THE INTERNATIONAL EMF PROJECT

Minutes of the 8th International Advisory Committee meeting
9-10 June 2003
Geneva, Switzerland

Dr Michael Repacholi, WHO Co-ordinator, Radiation and Environmental Health welcomed the participants to the Meeting of the International Advisory Committee of the WHO International Electromagnetic Fields Project. Dr Hilary Walker (UK) was elected chairman and Dr. Tan The Phua (Singapore) was elected vice chairman.

Dr Repacholi then presented a progress report, outlining some of the highlights of the past year. These included publication of the WHO Handbook 'Establishing a Dialogue on Risks from Electromagnetic Fields', upgrading the project WebSite, conducting a scientific workshop 'Adverse Temperature Levels in the Human Body', meetings of scientific advisory groups for the Environmental Health Criteria (EHC) for Static Fields, and the Neurodegenerative Disease Chapter for the EHC on Extremely Low Frequency EMF (ELF EMF). Dr Repacholi announced that the Standards Harmonization Meeting, originally planned for May 2003 in Guilin, China - postponed due to the SARS outbreak - has been rescheduled for October 13 - 17 2003 in Guilin.

Dr Leeka Kheifets, Head, WHO Radiation Programme, presented an update on the EHC for ELF EMF. This is intended as a comprehensive assessment following the WHO IARC evaluation of ELF EMF as a Group 2B carcinogen and will include both cancer and non-cancer adverse health effects. The EHC was to include Static Fields but a review of the literature revealed an extensive data base for static fields themselves and it was decided to develop separate EHCs for ELF and Static Fields. In addition to adding hazard identification for non-cancer health effects of ELF, the EHC will review evidence of dose response and exposure assessment to support risk characterisations in a risk assessment. Operationally this is conducted through scientific working groups meeting on specific topics and presentation before a WHO Task Group. Topics for the working groups include neurodegenerative diseases, cardiovascular effects, childhood leukaemia, behaviour and cognitive aspects, and reproduction as well hypersensitivity, methodologies, and policy.

Dr Eric van Rongen presented an update on the Static Fields EHC. A working group meeting was held in the Netherlands in November 2002. Peer-reviewed scientific publications will be appraised and those meeting agreed-upon inclusion criteria (e.g. pure static field rather than gradient fields or static field in combination with continuous wave fields, adequate dosimetry and experimental design) would become part of the EHC. Primary and secondary reviewers were assigned to each of 32 categories of papers.

Report on NIR activities from collaborating institutions and international organizations
Dr Repacholi then invited reports from WHO collaborating institutions. International agencies and collaborating organizations emphasized research programs underway.

These tend to be focusing on:

- Physiological/biological research, e.g. cellular studies
- Occupational exposures, particularly in the telecommunications and Defense sectors
- Epidemiological studies of cell phone exposures

International Committee for Electromagnetic Safety (ICES)
Ralf Bodemann reported that a major goal of ICES standardization is facilitation of international standards harmonization, (e.g. closer cooperation with ICNIRP) in an open, transparent, and consensus oriented process where participation of all interested parties is welcome. In 2002, the IEEE standard C95.6 was published. It included a detailed procedure to derive reference levels from limit values. The basic restrictions in the present draft of the revised RF standard are in agreement with those of ICNIRP. Other current activities include a Recommended Practice for an RF safety program.

National Radiological Protection Board, UK (NRPB)
Dr Alastair McKinlay reported that the NRPB is a WHO collaborating organization responsible for providing advice to the UK Government, conducting research and providing technical services. With effect from 1 April 2004, it is intended that NRPB will become part of the UK Health Protection Agency. Among various activities, NRPB is currently concluding a 4-year pilot study of occupational RF exposures, an extension to the national UK childhood cancer study investigating the characteristics of homes with higher than 'normal' power frequency magnetic fields, and ELF field assessment for a UK national adult brain tumour study. NRPB has published a Draft Consultation Document, which proposes the adoption of the ICNIRP Guidelines in the UK and further aspects of precaution for EMF exposures. NRPB is also carrying out work under the Mobile Telecommunications and Health Research Programme, UK (MTHR). Alastair McKinlay reported that this involves studies of micro- and pico-cell base stations in support of measurement techniques for emerging technologies. Biological studies on behaviour in mice are also being carried out under this programme. The attention of the delegates was drawn to an International Experts Workshop that NRPB had organized in the UK on behalf of ICNIRP and WHO on Weak ELF Electric Field Effects. The Proceedings of this Workshop will be published in the journal 'Radiation Protection Dosimetry' by the end of 2003.

