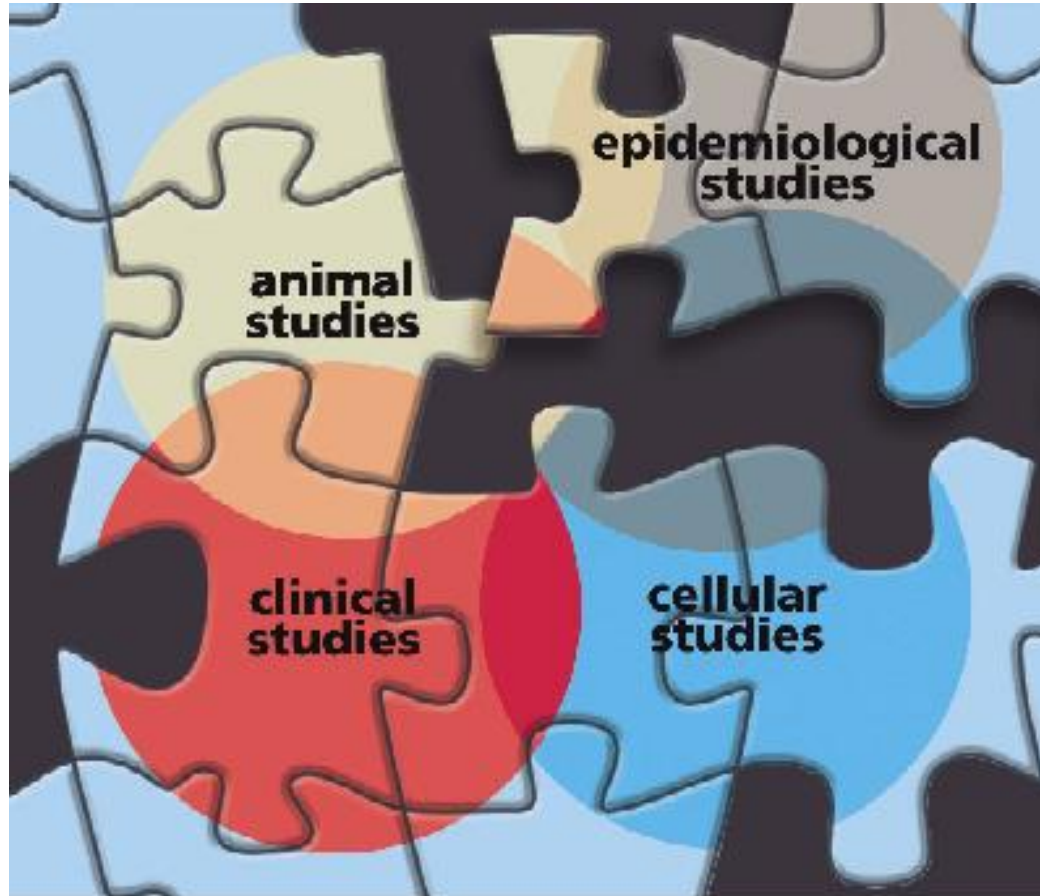

What type of research is needed?



