electromagnetic field. A report prepared by a European group of experts for the European Commission, DGV. Ed. by U. Bergqvist and E Vogel. Arbete och Hälsa, 1997:19. Swedish National Institute for Working Life, Stockholm, Sweden. ISBN 91-7045-438-8). The fact sheet is being reviewed and will be published by WHO.

Pulsed radiofrequency fields

A mid-term scientific review of possible health effects of low-level pulsed radiofrequency fields was held at the Ettore Majorana Centre for Scientific Culture in Erice, Sicily, Italy, from 21 to 25 November 1999. The purpose of the meeting was to conduct a final review of literature published since the meeting on non-thermal effects of RF fields held in Munich in November 1996. The meeting gave a health status report on low-level pulsed RF field exposure and identified research gaps not found during the Munich meeting that researchers are not currently addressing. This was the final review prior to the formal review process established by the EMF Project where the International Agency for Research on Cancer (IARC) and WHO make assessments of health risk in 2003 and 2004. This has resulted in an updated summary report on possible health effects from pulse modulated, low-level RF fields, that will be submitted to a scientific journal.

UK Expert Committee on Mobile Phones and Health

Dr Repacholi participated as a member of this Independent Expert Committee on Mobile Phones established by the UK Minister for Health. A full copy of the final report is available from the

committee's web site at: <http://www.iegmp.org.uk/IEGMPtxt.htm>. This detailed review of the literature and the recommendations as well as the WHO/ICNIRP RF review in Sicily in November 1999, provided a basis for updating the facts sheet on mobile telephones and base stations. Many of the recommendations from this committee tended to be very precautionary, but addressed most of the concerns that the public had about possible health effects from mobile telecommunications technology.

RESEARCH CO-ORDINATION

Exposure assessment for epidemiology

Following the International Workshop entitled "Exposure Metrics and Dosimetry for EMF Epidemiology" at the National Radiological Protection Board (NRPB) and the proceedings being published ("Exposure Metrics and Dosimetry for EMF Epidemiology," AF McKinlay and MH Repacholi eds, Radiation Protection Dosimetry 83 Nos. 1-2, 1999), a follow-up WHO/EPRI workshop was held in San Francisco from 16-17 March 2000. The recommendations of this workshop and the elements of the protocols developed will be used in an ELF and childhood cancer study to be conducted in Tokyo as well as in the USA, Italy and Germany.

Research Co-ordination Committee Meeting

The next research coordination committee meeting will be held in San Antonio on 13 November 2000. This meeting will be the last for identification of research needs for static and ELF fields since the process for health risk assessment for these fields commences in 2001-2002.

HEALTH RISK ASSESSMENTS

Schedule of assessments

Following agreement with IARC and ICNIRP the schedule for formal reviews of the EMF literature will be as follows:

2001	IARC carcinogen identification and evaluation of static and ELF fields
2002	WHO/ICNIRP health risk assessment of static and ELF fields
2003	IARC carcinogen identification and evaluation of RF fields
2004	WHO/ICNIRP health risk assessment of RF fields

IARC will publish the results of their meetings in the IARC monographs and WHO will incorporate the IARC conclusions into the results of the WHO task group meetings and publish them as WHO monographs. It is anticipated that all reports will be published by 2005.

EMF RISK PERCEPTION, COMMUNICATION AND MANAGEMENT

A large amount of useful information has now been gathered following the international reviews in Vienna in 1997 and Ottawa in 1998. Two monographs are being prepared and have progressed following meetings in Geneva (December 1999, sponsored by the German Government) and a small working group meeting in New York (April 2000). The documents being prepared include:

- A user-friendly handbook published by WHO for governmental and non-governmental organizations, and individuals interested in this topic. The format and language of the text will provide a how-to manual on risk perception and communication on EMF issues. A working group has completed the text which is being formatted for publication, hopefully in late 2000.

- A WHO monograph on risk perception, communication and management. This will be a scientific document containing summaries of current information on this topic as well as recommendations for further research. Such a monograph would normally be used by specialists in the field as a basis for establishing programmes on risk and furthering research in this area. The monograph will include examples from all physical, biological and chemical agents, but will use EMF as a case study. Once an advanced draft has been completed, WHO will convene formal task groups to review the text and complete the document. When the task group has completed its work, WHO will have the monograph language edited prior to publication. It is anticipated this publication will be completed in 2001.

