

THE INTERNATIONAL EMF PROJECT

Progress Report

June 2014-2015



World Health
Organization

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1. OVERVIEW

In May 1996, the World Health Organization (WHO) launched an international project to assess the health and environmental effects of exposure to electric and magnetic fields, which became known as **the International EMF Project**. This was in response to growing public concern in several Member States over possible health effects from exposure to an ever-increasing number and diversity of EMF sources.

The International EMF Project brings together current knowledge and available resources of key international and national agencies and scientific institutions in order to develop scientifically-sound health risk assessments of exposure to static and time varying electric and magnetic fields in the frequency range 0-300 GHz.

The Project has been designed to provide authoritative and independent peer-review of the scientific literature. Since its inception, the objectives of the EMF Project have been to:

- ❖ review the scientific literature on biological effects of EMF exposure;
- ❖ identify gaps in knowledge requiring research that will improve health risk assessments;
- ❖ encourage a focused agenda of high quality EMF research;
- ❖ formally assess health risks of EMF exposure,
- ❖ encourage internationally acceptable harmonized standards;
- ❖ provide information on risk perception, risk communication, risk management; and,
- ❖ advise national programs and non-governmental institutions on policies for dealing with the EMF issues.

1. 1. MEMBERSHIP

The EMF Project is open to any WHO Member State government, i.e. department of health, or representatives of national institutions concerned with radiation protection. Since the commencement of the EMF Project, over 50 national authorities have been involved. In the past year, new representatives have been delegated by their governments, including Belgium, Latvia, Malaysia, Spain, Switzerland and Tunisia. During the reporting period, the EMF Project has been in contact with several new countries, including Armenia, Azerbaijan, Burundi, Chile, Estonia, Iraq, Latvia, Madagascar, Mexico, Moldova, Mongolia, Myanmar and Sudan.

While further outreach is planned, the challenge remains to locate the appropriate governmental contact at country level, with interest and responsibility regarding EMF protection. In some Member States, Ministries other than the Ministries of Health may show interest, such as the Ministry of Environment, Energy (dealing with electricity applications), Telecommunications (e.g. wireless networks), Transport (radar equipment for air navigation) or Industry.

Oversight of the Project is provided by an International Advisory Committee (IAC). The IAC is composed of members of international organizations, WHO collaborating centres, and national authorities from all regions of the world. The IAC meets once a

year to discuss national activities, current research programmes, legislation and public concern, and advises the International EMF Project on its activities.

The objectives of the IAC are

- to provide oversight on the conduct of the Project: review outputs of the Project, including scientific information related to public and occupational health, and management of the EMF issue
- to provide a forum for peer discussion on dealing with the health concerns raised by exposure to EMF fields.

Over the last 19 years, activities have closely followed the original work plan, and most activities have or are being implemented. The WHO Department of Public Health, Environmental and Social Determinants of Health is committed to ensuring that the work of the International EMF project continues subject to funding.

1. 2. COLLABORATION

The EMF Project has formal collaboration with different entities, i.e. non-governmental organizations (NGOs), international organizations and WHO collaborating centres (see details below). It also cooperates in an *ad hoc* manner with other institutions (e.g. co-sponsoring of meetings) and with individual experts.

International organizations

A number of international agencies are involved in the Project. Over the reporting period, there has been active collaboration with several of them.

The **Agency for Research on Cancer (IARC)**, a specialized agency of WHO, based in Lyon, France, has strong links with the International EMF Project. Its mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships.

Two Sections within IARC have been active in EMF-related issues, i.e. the Section of Environment and Radiation (ENV) and the Section on Monographs. Over the last year, the ENV Section has published several papers on electromagnetic fields. Dr Schüz, head of the ENV section, is participating in the Steering Group for the development of the Environmental Health Criteria monograph on radiofrequency fields. Under the auspices of the Section on Monographs, Volume 80 on “Non-Ionizing Radiation, Part 1: Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields” was published in 1992 and Volume 102 on “Non-Ionizing Radiation, Part 2: Radiofrequency electromagnetic fields and radar (including mobile telephones)” was published in 2013. In the reporting period, IARC launched the 4th edition of the European Code Against Cancer with the participation of the European Commission. Based on the best available scientific evidence, the new Code provides 12 ways to adopt healthier lifestyles and boost cancer prevention across Europe. It includes two topics related to radiation, i.e. radon and ultraviolet radiation (<http://cancer-code-europe.iarc.fr/index.php/en/ecac-12-ways/>).