Research

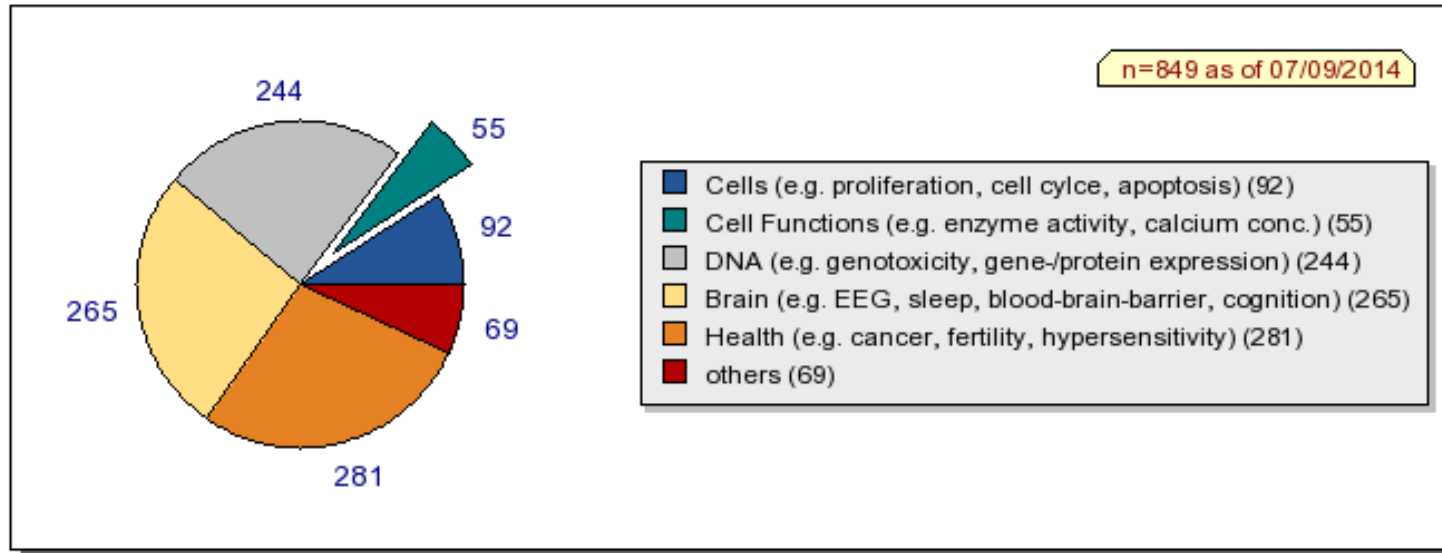
Balance of studies needed



<http://www.niehs.nih.gov/emfrapid/booklet/emf2002.pdf>

Laboratory Studies

Mobile phone-related experimental studies



From <http://www.emf-portal.de/>

powered by femu

EMF-PORTAL

Site Search: In glossary

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Information on the Effects of Electromagnetic Fields

Home | Objectives

Publications Search Topics

Graphical Overviews

Publication Search

Graphical Overviews

Glossary

Exposure Sources

Basics

Laboratory Studies

- Cellular studies
 - Genotoxicity
 - Gene expression
- Animal studies
 - Cancer
 - Behaviour
 - BBB
 - Skin
- Human studies
 - Sleep
 - EEG
 - Hormones
 - EHS



Short-term effects

(WHO fact sheet 193, June 2011)

- To date, research **does not suggest any consistent evidence** of adverse health effects from exposure to RF fields at levels below those that cause tissue heating.
- Research has not been able to provide support for a causal relationship between exposure to EMF and self-reported symptoms, or “electromagnetic hypersensitivity”.

