The International EMF Project

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ITU-D Meeting, 10 October 2018, Geneva, Switzerland
Update

- Introduction
- Activities of the WHO International EMF Project
- Outlook
The World Health Organization

• Established on 7 April 1948

• **Function**: act as the UN directing and coordinating authority on international health work

• **Objective**: attainment by all peoples of the highest possible level of health
The WHO 3-level structure

7000 people work for WHO in
- 150 WHO offices in countries, territories and areas,
- 6 regional offices,
- at IARC, and
- at the headquarters (Geneva)
WHO's core functions

1. Articulate ethical and evidence-based policy positions
2. Setting norms and standards, and promoting and monitoring their implementation
3. Shaping the research agenda, and stimulating the generation, translation and dissemination of valuable knowledge
4. Providing technical support, catalysing change and developing sustainable institutional capacity
5. Monitoring the health situation and assessing health trends
6. Providing leadership on matters critical to health and engaging in partnerships where joint action is needed
New leadership at WHO (July 2017)

Dr Tedros Adhanom Ghebreyesus

Over three decades, Dr Tedros has been a distinguished leader who has saved and improved the health of millions of people around the world.

Notable roles and other qualifications include:

- Minister of Foreign Affairs, Ethiopia
- Minister of Health, Ethiopia
- Chair, Global Fund to Fights AIDS, Tuberculosis and Malaria Board
- Chair, Roll Back Malaria Partnership Board
- Co-Chair, Partnership for Maternal, Newborn and Child Health Board
- Ph.D. in Community Health, Master of Science in Immunology of Infectious Diseases
- Globally recognised expert and author on health issues, including health workforce responses to epidemics, and malaria
Health in all policies
"Our goal is clear - to make WHO a modern organization that works seamlessly to make a measurable difference in people's health at country level."

Dr Tedros
Address to the Executive Board, January 2018
WHO International EMF Project

- Established in 1996
- Coordinated by WHO HQ

Objectives
- Review the scientific literature on health effects of EMF exposure and formally assess health risks;
- Promote a focused agenda of high quality EMF research;
- Encourage internationally acceptable harmonized standards;
- Provide information on risk perception, risk communication, risk management
Membership

- Open to any WHO Member State government department or representatives of national institutions concerned with radiation protection

- Over 60 national authorities have been involved in the Project
- Contacts with new countries
- New representatives have joined the International EMF Project
International Advisory Committee
Terms of Reference

• Provide a forum for a coordinated international response on the health concerns raised by exposure to EMF fields
• Review outputs of the Project, including scientific information related to public and occupational health, and environmental management of the EMF issue
• Provide oversight on the conduct of the Project
Activities with International Agencies

- International Agency for Research on Cancer (IARC/WHO)
- International Labour Organization (ILO)
- **International Telecommunications Union (ITU)**
- European Commission (EC)
- North Atlantic Treaty Organization (NATO)
WHO’s engagement with non-State actors

The policies governing WHO’s engagement with non-State actors are an important part of WHO reform
Activities with NGOs in official relations with WHO

- International Commission on Non-Ionizing Radiation Protection (ICNIRP)
- International Commission on Occupational Health (ICOH)
- World Federation for Ultrasound in Medicine and Biology (WFUMB)
- International Society of Radiology (ISR)
- International Organization for Medical Physics (IOMP)
- International Radiation Protection Association (IRPA) – in process

NIR activities now included!!
Activities with NGOs and others

- International Electrotechnical Commission (IEC)
- IEEE International Committee On Electromagnetic Safety (ICES)
- International Union of Radio Science (URSI)
- Global Coordination of Research and Health Policy on RF Electromagnetic Fields (GLORE)
Collaborating Centres on EMF

- Australian Radiation and Nuclear Safety Agency (ARPANSA), Australia (2016-20)
- Public Health England (PHE), United Kingdom (2016-20)
- Bundesamt für Strahlenschutz (BfS), Germany (2018-22)
- Federal Office of Public Health (FOPH), Switzerland (2018-22)
- Italian National Institute of Health (ISS), Italy (2018-22)

NEW!!
Specific Activities
Development of a first draft

• Set search criteria and quality criteria, include several languages
• Published peer-reviewed literature since 1993 (> 1000 refs)

Expert consultation (Fall 2014)

• Over 700 comments

WHO feedback based on evolving internal processes

• “although the types of questions that are being examined and the statements that will be issued are not typical ones related to interventions, they will have global impact and must be based on a systematic review of the evidence and transparent, explicit processes that minimize bias. Thus the basic principles for guideline development apply”.

