WHO’S INTERNATIONAL EMF PROJECT
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## Abstract

With growing concern being expressed that exposure to electromagnetic fields (EMF) may cause various health effects and that everyone in the world, both in developed and developing countries, is now subjected to EMF from manmade sources, WHO established the International EMF Project in 1996 to move towards a resolution to this issue.

Briefly the International EMF Project provides: a coordinated international response to the concerns about possible health effects of exposure to EMF; assesses the scientific literature and makes status reports on health effects; identifies gaps in knowledge needing further research to make better health risk assessments; encourages a high quality, focused research programme to fill important gaps in knowledge; incorporates research results into WHO Environmental Health Criteria monographs, in which formal health risk assessments of exposure to EMF will be made; provides information on risk perception, risk communication and risk management as they apply to EMF; provides advice and publications to national authorities on EMF issues; and facilitates the development of internationally acceptable standards for EMF exposure. This presentation provides an update of activities and outputs for the International EMF Project.

## International EMF Project

WHO established the International EMF Project to assess health and environmental effects of exposure to static and time varying electric and magnetic fields in the frequency range 0 - 300 GHz. The Project commenced at WHO in 1996 and is scheduled for completion in about 2005. It has been designed to follow a logical progression of activities and produce a series of outputs to allow improved health risk assessments to be made and to identify any environmental impacts of EMF exposure.

The ultimate objectives of the Project are to provide sound advice to national authorities on how best to manage the EMF issues, and to complete health risk assessments that will lead to the development of an international consensus on exposure guidelines. Details on the EMF Project are available on the home page at: http://www.who.ch/emf/. An overview of the complete EMF Project is shown in figure 1.

## Scientific reviews

WHO, through its International EMF Project, has recently conducted in-depth international reviews of the scientific literature on the biological and health effects of exposure to radiofrequency (RF), intermediate frequencies as well as static and extremely low frequency (ELF) fields. These reviews were conducted with the purpose of identifying:

1. health effects that can be substantiated from the literature, and
2. biological effects that are suggestive of possible health effects, but require further research to determine if exposure to EMF at the low levels of exposure normally encountered in the living and working environment has any impact on health.

The results of these reviews have been published (Repacholi, 1998; Repacholi & Greenebaum, 1999; Litvak et al. 2001 in press). Research still needed to fill these gaps in knowledge form the WHO EMF Research Agenda that is available on the EMF Project home page or from WHO.

The proceedings of all papers from the scientific review process have been published jointly by WHO and ICNIRP, and are available from ICNIRP. Fact sheets
summarizing the results of these meeting are also published by WHO. Having completed the initial international scientific reviews, WHO is now urging EMF funding agencies world wide to give priority to this research, if it is their intention to obtain results that will assist both WHO and the International Agency for Research on Cancer (IARC) to make better health risk assessments.

Health risk assessments

Both WHO and IARC have already established a timetable for assessing health effects of EMF fields. In June 2001 IARC conducted a meeting to formally identify and evaluate the evidence for carcinogenesis from exposure to static and extremely low frequency (ELF) fields. The review found that there was sufficient evidence from the childhood leukaemia studies to conclude that ELF magnetic fields are a "possible human carcinogen", IARC will publish the results of this meeting in the IARC Monograph Series later in 2001. A WHO fact sheet describing this result will be published by WHO in September 2001.

Figure 1: A schematic outline of the activities and outputs of the International EMF Project.

EMF risk perception, communication and management

International seminar were held in Vienna (October 1997) and Ottawa (September 1998) to discuss application of the principles of risk perception and risk management to EMF fields. The seminars were followed by working group meetings to progress draft report on this topic. The proceedings of the Vienna seminar
published by ICNIRP (1998) and the Ottawa meeting were published by WHO in 1999. From these reviews there will be publications by WHO in the form of a monograph and a Handbook. Terms of reference for the monograph are as follows:

?? Intended for use by governmental and non-governmental authorities, as well as by individuals seeking further information about this topic.

?? To foster a better understanding of governmental, non-governmental, and individual views on EMF issues, how they can be better communicated, and how fruitful resolution of disagreements can be fostered.

?? Provide an easily readable overview of the characteristics and underlying assumptions of peoples’ perceptions of EMF risk, differences between scientific, governmental and popular views, and why these occur. Theoretical concepts of risk perception and risk communication will be presented and explained as necessary to provide context and understanding.

?? Be practical and provide sufficient information for agencies and organizations to examine their current approaches to EMF and to design better and more effective information and risk management programmes. Information provided should be “user friendly” and “menu-driven” (e.g. through extensive indexing) where possible.

Its information will be useful to individuals and capable of helping them better understand the process of scientifically-based risk assessment, the approaches and assumptions involved, and their reliability. The monograph should be completed in 2002.

The Handbook will be published towards the end of 2001 and will be a user-friendly, how-to publication, with practical information for EMF program managers who need basic information on EMF risk perception, communication and management.

Both the Monograph and the Handbook publications will be available through the EMF Project at WHO.

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 are 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 has been prepared and will be available before the end of 2001.

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.

Further Reading

2. Litvak E, Foster K R and Repacholi M H, Health Consequences of Exposure to electromagnetic fields in the frequency range 300 Hz to 10 MHz, Bioelectromagnetics, in press.


**Fact Sheets**

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

- 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.

**Press Releases**

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


All press releases are available in English and French, and some are available in other languages, particularly the language of the city in which the release was issued. 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/.