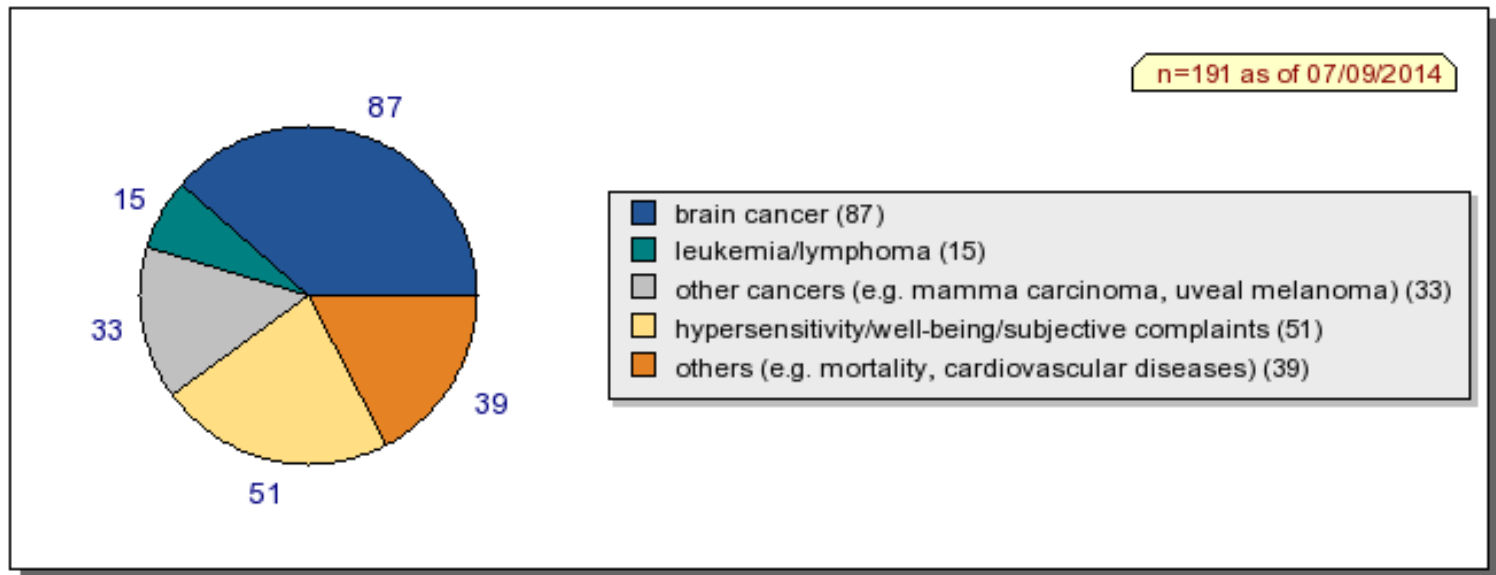


Epidemiological studies

Studies on mobile phones



Mobile phone related epidemiological studies



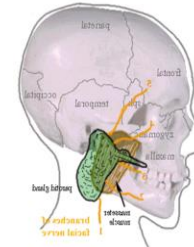
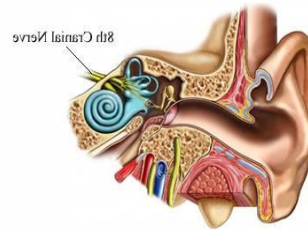
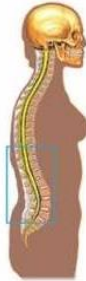
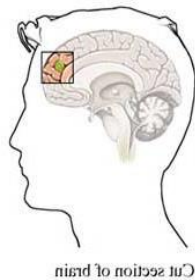
From <http://www.emf-portal.de/>

Epidemiological studies

Studies on mobile phones



- Tumours in head and neck
 - Glioma, meningioma, acoustic neuroma, parotid gland



- Numerous studies on the use of mobile phones
 - Published: USA, Nordic countries, INTERPHONE, CEFALO
 - Ongoing: MOBI-Kids, COSMOS

INTERPHONE study

(published 18 May 2010)

Published by Oxford University Press on behalf of the International Epidemiological Association
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International Journal of Epidemiology 2010;1–20
doi:10.1093/ije/dyq079

Brain tumour risk in relation to mobile telephone use: results of the INTERPHONE international case–control study

The INTERPHONE Study Group*

5 Corresponding author. Elisabeth Cardis; CREAL, Doctor Aiguader
*List of members of this study group is available in the Appendix

Accepted 8 March 2010

● Cases:

- 2,765 gliomas
- 2,425 meningiomas
- 1,121 acoustic neuroma
- 109 malignant parotid gland

● Controls:

- 7,658

Long-term effects

(WHO fact sheet 193, June 2011)

