

**Hotel Park Inn, Alexanderplatz, Berlin, Germany
Thursday 19 and Friday 20 June 2008**

MEETING MINUTES

The thirteenth meeting of the World Health Organization (WHO) International Electromagnetic Fields (EMF) Project International Advisory Committee (IAC) was opened by Dr Emilie van Deventer on behalf of WHO. After welcoming more than fifty delegates from the participating Member States, collaborating institutions and centres, she expressed sincere thanks to the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) for their kind invitation to Berlin for this meeting. This enabled delegates' cost-effective participation in the IAC and the final Conference discussing the results of the German Mobile Phone Health Research Programme (DMF, SSK Statement 2008). All participants thanked the staff of the German Federal Office for Radiation Protection (BfS) for their highly efficient and friendly organisation of both meetings in such a well-appointed venue.

The gathered delegates elected Dr Colin Roy (ARPANSA, Australia) as the Chairman, with Dr Michel Israel (National Institute for Public Health, Bulgaria) as Vice-Chairman for the meeting. After adoption of the slightly amended agenda, the delegates representing 33 diverse organisations introduced themselves.

Dr van Deventer particularly welcomed some new faces to the IAC and used her introductory report to set out the background and structure of the project. Most importantly, she set the aims and objectives of the EMF Project into the context of the WHO's Medium-Term Strategic Plan (2008 - 2013) (Objective 8) and core functions.

“To promote a healthier environment, intensify primary prevention and influence public policies in all sectors so as to address the root causes of environmental threats to health.”

To achieve this strategic objective WHO outlines six key activities. The most important features of the EMF project contribute significantly towards two of these (paraphrased):

- ***“Evidence-based assessments made, and norms and guidance formulated and updated on major environmental hazards to health”***

and

- ***“Technical support and guidance provided to Member States for the implementation of primary prevention interventions that reduce environmental hazards to health, enhance safety and promote public health, including in specific settings and among vulnerable population groups”***

Many of the activities of the Project are well underway and two important outputs have been delivered in the last two years. These were the WHO publications in the Environmental Health Criteria series on *Static Fields* (WHO EHC 232, 2006) and *Extremely Low Frequency Fields* (WHO EHC 238, 2007). The third and final major document is the EHC publication on Radio Frequency

(RF) EMFs. This publication is extremely important to the IAC participants and many others. However, it will only be finalized after the hazard identification relating to carcinogenicity of RF radiation by the International Agency for Research on Cancer (IARC). IARC has received requests for RF radiation to be included in their priority action plan (<http://monographs.iarc.fr/ENG/Meetings/index.php>), but it will not proceed until the overall INTERPHONE study results, combining data from all 13 participating countries, are published. This study, coordinated by IARC, was designed as a retrospective, case-control epidemiological study into the incidence of brain and neck tumours (e.g. acoustic neuromas, gliomas and meningiomas) and the use of mobile phones. Other analyses that will be evaluated with these IARC outputs are in progress. In particular, the International Commission for Non-Ionizing Radiation Protection (ICNIRP) will publish a review of the Health Effects of RF in 2009, which was commissioned by WHO.

The full report presenting the activity in 2006 and 2007, along with all other written outputs of the Project are available for download from the WHO International EMF Project web pages at http://www.who.int/peh-emf/publications/reports/Progress%20report_2008.pdf. The project web pages also host two important databases, one of EMF research (both ongoing and completed studies) and the other of EMF national standards from around the world. Fact sheets and background papers prepared from material generated through the EMF project are accessible as authoritative resources available to all. National authorities are encouraged to use them as reference materials when responding to enquiries from the public or journalists. The WHO and EMF project web pages are under review and all participants are invited to provide comments on how they may be improved or suggestions of other material that would be useful.

The representatives of collaborating institutions and organisations described many of their key publications and achievements of the past year and work in progress and what they anticipate to reach fruition in the near future. Some common themes within these work strands included:

- consideration of the interaction of EMFs with those who self-diagnosed as “electrosensitive”,
- educational material aimed at young people and researchers,
- audit of exposures arising from base stations,
- participation in major collaborative projects like the prospective cohort study of mobile phone users (COSMOS),

The USAF Research Laboratory, Human Effectiveness Directorate, Radio Frequency Radiation Branch has discussed the proposal of donating to WHO, for final editing and publishing as an International EMF Dosimetry Handbook, the material that it prepared with Microwave Consultants Ltd (UK).