• Systematic reviews, risk of bias analysis, GRADE process

Over the past 2 years

• Enlisted help of a contracted methodologist
• Risk-of-bias analysis on a subset of cancer data (pilot with NIEHS using OHAT approach)
Appraisal of the evidence for health risks associated with exposure to RF fields to result in 2 documents.

- A **scientific literature review** to be published as a WHO technical document. The review will include conclusions for the clear-cut health outcomes, and will recommend systematic analysis for health outcomes for which the evidence does not provide consensus.

- The **RF EHC monograph** will elaborate on the health outcomes highlighted in the review process, using procedures for guideline development as recently required by WHO.

- A **Task Group** will be tasked with finalizing conclusions on all health outcomes reviewed, as well as developing research recommendations, and a health risk assessment.
Latest steps

1. Review, revise and update the 2014 draft

2. Prioritize health outcomes
   - Developed and ran a survey (over 300 RF experts) – deadline 15 June 2018

3. Commission systematic reviews
   - Develop protocols for SRs
   - Call for expressions of interest from SR teams

Challenges
   - Limited EMF expert experience in SRs
   - Fundraise for SRs (>10-15k USD/ protocol)
Research topics
National research programmes

Examples

French Agency for Food, Environmental and Occupational Health & Safety

Related opinions and reports

Mar 2018 // Opinion
ANSES Opinion regarding the expert appraisal on electromagnetic hypersensitivity (EHS) or idiopathic environmental intolerance attributed to electromagnetic fields (IEI-EMF)

Jun 2016 // Opinion
OPINION of ANSES on the expert appraisal of "Exposure to radiofrequencies and child health"

Apr 2016 // Opinion
ANSES opinion on the electromagnetic compatibility of medical devices exposed to sources of radiofrequency radiation

Oct 2013 // Opinion
OPINION of the French Agency for Food, Environmental and Occupational Health & Safety concerning the update of the “Radiofrequency electromagnetic fields and health” expert appraisal

Bundesamt für Strahlenschutz

Research programme on "Radiation Protection in the Process of Power Grid Expansion"
Health effects from wireless technologies, other than radiation
• Current research on the impact on the mental and social well-being (including addiction)

HEALTH
a state of COMPLETE physical, mental and social well-being and not merely the ABSENCE of disease or infirmity"

(Constitution, 1948)
... Social and mental well-being

**Interdisciplinary Summit on Children and Screen Time**
November 1, 2017 | Washington, D.C.

<table>
<thead>
<tr>
<th>Cognitive, Psychosocial, and Physical Effects</th>
<th>Effects on Family, Society, and Culture</th>
<th>Media, Usage, and Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>learning</td>
<td>parenting</td>
<td>violence</td>
</tr>
<tr>
<td>attention</td>
<td>privacy</td>
<td>cyberbullying</td>
</tr>
<tr>
<td>sleep</td>
<td>digital inequality</td>
<td>advertising</td>
</tr>
<tr>
<td>anxiety</td>
<td>stereotypes</td>
<td>social media</td>
</tr>
</tbody>
</table>

3 urgent questions:
- How is digital media enhancing or impairing children’s ability to live happy, healthy, and productive lives?
- How are years of electronically mediated interactions shaping children's physical, cognitive, emotional, and social development?
- What should we do about it?

**A SUPPLEMENT TO PEDIATRICS**
Children, Adolescents and Screens: What We Know and What We Need To Learn
WHO RF Research Agenda (2010)

To promote research areas that have relevance to public health, and can

• reduce scientific uncertainties: health effects research

• respond to public concern through better risk communication: social science research

Useful to researchers and funding agencies
Social science research

<table>
<thead>
<tr>
<th>RF Research Agenda recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social science research</strong></td>
</tr>
<tr>
<td>Investigate the determinants and dynamics of RF EMF-related health concern and perceived health risks</td>
</tr>
<tr>
<td>Investigate the effectiveness of different formats for communicating scientific evidence regarding health effects of RF EMF exposure and risk information to the public</td>
</tr>
<tr>
<td>Investigate whether and how people’s perception of RF EMF health risks can affect their well-being</td>
</tr>
<tr>
<td>Investigate how RF EMF technologies have been handled in a larger social context</td>
</tr>
</tbody>
</table>
Assessing public perception of risk
Example: Annual French IRSN survey

Annual French surveys since 1990
Measuring general concerns, the perception of risks, the credibility of the information disseminated, the role of scientific experts, …
Risk perception
Example: France (IRSN, 2018)

Risks for the French people?
Dans chacun des domaines suivants, considérez-vous que les risques pour les Français en général sont :