EMF ENVIRONMENTAL IMPACTS

As technology has progressed, levels of EMF in our environment have increased steadily over the past 50-100 years. At specific frequencies, EMF emissions from man-made sources now exceed those from natural fields by many orders of magnitude and are detectable everywhere in the world. Significant increases in environmental EMF levels have resulted from major development projects such as high voltage transmission lines, undersea power cables, radars, telecommunication and broadcast transmitters, and transportation systems. Research has been focused to determine if EMF exposure of humans has any deleterious health consequence. By comparison, influences of these fields on plants, animals, birds and other living organisms have been less rigorously examined. Assessments of environmental impacts of EMF fields is important to:

- Ensure the preservation of balances in natural terrestrial and marine ecosystems, since these directly impact on human life.
- Preserve food supplies by ensuring there are no adverse impacts to fisheries, agricultural animals and plants.

An international seminar, organized by WHO and ICNIRP, and supported by the German Federal Office of Radiation Protection, was held in Ismaning, Germany 4-5 October 1999. It provided a summary of scientific knowledge about any consequences to the environment from man-made sources of EMF in the frequency range 0-300 GHz. Overviews of current knowledge in key areas were presented by a selected panel of recognized specialists. On the day following the seminar, working groups met (6 October 1999) to prepare conclusions and recommendations. The results of the working group meetings has been used to prepare a scientific paper for publication in a scientific journal. This has now been completed and awaits publication. The proceedings of all presentations have been published and are available from ICNIRP. A WHO fact sheet of the seminar results in lay language is being prepared and will be available before the end of 2000.

It is not anticipated that further meetings will be organized on this topic. The main purpose of this activity under the EMF Project is to provide information that specifically addresses environmental impacts of EMF fields. A comprehensive summary report on this topic will have at least two benefits. It will:

- be useful for both governmental and non-governmental institutions when conducting environmental impact assessments, and
- address any public concerns that EMF could be adversely affecting our environment.

HARMONIZATION OF EMF STANDARDS

In November 1998, WHO commenced a process aimed at the harmonization of EMF standards

worldwide. As over 45 countries and 8 international organizations are involved in the International EMF Project, it provides a convenient umbrella and a unique opportunity to bring countries together to develop an agreeable framework for standards. This framework can then be used to better define exposure limits once the EMF Project has completed its assessment of health risks associated with EMF exposure. With active participation by national authorities in the process of assessing health risk and the development of a standards framework, they will feel committed to a harmonized process for standards.

This WHO initiative to harmonize EMF standards is a response to the fact that many countries are considering new EMF standards. Globalization of trade and the rapid introduction of mobile telecommunications worldwide have focused attention on the large differences existing in standards. Differences in the EMF limit values in standards in some Eastern European and Western countries are, in some cases, over 100 times. This has raised concerns about their safety and has led to public anxiety about increasing EMF exposures from the introduction of new technologies.

It will take some years before this activity is complete, but the process will be finalized before formal assessment of EMF health risk assessments are published by WHO and IARC. Thus, the next generation of standards would be able to incorporate this health risk assessment information within the same harmonized standards framework.

Benefits of Harmonized International EMF Standards

Since recent technology uses various parts of the electromagnetic spectrum, there are many benefits to having harmonized standards for EMF exposure. These are listed below:

- Increased public confidence that governments and scientists agree on health risks.
- Reduced debate and fears about EMF.
- Health protection for everyone to the same high level.
- Economic benefits to trade that should be reflected in better health for all.

Elements of Harmonized Framework

In establishing the framework for harmonization of EMF standards, numerous questions will have to be addressed. For example:

- Criteria used to evaluate research results for standards development.
- Detailed requirements for a scientific rationale to support limits.
- Model for developing standards.
- Methods for determining compliance.
- What to do with isolated data points at specific frequencies?
- When research data are absent in particular frequency ranges, how and with what degree of confidence can results be extrapolated to other frequencies or intensities?
- Applicability and extrapolation of animal or cellular studies to humans.
- Should one standard cover the whole frequency range from 0 to 300 GHz?
- Safety factors: should they address scientific uncertainties in the fundamental research or imprecision in the techniques used for exposure assessment and should they also allow for gaps in knowledge?
- Should standards be one or two tiered - i.e. differentiate between occupational or controlled

- exposure and general population or uncontrolled exposure?
- Should social and economic impacts be considered?