A poster is also available summarizing recent highlights on Non-ionizing and Ionizing Radiations (<http://monographs.iarc.fr/ENG/Publications/Review2014-Radiation-Fatiha.pdf>) following an earlier summary in 2012 (http://monographs.iarc.fr/ENG/Publications/REF_Poster2012.pdf).

The **International Labour Office (ILO)**, a UN agency in Geneva, works closely with WHO in the area of occupational exposure to radiation, both ionizing and non-ionizing through Dr Shengli Niu from the Programme on Safety and Health at Work and the Environment (SafeWork). Over the past year, ILO has contributed to the discussions regarding the development of the Environmental Health Criteria monograph on radiofrequency fields and attended the Core Group meeting regarding the development of non-ionizing radiation standards.

The **International Telecommunications Union (ITU)** is the leading United Nations agency for information and communication technology issues, and the global focal point for governments and the private sector in developing networks and services. All three of its sectors have been involved with the WHO EMF Project through the Telecommunication Standardization Sector (ITU-T) Study Group 5 - Protection from Electromagnetic Environment Effects, the Radiocommunication sector (ITU-R), and the Telecommunication Development Sector (ITU-D).

Over the past year, WHO provided feedback on two ITU-T activities which include EMF and health: (i) a Focus Group Technical Report on “EMF considerations in smart sustainable cities” that aims to promote good policy and practice in the deployment of ICT. This report, developed by the ITU Focus Group on Smart Sustainable Cities (FG-SSC) was published in December 2014, (ii) a new ITU mobile application, ‘EMF Guide’, developed for smart phones, tablets and desktops (<http://www.itu.int/en/ITU-T/emf/Pages/default.aspx>). WHO was invited to give a keynote address at ITU-T workshops organized in Beijing, China (September 2015) and Kochi, India (December 2015).

WHO also provided feedback on ITU-D Report on Question 23/1 (Strategies and policies concerning human exposure to electromagnetic fields) developed over the period 2010-2014 (<http://emfguide.itu.int/pdfs/D-STG-SG01.23-2014-PDF-E.pdf>). In March-April 2014, ITU-D was instructed to work in collaboration with others on human exposure to EMF issues through Resolution 62 on “Measurement concerns related to human exposure to electromagnetic fields” approved at the World Telecommunication Development Conference (WTDC-14) in Dubai. In April 2015, WHO participated in a meeting of the follow-up ITU-D Question 7/2 (Strategies and policies concerning human exposure to electromagnetic fields) for the 2014-2018 study period.

Over the last year, WHO was kept abreast of the work of Working Party on Electromagnetic Fields at the **European Commission Directorate-General for Employment, Social Affairs and Equal Opportunities (DG Employment)** based in Luxembourg, regarding activities related to occupational exposure to EMF, and in particular the EC Directive 2004/40/EC. The Non-binding guide to good practice for implementing Directive 2013/35/EU ‘Electromagnetic Fields’ will be a useful tool for the EC countries as well as other Member States. It will also provide useful input to

the work of the Basic Safety Standards on Non-Ionizing Radiation.

The European Commission and the Scientific Committee on Emerging Newly Identified Health Risks (SCENIHR) has finalized its opinion on 'Potential health effects of exposure to electromagnetic fields (EMF)' which was published in March 2015 but formally adopted in January 2015, following a public consultation in Spring 2014 (http://ec.europa.eu/health/scientific_committees/emerging/docs/scenihr_o_041.pdf). Close communication is maintained with the **European Commission Directorate-General for Health and Consumers (DG SANCO)**, dealing with food safety and other regulatory issues, has been renamed in 2015 to DG Santé – the French word for 'health'.

WHO also follows with interest the EMF research projects funded by the **Directorate General for Research and Innovation (DG Research)** based in Brussels.