<table>
<thead>
<tr>
<th>Domaine</th>
<th>Élevés</th>
<th>Moyennement Élevés</th>
<th>Faibles</th>
<th>Ne Sait Pas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Le cancer</td>
<td>79,5</td>
<td>18,4</td>
<td>0,1</td>
<td></td>
</tr>
<tr>
<td>Le terrorisme</td>
<td>76,2</td>
<td>17,7</td>
<td>0,1</td>
<td></td>
</tr>
<tr>
<td>Les pesticides</td>
<td>74,8</td>
<td>18,9</td>
<td>0,2</td>
<td></td>
</tr>
<tr>
<td>Le tabagisme des jeunes</td>
<td>74,3</td>
<td>22,2</td>
<td>0,2</td>
<td></td>
</tr>
<tr>
<td>La pollution atmosphérique</td>
<td>70,3</td>
<td>25,6</td>
<td>0,3</td>
<td></td>
</tr>
<tr>
<td>La pollution des lacs, des rivières et des mers</td>
<td>69,7</td>
<td>23,0</td>
<td>0,1</td>
<td></td>
</tr>
<tr>
<td>Les échets chimiques</td>
<td>61,6</td>
<td>24,5</td>
<td>0,6</td>
<td></td>
</tr>
<tr>
<td>La pollution des sols</td>
<td>63,1</td>
<td>27,8</td>
<td>0,2</td>
<td></td>
</tr>
<tr>
<td>La drogue</td>
<td>61,4</td>
<td>28,1</td>
<td>0,5</td>
<td></td>
</tr>
<tr>
<td>Les accidents de la route</td>
<td>61,3</td>
<td>31,6</td>
<td>0,1</td>
<td></td>
</tr>
<tr>
<td>L’obésité des jeunes</td>
<td>61,3</td>
<td>32,4</td>
<td>0,2</td>
<td></td>
</tr>
<tr>
<td>Les échets radioactifs</td>
<td>59,3</td>
<td>26</td>
<td>0,1</td>
<td></td>
</tr>
<tr>
<td>L’alcoolisme</td>
<td>50,6</td>
<td>34,1</td>
<td>0,1</td>
<td></td>
</tr>
<tr>
<td>Les centrales nucléaires</td>
<td>33,9</td>
<td>19,1</td>
<td>0,1</td>
<td></td>
</tr>
<tr>
<td>Les installations chimiques</td>
<td>52,3</td>
<td>33,7</td>
<td>0,8</td>
<td></td>
</tr>
</tbody>
</table>

Les OGM (Organismes Génétiquement Modifiés)   | 49,5   | 34,3               | 13,2    |             |
Les perturbateurs endocriniens                  | 48,6   | 10,4               | 11,4    | 9,6         |
Les maladies professionnelles                   | 48,3   | 40,1               | 11,3    |             |
Les incendies de forêts                          | 37,7   | 32,4               | 19,8    |             |
Les retombées radioactives en France de l’accident de Tchernobyl | 34,7 | 28,8               | 25,8    |             |
Le sida                                           | 41,7   | 38,9               | 11,1    |             |
Les produits alimentaires                        | 41     | 37,8               | 20,8    |             |
Le transport des matières dangereuses            | 37,6   | 37,6               | 24      |             |
Les inondations                                   | 37,5   | 40,5               | 21,8    |             |
Les nanoparticules                                | 37,2   | 34,8               | 16,9    | 11,7        |
Les antennes de réseau pour téléphones portables | 36,2   | 39,8               | 18,4    | 3,6         |
La brouhaha                                       | 32,9   | 44,1               | 22,3    |             |
La consécration                                  | 29,9   | 42,9               | 27,2    |             |
Les incendies de déchets ménagers                | 29,1   | 42,8               | 25,5    |             |
Les risques médicaux                              | 27,7   | 44,4               | 27,8    |             |
Les accidents domestiques                         | 26,3   | 45,1               | 28,6    |             |
Les lignes à haute tension                       | 23,8   | 40                 | 34,7    | 11,9        |
Les accidents de radiosthérapy                    | 17,2   | 38,1               | 43,9    |             |
Les radiographies médicales                       | 16,7   | 38                 | 43,9    |             |
Les risques médicaux                              | 11,6   | 32,7               | 26      |             |
International standards for NIR Protection

It is intended that the International Standards for Non-Ionizing Radiation Protection be developed as a collaborative approach to reflect an international consensus on what constitutes a high level of safety for protecting people and the environment from harmful effects of non-ionizing radiation.