Draft Strategy for Standards Harmonization

Protecting populations against potentially hazardous agents is part of the political process so there is no reason to expect that all jurisdictions will choose exactly the same levels of protection. It is accepted and expected that different countries, and even different jurisdictions within a single country, may sometimes choose to provide different levels of protection against environmental hazards, responding to their citizens' wishes.

However, the disparities in EMF standards around the world do not arise from this fact alone. They have arisen in large part from different interpretations of the scientific data that underlie all of the standards and using different philosophies for public health standards development. For example, exposure guidelines in Russia and former Warsaw Pact countries are very different from those in Western Europe and the United States both in the exposure limits themselves, and in the scientific data that these standards are based on. In addition there are great differences in the way scientists in these different regions interpret risk data and the nature of environmental risks. Large differences in EMF exposure guidelines might reflect, in part, deficiencies in communications among scientists between different regions.

Objective

The purpose of this activity is to work towards, and hopefully achieve, international agreement on a framework for developing guidelines on protection of the public and workers from exposure to EMF.

Workplan

Development of the framework will be carried out by working groups formed to address the key components listed above. Working group meetings will be held, generally in conjunction with scientific meetings in key geographical regions that will allow the input of scientists and government officials in those regions.

One goal of setting up the working groups is to enhance the quality of communication among scientists and government officials, in examining the scientific basis for the standards and the assumptions that underlie them.

Working groups will be formed to address the following topics:

WG1: Standard concepts and terminology

WG2: Criteria used to evaluate research results for standards development. Requirements for a scientific rationale to support limits, and a comparative analysis of the different scientific rationales for various standards.

WG3: Model for developing standards. Safety factors: how should they address scientific uncertainties in the research database and imprecision in the techniques used for exposure assessment?

WG4: Should social and economic impacts be considered? How should precautionary approaches be devised if needed?

Draft papers that address components listed above will be prepared and presented to the working groups as a basis for discussion. Working groups will discuss their topics thoroughly and draft recommendations in their report. Drafts will be circulated for comment for approval by representatives of all countries involved in the standards harmonization process.

Schedule of work

The first phase of the work will be the formation of ad hoc working groups at scientific meetings held in key geographical regions around the world. A schedule of scientific meetings has been tentatively arranged as shown below. Further details will be given on the WHO EMF Project web page at: www.who.int/emf/

Scientific conferences are tentatively organized to include working group meetings in key regions.

1. 2nd International EMF Seminar in China: Electromagnetic Fields and Biological Effects: Xi'an, China 23-26 October 2000.
2. WHO EMF Standards Harmonization Meeting: Brooks Airforce Base, San Antonio, Texas 13-14 November 2000
3. WHO/Peru Government regional seminar: Bioeffects and EMF Standards Harmonization, Lima, Peru 7-9 March 2001
4. WHO/Israel Government seminar: Bioeffects and EMF Standards Harmonization, Israel, 26-29 March 2001
5. WHO EMF Standards Harmonization regional meeting, Bulgaria 30 April - 4 May 2001
6. WHO EMF Biological Effects and Standards Harmonization regional meeting, South Korea October 2001 (being finalised)

Activities to Date

The WHO initiative for harmonizing EMF standards worldwide was formally launched at a press conference during its first meeting in Zagreb, Croatia in November 1998. Over 21 countries were represented at the initial meeting: Australia, Austria, Canada, Croatia, Czech Republic, Finland, France, Germany, Hungary, India, Italy, Japan, Netherlands, New Zealand, Poland, Russian Federation, Slovenia, Sweden, Switzerland, United Kingdom, United States of America. Each country provided details of their current standards or at least what was being used as informal guidance and what was intended in the future. WHO has published the minutes of this meeting and they are available on the home page or by contacting WHO (Reference: "Inaugural Roundtable on World EMF standards harmonization." Minutes of meeting 18 November 1998, Zagreb. Publication WHO/SDE/OEH/99.4, Geneva: World Health Organization 1999).