International Commission on Non-Ionizing Radiation Protection (ICNIRP)
Dr Alastair McKinlay reported that ICNIRP, a WHO collaborating organization, conducts activities in a broad range of the frequency spectrum. It is currently completing reviews of the literature on ELF epidemiological studies as well as ELF biology and physics. Reviews of RF epidemiology, biology and physics have also commenced. The attention of the delegates was drawn to the International Non-Ionizing Radiation Workshop that ICNIRP has organized in collaboration with WHO and an URSI Symposium, to be held in Seville, 20-22 May 2004 (see http://www.icnirp.org).

National Institute of Environmental Studies, Japan
Dr Michinori Kabuto reported that a report on a population-based case control study is available on their WebSite. In general, the data do not exclude an increased risk for childhood leukemia

when the average exposure is above 0.4 μT. A follow-up meeting on this study is to be held in Japan this autumn. The Institute is also conducting assessments of individual exposure from domestic appliances.

North Atlantic Treaty Organization (NATO)
Dr Patrick Mason reported that a revision of the STANAG on medical overexposures has raised the E-field limit from 100mV/m^2 to 200mV/m^2.

United States Air Force (USAF)
Dr Patrick Mason reported that USAF is involved in 27 ongoing research projects. This wide-ranging activity includes studies of biomarkers for RF exposure, effects on the Blood Brain Barrier and development of a personal exposure dosimeter.

International Electrotechnical Commission (IEC)
Rémy Baillif reported that IEC/TC106, a Technical Committee concerned with Standards for Measurement and Calculation Methods for the assessment of EMF associated with human exposure, was developing a procedure to measure the Specific Absorption Rate (SAR) in the human head from wireless communication devices in the frequency range of 300 MHz to 3 GHz. Other projects are conducted on fields surrounding base stations.

International Telecommunications Union (ITU)
John Collins reported that ITU is interested in occupational exposures to RF and the development of guidance to comply with telecommunications industry standards. An emerging issue is the allocation of 2 – 5 GHz bands to cellular phones.

International Radioscience Union (URSI)
Dr Bernard Veyret reported on the Union's activities, especially as they relate to Commission K on electromagnetism and biology (one of the ten commissions of URSI). Currently they are participating in the International Symposium to be held jointly with ICNIRP in Seville, Spain (May 2004). URSI publishes a peer-reviewed journal, the Radioscience Bulletin.

European Committee for Electrotechnical Standardization (CENELEC)
Dr Georges Goldberg reported that CENELEC is involved in the development of standards for measuring the emissions from products, especially those specified in mandates from the European Commission.

National concerns and key issues
Participants from each country and organisation tabled written reports at the meeting. There were 23 country presentations. Participating countries focused on the development of standards, harmonising standards internationally, and public concerns associated particularly with powerlines and cell sites from which the following general themes emerged:

- Public concern has generally shifted from power frequency to mobile communications
- Communication is a valuable tool for enabling technologies
  - Participation in public forums aids siting decisions and construction
  - Such programs reduce rather than increase anxiety and concern
  - Outreach programs generally reduce the number of inquiries
- Measurements around base stations are consistently below guidance levels

There appeared to be only minor concerns associated with other exposures, including cell phones. Provision of and access to information was most effective in reducing concerns among members of the public and community groups. This information also included the benefits of electricity and telecommunications as well as a discussion of concerns and possible health issues.