Expansion of the European Union has made it a major population block in the world and the activities within three of the Directorates General of the European Commission (Employment, Public Health and Research) will become more important. Many of the studies recommended in the WHO Research Agendas have been partly funded through the European Framework Programmes, FP5 and FP6. Further relevant calls for research are being made under the current FP7. The IAC heard that a second report is soon to be published by the EC on how European States have implemented the Recommendation on the limitation of exposure of the general public to EMFs (EC/519/1999). After much debate within the EU the Council and Parliament have agreed to extend the implementation period of the Directive regarding the exposure of workers to electromagnetic fields (EC/40/2004) until April 2012. Two projects, sponsored by UK’s Health & Safety Executive (published as HSE Research Report 570) and the EC (available soon), have produced significant datasets relating to the exposures of workers to the complex fields generated by clinical magnetic resonance imaging (MRI) equipment within the context of the ICNIRP Guidelines (1994 and 1998).

Research activities

The afternoon session started with summary reviews of the current situation of the many research programmes on EMF and health.

Joachim Schüz outlined the various epidemiological projects, summarising results where possible and describing progress on the more recent work. These included the multinational *Interphone* project where more than half of the national data from individual studies have been published and the overall combined analysis by IARC is awaited. During the discussions, questions were asked as to whether the possible period of exposure was long enough at about 10 years. The general view was that it was better to start at the shorter durations and then repeat the study at intervals, although identifying non-exposed controls is going to become more difficult as the technology becomes more pervasive. He also described the Swedish study by Hardell *et al*, who observed what they believed to be socio-economic confounders.

Future meetings will be very interested in the progress of two studies in progress in several European countries: *COSMOS*, which is a prospective cohort study of mobile phone users looking at several end points, and *Cefalo*, which investigates any association between brain tumours in children and mobile phone use.

Bernard Veyret reviewed a large number of biological research projects that spanned the whole EMF spectrum. He reported that they provided an inconsistent picture with many showing no effects while others indicated some positive associations. An overview of research studies can be found on the International EMF Project web pages (www.who.int/peh-emf/research/en) where links to past and current research as well as the WHO Research Agenda are listed.

Update on Static fields activities

Short presentations were made on the current position on static field studies sponsored by the UK Health & Safety Executive and the EC to help inform the active debate in Europe over the safety of workers using MRI equipment in hospitals. Paolo Vecchia, Chairman of ICNIRP, reported that there will be a statement on Static Fields within the year and that this had been held up to ensure that there was consistency with another on extremely low frequency (ELF) fields, to follow in 2009. In the future, ICNIRP would issue revision statements for separate regions of the spectrum, according to the scientific position rather than a single full spectrum statement, as in 1998.

Update on ELF (and intermediate frequency) fields activities

Gyorgy Thuroczy made a short presentation on *TransExpo*, an international study of childhood leukaemia and residences above transformer rooms, which examines the ELF EMF exposures to families arising from electricity supply transformers located on the ground floor of apartment blocks in various countries around the world.

Participants were informed of the review reports that had been published by various national institutions or other groups during the year. This was followed with a discussion on their relevant merits and how they were viewed by the public, activists and Governments.

The final session of the day was a report by Rüdiger Matthes outlining the scope of topics considered during the Childhood Leukaemia meeting sponsored by ICNIRP, WHO and BfS in Berlin, May 2008. The discussions were not limited to the possible role of EMFs in the aetiology, but covered many other agents, such as pesticides, chemicals, the role of folates and factors such as immune dysregulation. There appeared to be some general agreement that childhood leukaemia was possible a “two-hit” process, with one insult being delivered *in utero* and then a second, triggering the development of the disease, after birth.

Update on RF fields activities

Eric van Rongen set out some options for the next WHO EMF Project publication, which will be the health risk assessment for RF EMFs, to be published in the WHO Environmental Health Criteria (EHC) series. It is likely that a Core Group will be established, which will be responsible for developing a draft text for consideration by the WHO approved Task Group. There were still some variables that were open for discussion before a decision is made. Examples of these are whether there should be a call for data, as some in languages other than English are not so easy to identify; should individuals put their names forward for inclusion in the Core Group or Working Groups who will draft sections on separate topics? The starting point for the draft will be the ICNIRP review of RF health effects literature. Another important document will be the IARC Monograph on RF carcinogenicity, however, given the factors already covered above leading to delays in the overall analysis of the *Interphone* data, WHO has decided not to wait for this publication but to establish concurrent work streams that will allow the shape of the EHC to develop to a draft report by the end of 2009 or early 2010 with the Task Group meeting in late 2010 and publication in 2011. Some participants questioned the system for joining the various groups and Dr van Deventer assured delegates that the process would be open and in accordance with WHO procedures. There was also a discussion as to whether the benefits of RF EMFs should be included in the final review report.