To provide greater interaction with Russian and Chinese scientists, and to discuss the results of their studies and how they develop standards, two meetings have been held in Moscow, Russia (1998 and 1999) and two meetings in China: Beijing (May, 1999) and Xi'an (23-26 October 2000). Engaging scientists from these countries is very important since many of the studies have been published in Russian or Chinese and are not easily available to the wider scientific community. Results obtained from scientists in these countries must be considered when global standards are developed.

The second EMF standards harmonisation meeting was held during a series of meetings on

biological and health effects of pulsed RF fields in Erice, Sicily, Italy, 21-27 November 1999. The standards harmonization meeting was on 27 November 1999 and the minutes have been published and are available on the home page. At this meeting, topic areas for working groups have been developed and will be progressed prior to the third meeting to be held in San Antonio on 15 November 2000.

ICNIRP and IEEE met on 12 June in Munich during the BEMS meeting in order to discuss differences in their standards and to set an agenda for reducing these differences. The next meeting will be held in San Antonio during the week of 13-17 November 2000.

To focus discussion on eastern European standards, a meeting will be held in Bulgaria 30 April to 4 May 2001. Working group meetings will be held to discuss in detail scientific rationales, methods for developing standards and the concept of safety factors.

It is also anticipated that other working group meetings will be held at times convenient to meetings being held in various countries.

EMF PROJECT MEETINGS HELD DURING THE YEAR

Meetings September 1999 to July 2000

Seminars and meetings supported by the EMF Project to assist national authorities requiring information about EMF-induced health effects and updates on progress of Project activities and outputs are given below:

- 2nd International Conference: Problems of Electromagnetic Safety of The Human Being; Fundamental and Applied Research. Development of Standards: Philosophy, Criteria and Harmonization. 20-25 September 1999, Moscow, Russia.
- Italian Radiation Protection Society meeting, Naples 28 September to 1 October 1999.
- International meeting on EMF Environmental Impacts. 4-6 October 1999 Munich, Germany.
- Biological Effects, Health Consequences and Standards for Pulsed RF Fields. 21-25 November 1999, Erice, Sicily, Italy.
- Harmonization of EMF Standards meeting. 27 November 1999. Erice, Sicily, Italy.
- Symposium on EMF, 19 May 2000, Tokyo, Japan
- 4th International Workshop on Non-Ionizing Radiation. 22-25 May 2000, ICNIRP/WHO, Kyoto, Japan.
- Conference on Radiofrequency EMF: Effects on health. European Parliament, Brussels 29 June 2000.
- UNESCO Seminar On Cellular Mechanism Of Beneficial And Harmful Effects Of Electromagnetic Fields: Yerevan, Armenia, 24 September to 3 October 2000
- Second International EMF Seminar in China: Electromagnetic fields and biological effects. Xi'an China 23-26 October 2000

Future meetings

- IBC UK Conference: Mobile telephones- is there a health risk? London 9-10 November 2000
- WHO EMF Research Coordination meeting. San Antonio, USA. 13 November 2000
- WHO EMF Standards Harmonization meeting. San Antonio, USA. 15 November 2000
- EMF bioeffects and standards meeting. Bulgaria 30 April-4 May 2001

See the web site for further details

ADMINISTRATION

Role of WHO

While WHO established the International EMF Project in 1996 and defined the activities and workplan, its role is to merely to act as the secretariat to coordinate, facilitate and implement the Project. Neither Dr Repacholi or any other staff member of WHO can be a member of any of the EMF Project working groups. WHO staff act to facilitate consensus agreements on conclusions and recommendations of international scientific groups who have the necessary range of expertise and diversity of opinion.

The international EMF scientific reviews held in Munich (1996), Bologna (1998), Maastricht (1999), Ismaning (1999) and Erice (1999) were conducted in conjunction with ICNIRP (WHO's formally recognized NGO for NIR protection). All such review meetings are open to any scientist who wants to attend. However, only independent (non-industry) scientists could be working group members to arrive at the final conclusions and recommendations. WHO publishes WG conclusions and recommendations in scientific peer-review journals to ensure that the information is made available to as wide an audience as possible. The only reason that WHO staff members are authors is because the scientific journal requires a contact authority and authors. In this case the WHO authors are noted as editors who compiled the manuscripts for the WGs. All WG members are noted in the manuscript with WHO staff members as members of the secretariat only.