**Target audience** of the voluntary Standards: policy makers, radiation regulators and relevant employers.

**Scope**: whole NIR spectrum, including EMF radiation, optical radiation, and acoustic fields (ultrasound and infrasound), in line with accepted definition (e.g. ICNIRP, FDA).
The IR Landscape
Science, recommendations, standards

Scientific basis
Effects, risks, sources, levels, trends, ...

Recommendations
System of RP
(philosophy, principles, dose criteria, ...)

Standards
(safety requirements, regulatory language, ...)

National regulations
The ionizing radiation landscape

Jointly sponsored by
EC, FAO, IAEA, ILO, OECD/NEA, PAHO, UNEP, WHO
The NIR landscape

Scientific basis
Effects, risks, sources, levels, trends. Many international reviews

Recommendations
System of RP (philosophy, principles, limits). Other bodies CIE, ICES

Standards
(safety requirements, regulatory language,..)

National regulations
International standards for NIR Protection

Table of contents

1. Introduction
2. General recommendations
3. Public exposures (EMF, Optical, Infrasound/Ultrasound)
4. Occupational exposures (EMF, Optical, Infrasound/Ultrasound)
5. Medical exposures (EMF, Optical, Infrasound/Ultrasound)
Worldwide EMF standards
## Electromagnetic fields

### Exposure limits for radio-frequency fields (public)

#### Data by country

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Electric field (V/m)</th>
<th>Power density (W/m²)</th>
<th>Specific absorption rate (SAR) (W/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>900 MHz</td>
<td>1800 MHz</td>
<td>900 MHz</td>
</tr>
<tr>
<td>Argentina</td>
<td>2017</td>
<td>41.25</td>
<td>58.36</td>
<td>4.5</td>
</tr>
<tr>
<td>Australia</td>
<td>2017</td>
<td>41.1</td>
<td>58.1</td>
<td>4.5</td>
</tr>
<tr>
<td>Austria</td>
<td>2017</td>
<td>41.25</td>
<td>58.34</td>
<td>4.5</td>
</tr>
<tr>
<td>Bahrain</td>
<td>2017</td>
<td>41</td>
<td>58</td>
<td>4.5</td>
</tr>
<tr>
<td>Belgium</td>
<td>2017</td>
<td>i</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>Brazil</td>
<td>2017</td>
<td>41.25</td>
<td>58.34</td>
<td>4.5</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>2017</td>
<td>6.14</td>
<td>6.14</td>
<td>0.1</td>
</tr>
<tr>
<td>Canada</td>
<td>2017</td>
<td>32.1</td>
<td>40.07</td>
<td>2.74</td>
</tr>
<tr>
<td>Chile</td>
<td>2017</td>
<td>0.1/1.0</td>
<td>0.1/1.0</td>
<td>1.6/2</td>
</tr>
</tbody>
</table>

Download filtered data as: CSV table | XML (simple) | JSON (simple) | Download complete data set as: CSV table | Excel | CSV list | more...
# Electromagnetic fields

## Legislative status

**Data by country**

In this section:
- Existence of standards
- Legislative status
- Exposure limits

<table>
<thead>
<tr>
<th>Country</th>
<th>Public</th>
<th>Worker</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Static</td>
<td>Low-frequency</td>
</tr>
<tr>
<td>Croatia</td>
<td>Mandatory</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Cuba</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>Cyprus</td>
<td>Mandatory</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>

**Bahrain, Legislative status, Public, Low-frequency**

**Name:** Order No. 4(4) with respect to Regulating and Monitoring of Non-Ionizing Radiation emitted from Electromagnetic Fields

**Publication date:** 2 April 2009

**Link:** [http://www.tra.org.bh/media/document/Order%20No.%20(4)%20of%20the%20Year%202009%20With%20Respect%20to%20Regulating%20and%20Monitoring%20of%20Non-Ionizing%20Radiation%20emitted%20from%20Electromagnetic%20Fields%20EN.pdf](http://www.tra.org.bh/media/document/Order%20No.%20(4)%20of%20the%20Year%202009%20With%20Respect%20to%20Regulating%20and%20Monitoring%20of%20Non-Ionizing%20Radiation%20emitted%20from%20Electromagnetic%20Fields%20EN.pdf)

**Comment:**

**Value:** Mandatory

**Details:** Year: 2018, WHO region: Eastern Mediterranean

**Effective:** 2018-06-11
Participating countries & entities in EMF Project

Click on your location in the map below to find information on contact details and activities relating to EMF in your area.
Outlook

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Department of Public Health, Environmental and Social Determinants of Health
Geneva, Switzerland