Active collaboration is ongoing with the **International Commission on Non-Ionizing Radiation Protection (ICNIRP)** - an NGO in *official relations* with WHO (for more information on this status, see <http://www.who.int/civilsociety/>). This status is conferred for a 3-year period. The WHO Executive Board reviewed the past 3-year collaboration at its 136th session in January 2015, and decided to maintain ICNIRP in official relations with WHO and to pursue implementation of the agreed plan for collaboration. The next review of the implementation of that plan will take place in January 2018. The WHO Executive Board is currently deliberated WHO's Framework of engagement with non-State actors, which includes nongovernmental organizations and will inform ICNIRP of any changes in due course.

A workshop on "Radiation Protection Principles: Similarities and Differences in Ionizing and Non-Ionizing Radiation", jointly organized by ICNIRP, ICRP, ILO, IRPA, and WHO, was held on 27-28 June in Geneva, Switzerland and in Ferney, France. The workshop followed the 4th European IRPA Congress held from 23 to 27 June, also co-sponsored by WHO among others. The main objectives of the workshop were to discuss similarities and differences between ionizing and non-ionizing radiation approaches towards safety/uncertainty factors for different populations. The discussion included the principles of justification, optimization and limitation that govern ionizing radiation protection and whether they can or should be applied for non-ionizing radiation (<http://www.icnirp.org/en/workshops/article/workshop-principles-2014.html>).

WHO participated in the Workshop on Radiofrequency Field Health Effects & Standards organized by ICNIRP, ACEBR (Australian Centre for Electromagnetic Bioeffects Research) and ARPANSA (Australian Radiation Protection and Nuclear Safety Agency) in November 2014. The aim was to discuss the latest evidence of health consequences from exposure to radiofrequency (RF) fields, and their relationship to ICNIRP's current updating of the HF guidelines. WHO was invited to attend the ICNIRP Main Commission meeting as an observer on the following days.

WHO and ICNIRP are now engaging more particularly on the topic of NIR and patient safety. A side event "Imaging for Saving Kids - the Inside Story About Patient Safety in Paediatric Radiology", jointly co-organized by Uganda, Spain, Kenya and Malaysia,

will be held at the next WHA68 on 26 May 2015. This event is also co-organized by 9 NGOs in official relations with WHO, including ICNIRP.

The following organizations have been in communications with WHO EMF Project over the last year: the **International Commission on Occupational Health (ICOH)**, **NATO**, and the two main international organizations developing exposure assessment standards, the **International Committee on Electromagnetic Safety (ICES)** operating under the rules and oversight of the IEEE Standards Association Standards Board and the **International Electrotechnical Commission (IEC)**. All these entities participated in the Consultancy meeting in June 2014 on NIR Basic Safety Standards.

WHO collaborating centres

A WHO collaborating centre (CC) is an institution designated by the Director-General to form part of an international collaborative network carrying out activities in support of the Organization's programme at all levels. Such designation follows a formal procedure within WHO, with specified terms of reference for a period of 4 years and annual reporting of joint activities.

The EMF Project works with the following scientific institutions which have been formally recognized as collaborating centers of WHO in the area of ionizing and non-ionizing radiation:

- **Swiss Federal Office of Public Health (Switzerland)** – Bilateral meetings were held in Geneva in December 2014 and March 2015 to meet new FOPH management and discuss activities in the work plan.
- **Australian Radiation and Nuclear Safety Agency, ARPANSA (Australia)** – Close cooperation has been maintained on the development of communication products (e.g. fact sheets, local authorities brochure) and on the Non-Ionizing Radiation Basic Safety Standards project. WHO was invited to address ARPANSA's Radiation Health and Safety Advisory Council in November 2014 in Sydney.
- **Institut für Strahlenhygiene, Bundesamt für Strahlenschutz, BfS (Germany)** – Close cooperation has been maintained on the development of communication products (e.g. fact sheets and web review and revision) and on the Non-Ionizing Radiation Basic Safety Standards project.
- **Public Health England (PHE)** – designation in process. Close cooperation has been maintained on the development of the Radiofrequency fields EHC.

1. 3. SECRETARIAT

The Project is managed through the Radiation Programme which has the responsibility for activities related to ionizing and non-ionizing radiation. This Programme is located at WHO Headquarters within the Department of Public Health, Environmental and Social Determinants of Health (PHE) in the Cluster of Family, Women's and Children's Health (FWC) Cluster.