Strategies included:

- Provision of pamphlets, fact sheets
- Industry and public consultation in developing standards, guidelines and legislation
- Mandatory of voluntary consultation by industry with affected communities
- Information on WebSites and available in hardcopy
- Prompt and full responses to public queries
- Provision of results from monitoring data
- Provision of SAR values to users
- Provision of a database of (accidental) overexposures and complaints of illnesses associated with exposures

Occupational exposures appear to be emerging as an area of concern, particularly for those using cell phones or using EMF therapeutically such as physiotherapists.

Research review of the past year
Dr Lawrence Goldstein (WHO) presented a brief overview of studies by Utteridge et al. (lymphomagenesis in transgenic mice), Hardell et al. (brain tumour incidence in users of analogue cell phones) and Salford et al. (neural damage in brain) as examples of the continuing controversies surrounding studies of purported biological effects of RF radiation. Dr Goldstein advised that none of the studies published over the past year have identified any additional or previously unrecognised health effects. There is still no conclusive evidence of EMF causing adverse health effects. Some new approaches have been introduced; some controversial areas remain particularly in cellular responses and genomics; and there is still a need for more research, particularly into RF and children.

Following this presentation Dr Walker adjourned the meeting until Tuesday, June 10, 2003.

Tuesday 10 June 2003

Dr Walker called the meeting to order.

Precautionary Approaches to ELF and RF
Dr Leeka Kheifets (WHO) presented an update on the document "Precautionary Framework for Public Health Protection" which is being developed by WHO staff in the Radiation Programme. Comments from 18 participants followed on a wide range of aspects of the Framework. In summary, there was general support for the framework approach but there is work needed to clarify and improve the text. The framework is intended to provide leadership and guidance on public health risks from noncommunicable diseases, communicable diseases, and hazardous substances as well as electromagnetic fields. Case studies will include biological and chemical risks as well as physical/radiation risks. WHO staff noted the comments and will consider their inclusion in the revised document.

Review of the document "Framework for Developing EMF Standards"
The meeting discussed the Framework in detail and agreed on amendments to wording and moved the development of the text along significantly. The principles and concepts had been previously agreed through several rounds of consultation. It was noted that harmonising standards for exposure would imply harmonised standards for topics, such as measurement methodologies, instrumentation and calibration, to be effective.

Model legislation
Following lunch, Dr Tom McManus presented a WHO-initiated proposal to draft a document on model legislation for protecting human health. This project is only in its initial stages and Dr McManus invited written comments of the IAC delegates to aid him in his task. There was a short discussion on the form that such a paper could take and the sort of questions that may be posed within it.

Draft Fact Sheets
Dr Repacholi then invited comment on five draft WHO Fact Sheets:

- **Effects of EMF on the Living Environment**: This fact sheet was first drafted some years ago and has already been through extensive consultation. A number of comments for correction and clarification were made but no substantive changes were recommended.
- **Electromagnetic Hypersensitivity**: This fact sheet had also been drafted some years ago but required significant redrafting as there had been research and other developments since the first draft that needed to be incorporated. The evidence for the existence of this condition was weaker than when the fact sheet had been drafted so changes needed to reflect this.
- **Intermediate Frequencies:** A number of changes will be incorporated and the recently published ICNIRP guidelines for these frequencies also needed to be included.
- **Medical Response to RF Overexposure:** Comments clarifying a number of points will be included in a redrafted fact sheet. The fact sheet covered cellular level effects well but will be extended to include whole body exposures. It was considered an important paper, particularly for occupational physicians.
- **Microwave Ovens:** Only minor corrections and clarifications were made to this fact sheet and it will be finalised by WHO and published on the EMF project WebSite within a few months.

The draft Fact Sheets were returned to staff for further revision.

The Advisory Committee was informed of the updated EMF Project WebSite and was asked to comment on the value of the current web-based research database. The next meeting of the IAC was announced for Istanbul, Turkey for June or July 2004.

There being no other business, Dr Repacholi thanked the participants and Dr. Walker adjourned the meeting.