- No increased risk of glioma, meningioma or acoustic neuroma with mobile phone use > 10 years
- Indications of increased risk of glioma for heavy users
 - But biases and errors prevent a causal interpretation
- No available data for long-term use (15-20 years)
- Studies on children ongoing



Media centre



Electromagnetic fields and public health: mobile phones

Fact sheet N°193

June 2011

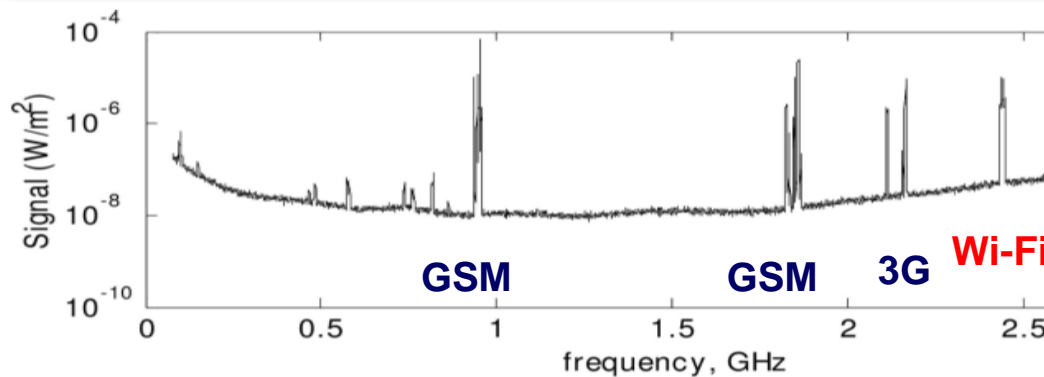
Key facts

- Mobile phone use is ubiquitous with an estimated 4.6 billion subscriptions globally.
 - The electromagnetic fields produced by mobile phones are classified by the International Agency for Research on Cancer as possibly carcinogenic to humans.
 - Studies are ongoing to more fully assess potential long-term effects of mobile phone use.
 - WHO will conduct a formal risk assessment of all studied health outcomes from radiofrequency fields exposure by 2012.
-

Epidemiological studies

Base stations and wireless networks

- Some studies have been performed
 - Well-being and performance
 - Cancer
- Difficulty of personal exposure assessment



Kenneth R. Foster, *Radiofrequency exposure from wireless LANs utilizing WI-FI technology*. *Health Phys.* 92(3):280–289; 2007





**World Health
Organization**

Fact sheet N°304
May 2006

Electromagnetic fields and public health Base stations and wireless technologies

Conclusions:

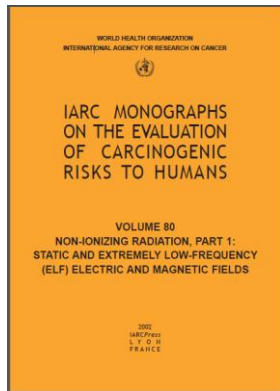
“Considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak RF signals from base stations and wireless networks cause adverse health effects”



How do we evaluate the health risk from EMF?