The priorities, strategic objectives and expected results of the Organization are delineated in the Twelfth General Programme of Work (2014-2019). In addition, more specific short-term programmatic outputs are described in two-year work

plans. The current reporting biennium spans 2014-2015. The broad lines of work for PHE within the current biennium are described below.

<i>Programme</i>		<i>Health and the environment</i>
<i>Outcome</i>		<i>Reduced environmental threats to health</i>
3.5.1.	Output	Country capacity strengthened to assess health risks, develop and implement policies, strategies or regulations for the prevention, mitigation and management of the health impacts of environmental risks
3.5.2.	Output	Norms, standards and guidelines to define environmental and occupational health risks and benefits associated with air quality, chemicals, water and sanitation, radiation, nanotechnologies, and climate change
3.5.3.	Output	Public health issues incorporated in multilateral agreements and conventions on the environment and sustainable development

In particular, EMF activities are broadly described in the work plan as follows:

3.5.1.H1-9.1	Develop and publish a health risk assessment on electromagnetic radiofrequency fields
3.5.1.H1-11.1	Develop and disseminate information materials on risk management policies of electromagnetic fields
3.5.1.H1-11.3	Provide technical support to national authorities and international organizations regarding non-ionizing radiation
3.5.2.H1-30.1	Establish an inter-agency committee on non-ionizing radiation safety to exchange information and harmonize activities
3.5.2.H1-30.2	Develop international standards for protection against non-ionizing radiation

The Secretariat of the WHO International EMF Project facilitates all activities of the Project and provides regular reports to the International Advisory Committee and contributors to the Project. It organizes and conducts review group meetings, prepares and publishes reports and brochures, organizes the preparation and publication of monographs and scientific reports, and liaises with consultants, collaborating agencies and key institutions to prepare material as required. The focal points in WHO Regional Offices participate where possible and facilitate communications with countries in their respective regions.

A key challenge has been and remains to ensure alignment between activities planned and the resources mobilized, both human and financial.

Personnel

Dr van Deventer is the Team Leader of the Radiation (RAD) programme, with managerial responsibility for both the Ionizing and Non-Ionizing Radiation programmes. Further she has technical responsibility for the International Radon Project, the WHO EMF Project and the INTERSUN UV Programme.

The EMF Project continues to encourage Member States to promote direct involvement of their staff in the work of the International EMF Project through different means, including secondment. Other mechanisms are available through

Junior Professional Officer (JPO) program¹
(<http://www.who.int/employment/jpo/en/>) or through WHO's Internship Programme which provides a wide range of opportunities for students to gain insight into the work of WHO. Every year a limited number of places for internships are available (<http://www.who.int/employment/internship/en/>).

Funding

WHO receives its funding principally through assessed contributions from Member States and voluntary contributions. All contributions and accounting are audited by WHO. For any contribution, 13% of expenditure is usually deducted by WHO to cover administrative costs related to administering the funds, in accordance with World Health Assembly Resolution WHA 34.17.

The technical Unit may follow up on any funding interest from the part of Ministries of Health, or other governmental bodies. The EMF Project is currently solely funded through voluntary contributions from participating countries. For amounts under US\$ 50 000, a standard Letter of Agreement of Contribution (LAC) is sufficient if the donor is simply making a contribution to support existing unspecified activities, provided however that no conditions are attached to the contribution. Unspecified contributions provide WHO with greater management flexibility and do not need to issue a certified financial statement.

Over the years, several governments have given direct contributions to the WHO EMF Project, either on a periodic or ad-hoc basis. For the period June 2014 to May 2015, the following governmental entities have provided funding to the WHO International EMF Project:

- Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), Australia
- Ministry of Environment, Israel
- Ministry of Health, New Zealand
- Federal Office of Public Health, Switzerland
- Health and Safety Executive, United Kingdom

Some countries provide financial support for specific earmarked activities within the Project. Other countries provide in-kind contributions in the form of staff time. This is the case of the Health Council of the Netherlands, the UK Public Health England for the Environmental Health Criteria on RF, the New Zealand Ministry of Health for the brochure on RF for Local Authorities, and currently BfS, ARPANSA and GAEC for the Non-Ionizing Radiation Basic Safety Standards.