The WHO RF EMF Research Agenda will be updated to take account of studies performed to date and of recommendations from other international and national expert bodies, and developments in applications and novel technologies particularly those operating in previously little used regions of the spectrum. Concerns were expressed that there risked being a waste of limited research funding if a wide range of experiments needed to be repeated just for a change in pulse type or modulation frequency.

The brochure for Local Authorities to help them managing the expectations of the various stakeholder groups involved with the siting of mobile phone base stations has reached its fourth draft now. There will need to be another round of drafting to include some of the work done on risk communication that was reported earlier in the week during the Conference on the Results of the DMF. The outline of the chapters is: Introduction; Electromagnetic fields and their sources, Sources and exposures to RF fields in the environment, Wireless networks, Potential health effects from exposure to RF fields, Exposure guidelines, Compliance with exposure limits, Risk communication and risk management issues, followed by Appendices: FAQs; Additional resources ; Glossary of Terms; Examples of consultative processes by LAs. The intention is to keep the style similar to previous WHO publications and to produce a 4-page summary of the final 28-page brochure.

Examples of national EMF research programmes were described (France: Françoise Boudin, Santé et Radiofréquences; The Netherlands: Eric van Rongen, Health Council of the Netherlands; Switzerland: Mirjana Moser, Federal Office of Public Health). These programmes are diverse in their content, duration and funding, all set according to national priorities. The proposed work activities included investigation of exposures to children, communications with the public and exposures from mobile phones. Some work was also included on people with non-specific symptoms and self diagnosed as suffering from electrohypersensitivity.

The meeting heard outlines of two other collaborative projects – GLORE and COST BM 0704. GLORE, the Global Coordination of Research in Electromagnetic Fields and Health, started in 1997 as a collaboration between Korea and Japan to share research and to create a harmonization network between the two countries. Since then, the USA, European Union and others have joined. The next workshop will be held in Chicago in the Fall 2008. The other project, COST, is an intergovernmental framework for European Cooperation in Science and Technology, allowing the coordination of nationally-funded research on a European level. COST is a European Commission funded programme to facilitate the exchange of information between researchers in the 27 Member

States. Typically, States that have signed up to individual actions can receive money to support researchers' travel to workshops to discuss aspects of the technical work that they undertake. This will permit researchers working on similar topics to come together to share knowledge and improve the overall quality of their research outputs. Following completion of the COST 281 Action (Mobile Phones and Health), proposals were put forward that a follow-up Action would be useful on Emerging EMF Technologies: Health Risk Management. The BM in this Action's denomination stands for "Biomedical". The intention is to bring together multidisciplinary groups and the organizers especially want to support early stage (new-entrant) researchers. One of the areas of interest will be WiFi, with a potential focus on exposures to young children.

Standards activities

Paolo Vecchia, Chairman of ICNIRP, started the next session on exposure standards with a brief update on their work plan and shared some of the thinking behind the changes in process that were being contemplated. The basic features of the guidelines had not changed over the years as the underpinning scientific evidence had continued to support the recommendations. Now, ICNIRP was going to reconsider the guidelines by spectral region due to new evidence of different effect endpoints, changes in thresholds and refinements in dosimetry along with the development of new technologies and a better understanding of the practicality of implementing the guidelines. This would allow changes to be made when necessary according to the state of the relevant research database. He commented that social pressures alone were not sufficient justification for ICNIRP to change their recommendations.

Ralf Bodemann described the consensus process that he chairs in the IEEE International Committee for EMF Safety (ICES, full details at www.ices-emfsafety.org). The ICES standards are based upon basic restrictions (to different parts of body and refer to induced electrical field, not currents) and maximum permissible exposure levels (MPEs, which are very different to ICNIRP reference levels at 50/60 Hz). Maintenance of the standards is done on a 5 year cycle with positive re-affirmation at the end of the cycle. Some of the current subjects of detailed discussions are

- Modelling whole body exposures to Low Frequency EMF to derive MPEs,
- Use of conductive shoes,
- Whether there should be contact current limits,
- Relation between whole body and localized SAR and localized temperature rise in tissue, and
- Emerging techniques, eg using THz frequencies and the link across to the optical range.