All publications by WHO staff members for the EMF Project are reviewed by the Project's International Advisory Committee; the oversight Committee composed of representatives of the 45 national authorities, 8 international agencies and WHO collaborating centres. Final approval of all publications is given by senior WHO management.

Once a scientific review is completed WHO uses the conclusions and recommendations in its information for national authorities and the public. This information is usually published as WHO Fact Sheets prepared by WHO's Information Services and approved by the Director General's Office.

All WHO staff members adhere to the text of agreed documents when giving presentations. Personal opinions cannot be part of a presentation if given on behalf of WHO.

Funding

Over the past year there have been questions raised as to the funding sources of the EMF Project. To respond to these questions, a summary of funding sources and conditions are given below. There are very strict requirements for WHO to receive funds for extrabudgetary projects, such as the EMF Project. For most projects, WHO receives funds from member states for specified activities. Under certain circumstances, WHO can receive funds from an industry association that has been reviewed by WHO's Legal office. WHO cannot, in general, directly receive funds from an individual company that has or is perceived to have, a conflict of interest with the project intending to receive funds. In addition, there is a special committee to provide further review of funding from industry.

All contributions and accounting are strictly audited by WHO. The EMF Project has adhered to all the requirements placed on it by WHO and will continue to do so until the Project concludes

in 2005.

Personnel

During the period from October 1998 to December 1999, Dr Tony Muc, from Toronto, Canada, has been assisting with the EMF Project activities. In addition Dr Kjell Hansson-Mild assisted with the completion of the Project activities from 27 September to end of December 1999. Prof. Ken Foster worked from January 2000 for the Project during his sabbatical leave until August 2000. Additional scientific staff are being recruited to assist with the ever increasing demands on the EMF Project. These should be in place by the end of 2000.

Home page

WHO's home page and e-mail addresses have changed to a newly created domain from ".ch" for Switzerland to ".int" for international. Although both addresses will be valid for some extended period, the EMF Project home page is now at <http://www.who.int/emf/>. The WHO EMF home page provides:

- Details of the organization and scientific structure of the Project
- Schedule of activities and outputs
- Update on current events
- Copies of press releases and fact sheets in several languages
- Reports of IAC and scientific meetings, publications and their availability, and details of future meetings.

EMF PROJECT PUBLICATIONS

Brochure

An extensive booklet on Electromagnetic Fields was drafted for the WHO European Regional Office. It is written for the lay public and local authorities, and was published in early 1999. This booklet gives details on the physical characteristics and biological effects of EMF, standards and protective measures, and is presented in a glossy format with many colour pictures and diagrams for ease of comprehension. Copies can be ordered directly on the web site at: www.who.dk/environment/pamphlets or from the Chartered Institute of Environmental Health, Chadwick Court, 15 Hatfields, London SE1 8DJ, UK.

Fact Sheets

The following WHO Fact Sheets concerning EMF have been published or are being drafted:

- Electromagnetic Fields and Public Health: The International EMF Project. WHO Fact Sheet #181 Oct. 1997, revised May 1998.
- Electromagnetic Fields and Public Health: Physical Properties and Effects on Biological Systems. WHO Fact Sheet #182 Oct. 1997, revised May 1998.
- Electromagnetic Fields and Public Health: Health Effects of Radiofrequency Fields. WHO Fact Sheet #183 Oct. 1997, revised May 1998.
- Electromagnetic Fields and Public Health: Public Perception of EMF Risks. WHO Fact Sheet #184 Oct. 1997, revised May 1998.
- Electromagnetic Fields and Public Health: Mobile Telephones and their Base Stations. WHO Fact Sheet #193, revised June 2000.
- Video Display Units (VDUs) and Human Health. WHO Fact Sheet #201 July 1998