2. RISK ASSESSMENT AND SCIENTIFIC ACTIVITIES

¹ The Junior Professional Officer (JPO) Programme provides young professionals who wish to pursue a career in development with hands-on experience in multi-lateral technical co-operation. JPOs are sponsored by their respective governments. Currently the following donor governments sponsor JPOs for WHO: Austria, Belgium, Denmark, Finland, France, Germany, Italy, Japan, Korea, Luxembourg, The Netherlands, Norway, Spain, Sweden and Switzerland.

The primary goal of the International EMF Project is to assess the health risks from EMF within the frequency range 0 to 300 GHz and to develop policy options for protection of people from EMF exposure. The key **scientific objectives** of the Project are to:

- ❖ Assess the scientific literature and make a status report on health effects,
- ❖ Incorporate research results into WHO's Environmental Health Criteria (EHC) monographs where formal health risk assessments are conducted on EMF,
- ❖ Identify gaps in knowledge needing further research,
- ❖ Encourage a focused research program in conjunction with funding agencies and the global scientific community.

2. 1. RESEARCH EVALUATION

Environmental Health Criteria (EHC)

The health risk assessments related to chemical, biological and physical agents developed by WHO are published in the Environmental Health Criteria (EHC) series (<http://www.who.int/ipcs/publications/ehc/en/>). Since 1981, WHO has addressed possible health effects from exposure to EMF through six monographs dedicated to various parts of the EMF frequency spectrum (http://www.who.int/peh-emf/research/health_risk_assess/en/index2.html).

The EHC monographs are usually revised if new data are available that would substantially change the evaluation, if there is public concern for health or environmental effects of the agent because of greater exposure, or if an appreciable time period has elapsed since the last evaluation. Three monographs spanning the 0-300 GHz EMF frequency range have been planned: static fields (0Hz), ELF fields (up to 100 kHz) and RF fields (100 kHz – 300 GHz). So far, the EMF Project has developed the first two volumes on Static Fields and ELF fields. These documents were developed following the publication of the IARC monograph on Non-Ionizing Radiation, Part 1: Static and ELF fields (2002). The IARC monographs provide a hazard identification regarding cancer, while the EHCs represent a health risk assessment of all studied (published) health endpoints, including the four classical steps of (i) hazard identification, (ii) exposure assessment, (iii) dose-response assessment and (iv) risk characterization.

EHC on Radiofrequency fields

Following on the publication of the INTERPHONE study (May 2010) and the IARC classification of RF fields (May 2011), the health risk assessment of radiofrequency fields by WHO was started with a kick-off meeting in January 2012. A core group of 6 experts has been gathered to help with the development of the monograph. They, in turn, have enlisted the help of close to 30 experts to develop different sections of the first draft.

The WHO Environmental Health Criteria monograph on RF fields will be based on published peer-reviewed data. Search strategies, inclusion/exclusion criteria and quality criteria have been developed for the different types of studies. Over the past year, a first draft which currently contains 14 chapters and over 1000 references was developed. An expert consultation on this first draft was opened on the website of

the WHO EMF Project website (http://www.who.int/peh-emf/research/rf_ehc_page/en/) from 30 September until 15 November, and then extended until 15 December 2014. Declarations of interests were requested from individual experts when providing comments.

The objective of the technical consultation was to seek expert comments on the accuracy and completeness of the information contained in the chapters. To that end, the IAC was requested to provide a list of RF experts in their respective countries. Over 300 names were provided by 32 Member States.

The first draft included the scientific chapters 2 to 12. It was explained that the chapters 1, 13 and 14 which will provide a summary, health risk assessment and protective measures were not available for this consultation. The process used in developing the scientific chapters was described in Appendix X. The drawing of conclusions from the literature and the drafting of these chapters is the remit of a formal Task Group that will be convened by WHO at a later stage in the process.

The literature searches were performed for a 21-year time window between January 1992 and December 2012 (in a few instances to December 2013). While more recent studies were not included in the first draft, suggestions for inclusion of peer reviewed studies were requested. Searches and chapters will be updated before finalization of the second draft which will be circulated to the Task Group before its meeting.

98 entries were filed electronically through the consultation providing over 400 comments to different chapters and section of the draft. Each submission is carefully being considered by the Core Group and the draft is being revised to take account of relevant comments. As a result of the consultation, a new chapter on biochemical and biological effects has been added.