The third international standard, described by Georges Herbillon, was the European Union's Directive on restricting exposures of workers to EMFs (EC/40/2004). The original transposition deadline was April 2008 but concerns in various sectors persuaded the EU to amend this date to April 2012. An additional initiative was to let a contract to develop an overview of the impact that the Directive will have on business and society. This will be completed by the end of 2009 and will help to inform the consultation dialogue with the social partners. By this stage the EU anticipates that ICNIRP will have published revised statements on both static fields and ELF EMFs that can be taken into account new proposals that the European Commission expects to bring forward to revise EC/40/2004 during 2010. As part of the process of implementing the Directive, the European Commission had contracted a consortium of technical specialists from across Europe to produce a practical guide to help users understand and implement the requirements of the Directive. It is anticipated that this will be available towards the end of 2008. Dr van Deventer would like to complement this work with the Practical Guide that NIOSH has collaborated with WHO to draft. A suggested useful way forward was to amalgamate the two works to create a document that would be useful to the wider international community under the auspices of WHO, ILO and NIOSH.

Victor Cruz gave a brief overview of the position with national standards in the Latin American

region; Colin Roy talked of the Australian process being led by their Radiation Protection and Nuclear Safety Agency (ARPANSA) and Chiyoji Ohkubo described Japan's progress. Most of the states were using the ICNIRP recommendations directly or in a variant form.

As part of her doctorate studies, Shaiela Kandel had approached the states participating in the WHO International EMF Project to provide her with data relating to the regulatory frameworks in place and how they have changed with time. 43 countries had responded and Ms Kandel was analysing the data for the large number of variables in two dimensions (whether based upon the ICNIRP recommendations and the legal basis). This analysis will take some time, but it appears that there has probably been some convergence over time, possibly due to the harmonization discussions within the WHO Project.

The WHO International Standards database has been available on the WHO web site for some years. Because the database is on an old server, which is no longer maintained, it needs to be migrated and will be reviewed. Professor Dina Simunic, as one of original developer of the database, presented the work of a small working group tasked with the review of the database. A series of 31 questions that cover the exposure standards, guidelines and policies was put out to national representatives. The data will be used in a spreadsheet application that will allow interrogators to compare various aspects across different states. An unresolved question was whether to try to include any restrictions in place on emissions from sources or just the exposures received by people.

A short discussion on public health policies and precautionary recommendations brought out that many states support the introduction of precautionary approaches, but were not making them mandatory. One delegate described how the restriction for RF exposures had been set at just 10% of the ICNIRP Guideline but this had still not satisfied the activists.

Administrative business

Leaving one of the most important subjects to almost the end of the meeting, Dr van Deventer informed delegates that while contributions from governments had increased, the overall funding of the Project was still critical. This was due, in part, to the ending of the "firewall" arrangement that had been provided by the Royal Adelaide Hospital to allow financial contributions to be accepted by WHO from industry groups. Direct sponsorship of meetings or activities by industry is not acceptable to WHO. An alternative provider of a financial "firewall" is being sought to improve the financial stability of the project. Meanwhile, Governments were encouraged to look at how they could increase their support for this important work as it enters the final phase of the Project. National support for projects of this nature provides a very strong public statement of the interests of States and their determination to ensure that their citizens are adequately protected, while enabling businesses to develop and apply technological developments for the benefit of all.

In drawing the meeting to a close, Dr van Deventer thanked delegates for their positive, active participation in the meeting and reminded them that the ICNIRP International NIR Workshop will be held in Rio de Janeiro during the week preceding the IRPA 112th Congress in Buenos Aires in October 2008.

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References

1 IRPA has awarded the United Kingdom the honour of hosting the 13th Congress, which will be in Glasgow, May 2012 and will be preceded by the ICNIRP International NIR Workshop in Edinburgh.

SSK Statement 2008: DMF

WHO EHC 232: WHO Environmental Health Criteria publication 232 “*Static Fields*”, March 2006, Geneva

WHO EHC 238: WHO Environmental Health Criteria publication 238 “*Extremely Low Frequency Fields*”, June 2007, Geneva (http://www.who.int/peh-emf/publications/elf_ehc/en/index.html)
www.who.int/peh-emf

HSE Research Report 570: (<http://www.hse.gov.uk/research/rrhtm/rr570.htm>)