- Electromagnetic Fields and Public Health: Extremely Low Frequency (ELF). WHO Fact Sheet #205 November 1998.
- Electromagnetic Fields and Public Health: Radars and Human Health. WHO Fact Sheet #226 June 1999.
- Electromagnetic Fields and Public Health: WHO Backgrounder on Cautionary Policies. March 2000
- Electromagnetic Fields and Public Health: EMF Hypersensitivity. WHO Fact Sheet (in preparation)
- Electromagnetic Fields and Public Health: Guidance on protection of the public. WHO Fact Sheet (in preparation)
- Electromagnetic Fields and Public Health: EMF Intermediate Frequencies and Health. WHO Fact Sheet (in preparation)
- Electromagnetic Fields and Public Health: Environmental Impacts of EMF. WHO Fact Sheet (in preparation)

Many published Fact Sheets are now available in Bulgarian, Dutch, English, French, German, Hebrew, Italian, Japanese, Russian, and Spanish. Translation into Chinese and Arabic is currently in progress. Translation into other languages would be considered if national authorities could assist. WHO fact sheets are available on the Project home page.

Press Releases

The following press releases have been published by WHO on the Project:

- WHO Launches New International Project to Assess Health Effects of Electric and Magnetic Fields. Press release WHO/42, 4 June 1996.
- Electromagnetic fields: Experts Met in Vienna to Assess Public Perceptions of Risks. Press release WHO/75, 23 October, 1997.
- Health Effects of Electromagnetic Fields: WHO Recommends Research Priorities. Press release WHO/95, 19 December 1997.
- Scientists Meet in Moscow to Discuss Adverse Effects of Electromagnetic Fields. Press release WHO/38, 20 May, 1998.
- WHO Launches an Initiative to Harmonize Electromagnetic Field Standards Worldwide. Press release WHO/88, 17 November 1998
- More information necessary to establish health effects of mobile phones. Press release WHO/45, 28 June 2000.

Further details can be obtained from the Programme Manager, Health Communications and Public Relations, WHO, Geneva, Tel: +41 22 791 2532, Fax: +41 22 791 4858. All WHO press releases can be obtained on the Internet on the WHO HOME PAGE <http://www.who.int/>.

WHO EMF Research Agenda

- WHO's Agenda for EMF Research WHO/EHG/98.13

Project Reports

- Progress Report (1995-1996) WHO/EHG 96.19
- Progress Report (1996-1997) WHO/EHG 97.19
- Progress Report (1997-1998) WHO/EHG/98.18

- Progress Report (1998-1999) WHO/SDE/OEH/99.9

Minutes of Research Co-ordination Meetings

- First Research Co-ordination Committee meeting (4-5 December 1997), WHO/EHG/98.14
- Second Research Co-ordination Committee Meeting (7-8 Dec. 1998) WHO/SDE/OEH/99.3.
- Third Research Co-ordination Committee Meeting (26 November 1999) WHO/SDE/OEH/00.1

Minutes of EMF Standards Harmonization Meetings

- Inaugural meeting EMF Standards Harmonization (18 November 1998) WHO/SDE/OEH/99.4
- Second meeting EMF Standards Harmonization (27 November 1999) WHO/SDE/OEH/00.3

Minutes of International Advisory Committee meetings

- Minutes: First International Advisory Committee meeting (30-31 May 1996) WHO/EHG/96.14
- Minutes: Second International Advisory Committee meeting (30-31 May 1997) WHO/EHG/97.14
- Minutes: Third International Advisory Committee meeting (25-26 May 1998) WHO/EHG/98.17
- Minutes: Fourth International Advisory Committee meeting (3-4 June 1999), WHO/SDE/OEH/99.12

Meeting Proceedings

- Non-Thermal Effects of RF Electromagnetic Fields. R Matthes, JH Bernhardt and MH Repacholi (eds) Proceedings of Munich meeting, November 1996. ICNIRP Pub. 3/97. From: ICNIRP C/- Bundesamt für Strahlenschutz, Institut für Strahlenhygiene, Ingolstädter Landstraße 1, D-85764 Oberschleißheim, Germany. Tel:+49 89 31603288, Fax:+49 89 316 03289, E-mail: RMatthes@bfs.de
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FOR FURTHER INFORMATION:

Visit the International EMF Project World Wide Web site at: <http://www.who.int/emf/>

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