Monthly conference calls have been held over the past year. A face-to-face meeting was convened in Geneva in January 2015 to review the comments gathered, and another face-to-face meeting is scheduled in Istanbul in May 2015. The meeting of the Task Group is currently slated to be held in the Fall of 2015.

2. 2. RESEARCH COORDINATION

To avoid unnecessary duplication of research effort and to make sure that all important questions are being studied, research coordination on a global level is important. To that end, the WHO International EMF Project has been providing such an umbrella for worldwide coordination and exchange of information about planned and ongoing projects.

Research agenda

From its inception, the WHO International EMF Project has strived to identify gaps in knowledge needing further research to make better health risk assessments, and to encourage a focused research programme in conjunction with funding agencies (<http://www.who.int/peh-emf/research/agenda/en/index.html>).

A discussion is scheduled at the next International Advisory Committee to discuss the need for an update of the research agendas on static and extremely low frequency fields. For radiofrequency fields, the latest EMF Research Agenda was published in 2010 (http://whqlibdoc.who.int/publications/2010/9789241599948_eng.pdf). The upcoming RF EHC monograph will provide an update of research priorities.

WHO input to national agencies

The EMF Project actively works with international donors and national authorities to review, promote, and fund research topics identified by WHO. Dr van Deventer is an observer on the Swedish independent expert group on EMF, commissioned by the Swedish Radiation Safety Authority for a second 3-year term from May 2013.

3. RISK MANAGEMENT ACTIVITIES

WHO's International EMF Project provides a unique opportunity to bring countries together, identify criteria for science-based standards setting and encourage the establishment of exposure limits and other control measures that provide the same or similar level of health protection for all people.

The key **risk management objectives** of the Project are to:

- ❖ facilitate the development of internationally acceptable standards for EMF exposure,
- ❖ provide information on the management of EMF protection programs for national and other authorities, including monographs on EMF risk perception, communication and management, and
- ❖ provide advice to national authorities, other institutions, the general public and workers, about potential hazards resulting from EMF exposure and possible mitigation measures.

3. 1. INTERNATIONAL STANDARDS FOR NON-IONIZING RADIATION PROTECTION

The development of non-ionizing safety standards has been proposed by a Member State using the example of the International Ionizing radiation Basic Safety Standards (BSS) (http://www-pub.iaea.org/MTCD/publications/PDF/Pub1578_web-57265295.pdf) developed as a collaborative approach between 8 international organizations (EC, FAO, IAEA, ILO, NEA, PAHO, UNEP and WHO). The request reflects the fact that Member states are increasingly interested in clear guidance based on harmonized standards and their application within a national framework of protection.

The scope of the Non-Ionizing Radiation Basic Safety Standards (NIR BSS) includes the whole non-ionizing radiation spectrum, i.e. electromagnetic radiation (from static field to optical radiation), as well as acoustic radiation (ultrasound and infrasound), with the aim of protecting health. These would be voluntary standards.

This topic was first brought for discussion at the 18th IAC meeting (Paris, June 2013) where it was proposed to parallel the Ionizing Radiation (IR) approach and develop Basic Safety Standards (BSS) for NIR, with WHO taking the lead role. Following the show of support from Member States, WHO held bilateral meetings with relevant UN agencies and organised a consultancy meeting on 2-3 June 2014. Participants included representatives from international organisations, NIR experts and relevant NGOs. The meeting agenda covered issues regarding the need for NIR standards, their content, the roles of various stakeholders and how NIR standards would be developed and supported. The consultancy meeting developed a project outline, including ideas on how the standards would be developed, what outcomes were expected, and how the work might be funded.

As a next step, a small working group was set up to develop a more detailed proposal and evaluate funding needs. The group composed of 6 members representing different areas of expertise (EMF, optical, ultrasound and infrasound) met electronically and at a face-to-face meeting on April 27-28 in Geneva. The working group will provide its feedback at the 20th IAC meeting.

3. 2. STANDARDS DATABASE

A number of national and international organizations have formulated guidelines establishing limits for occupational and residential EMF exposure. The International EMF Project has developed a survey in 2013 to gather national information on legislation related to frequency ranges (static, low frequencies and radio frequencies) and to populations (public, workers). The survey was sent to all IAC members in 2013 and again in 2014. To date, over 25 countries have provided data. The first set of information on EMF legislation has been uploaded on the WHO Global Health Observatory website (www.who.int/gho), a dedicated portal providing access to data and analyses for monitoring the global health situation. The data tables and related maps and text on EMF legislation (existence of standards) are published at <http://www.who.int/gho/phe/emf/legislation/en>.

The data provide information regarding the existence of standards, their legal status, and the values at specific frequencies within each range to allow easy comparison of different standards. The next step will be the development of comprehensive country profiles with specific national information. This topic is tabled for discussion at the 20th IAC meeting in May 2015.

3. 3. LOCAL AUTHORITIES BROCHURE

To help municipalities, a brochure on Wireless Networks for local authorities has been developed to provide them with basic information on wireless networks and health for the purpose of installation of mobile phone base stations and responding to public enquiries. Some pilot sites have been chosen and test will be conducted upon translation of the document in the coming months.

4. RISK COMMUNICATION ACTIVITIES AND RESOURCES

4. 1. ENQUIRIES

A number of enquiries are sent to the EMF Project from governments, the media and the general public. Depending on the nature of the enquiries, these are usually handled by the Project staff or by the communications officers of WHO. Technical support is regularly needed - and given - as requests in other languages are often forwarded to IAC members for translation and/or response.

4. 2. WEBSITE INFORMATION

EMF Home page

Over the past year several of the tutorial pages have been translated into Russian. Also, the web pages of the EMF Project have been reviewed and a major revamp is scheduled by June 2015 to align the structure with the WHO ionizing and UV websites. Help from the German WHO Collaborating Centre, BfS, is gratefully acknowledged.

National contacts and information

Because many enquiries to the EMF Project are of a local nature, a country-focused database of information that lists the Member States of the EMF Project has been set up. Thanks to the input of the IAC members (<http://www.who.int/peh-emf/project/mapnatreps/en/>) who provide annually updated information for their respective pages; this has proved to be a very useful tool worldwide.

New EMF_PROTECTION listserv

The WHO International EMF Project launched an EMF_PROTECTION listserv to enable a free flow of information to support the efforts of Member States working to EMF radiation protection. Topic areas for the listserv communications include any EMF-related health research or resources, legislation, policies and upcoming meetings. The target audience is members of the International Advisory Committee of the WHO EMF project. To date, 62 participants from 29 countries have enlisted to join the discussion group and to post relevant and timely information. Its success is dependent upon the contribution of its members.

4. 3. WHO PUBLICATIONS

The publications of the EMF Project are reviewed by the International Advisory Committee before seeking formal approval by WHO management. Recent documents are available electronically for download on the Project's website. Some of the materials are available free of charge, while priced publications are on sale through the WHO Online Bookstore <http://apps.who.int/bookorders/>.

Translations

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<http://www.who.int/about/licensing/translations/en/index.html>. A link at the bottom of the page is the online form to be submitted http://www.who.int/about/licensing/translation_form/en/index.html.

Since the Project's inception, translations have been encouraged, many of which being undertaken by members of the IAC. These translations have proven to make the EMF Project a web site well visited over the years. This year, a university in Saudi Arabia applied for the rights to translate the WHO handbook on Establishing a Dialogue on Risks, based from Electromagnetic Fields. Also the EHC on ELF (vol. 238) was translated and published by the China Electric Power Research Institute.

Fact sheets

Simple, easy to read information is provided through fact sheets that are formally approved by the Director General's Office. The latest Fact Sheets can be found on the corporate WHO **Media Centre website**, which is aimed primarily at the press and general public (<http://www.who.int/mediacentre/factsheets/en/>). Previous fact sheets can be found on the EMF Project website. (<http://www.who.int/peh-emf/publications/facts/factsheets/en/index.html>). Over the year, several fact sheets have been reviewed and revised and will be uploaded after final review by the IAC and pending WHO clearances. These include:

- Backgrounder (previously Fact sheet N°322) on Exposure to extremely low frequency fields (June 2007)
- Backgrounder (previously Fact sheet N°304) on Base stations and wireless networks (May 2006)
- Fact sheet N°193 on Electromagnetic fields and public health: mobile phones, reviewed October 2014

4. 4. MEETINGS

WHO staff (Dr van Deventer) participated in a number of local, national and regional scientific and coordination meetings during the reporting period:

When	Where	Title
June 23-27, 2014	Geneva, SWITZERLAND	Fourth European IRPA Congress, Radiation Protection Culture - A global challenge

June 27-28, 2014	Geneva, SWITZERLAND / Ferney, FRANCE	ICNIRP/ICRP/IRPA/WHO Workshop on "Radiation Protection Principles: Similarities and Differences in Ionizing and Non-Ionizing Radiation"
July 7-11, 2014	Lima, PERU	International meeting on electromagnetic radiofrequency fields organized by the Ministry of Transport and Communications and the Universidad Nacional Mayor de San Marcos
September 22, 2014	Varna, BULGARIA	8th International Workshop on Biological Effects of EMFs (<i>remote participation</i>)
September 23-27-, 2013	Beijing, CHINA	ITU Forum on "Using EMF to achieve the smartest sustainable city" at the 4th ITU Green Standards Week
November 11-15, 2014	Wollongong, AUSTRALIA Sydney, AUSTRALIA	ICNIRP/ACEBR/ARPANSA Workshop, annual meeting of the International Commission on Non-Ionizing Radiation Protection (ICNIRP) ARPANSA Radiation Health and Safety Advisory Council
November 27-28, 2014	Rome, ITALY	Swedish Radiation Safety Authority (SSM) biannual meeting
December 8, 2014	Paris, FRANCE	Annual meeting of Telecom ParisTech "Whist lab" (<i>remote participation</i>)
December 15, 2014	Kochi, INDIA	ITU Forum on Information and Communication Technologies (ICT's) - How Safe is EMF in India" (<i>remote participation</i>)
December 17, 2014	Geneva, SWITZERLAND	Bilateral meeting with Swiss Federal Office of Public Health
December 17-18, 2014	Lagos, NIGERIA	Second West African Conference on EMF Exposure and Health, organized by the Nigerian Communication Commission (<i>remote participation</i>)
January 15-16, 2015	Geneva, SWITZERLAND	Face-to-face meeting of the Core Group of experts for the WHO Environmental Health Criteria on radiofrequency fields
April 13-15, 2015	Muscat, OMAN	Telecom Forum: Law Regulation and Enforcement organized by the Oman Telecommunications Regulatory Authority (<i>postponed</i>)
April 22, 2015	Brussels, BELGIUM	GSMA Europe's 5th Forum on Electromagnetic Fields (<i>presented by E. van Rongen</i>)
April 22, 2015	Heidelberg, GERMANY	Annual meeting of the German Commission on Radiological Protection (SSK)
April 27-28, 2015	Geneva, SWITZERLAND	WHO Core Group meeting on the Development of International Standards for Non-Ionizing Radiation
April 30, 2015	Geneva, SWITZERLAND	ITU-D Q7/2 Rapporteur Group meeting
May 4-6, 2015	Geneva, SWITZERLAND	20 th International Advisory Committee of the EMF Project

4. 5. UPCOMING MEETINGS

- ICNIRP/WHO workshop on “A closer look at the thresholds of thermal damage”, 26-28 May 2015, Istanbul, Turkey (<http://www.icnirp.org/en/workshops/article/workshop-thermal-damage.html>)
- 31st International Congress on Occupational Health, 31 May-5 June, 2015, Seoul, Korea (<http://www.icoh2015.org/>)
- BioEM2015, organized by the Bioelectromagnetics Society (BEMS) and the European BioElectromagnetics Association (EBEA), Cape Town, South Africa, 14-19 June 2015, Monterey, California, USA (<http://bioem2015.org/>)
- 14th International Congress of the International Radiation Protection Association, 9-13 May 2016, Cape Town, South Africa (<http://www.irpa2016capetown.org.za/>)
- 8th ICNIRP International NIR Workshop, 9-11 May 2016, Cape Town, South Africa (<http://www.icnirp.org/en/workshops/article/workshop-nir2016.html>)

FOR FURTHER INFORMATION ON THE INTERNATIONAL EMF PROJECT

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