WHO Monographs on Electromagnetic fields



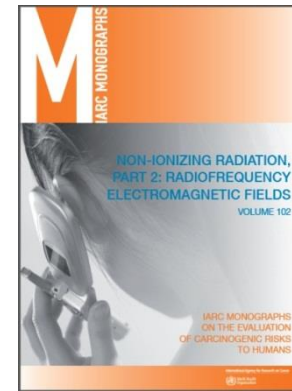
2002



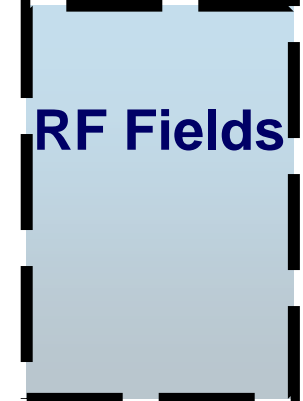
2006



2007

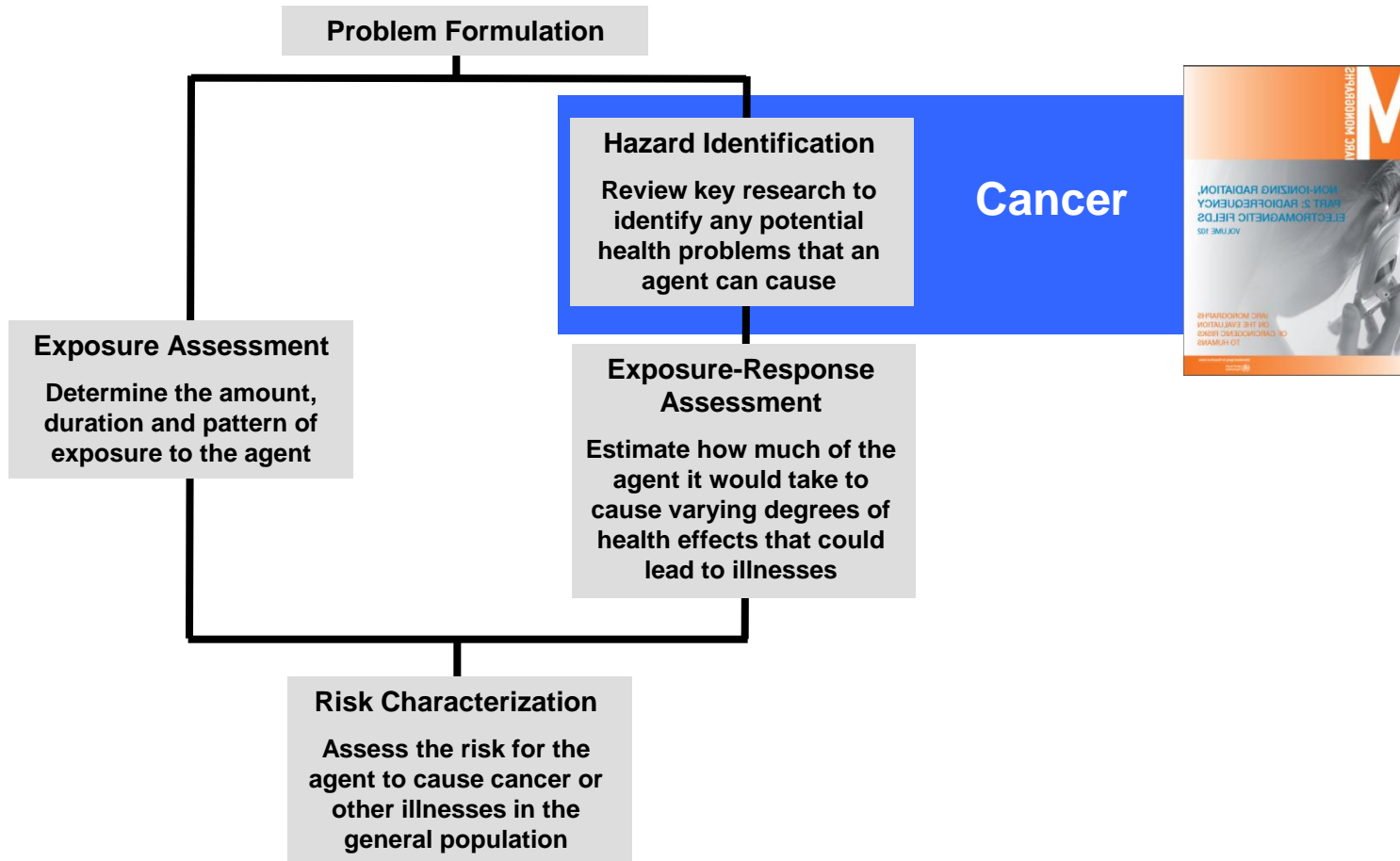


2013



2015-16

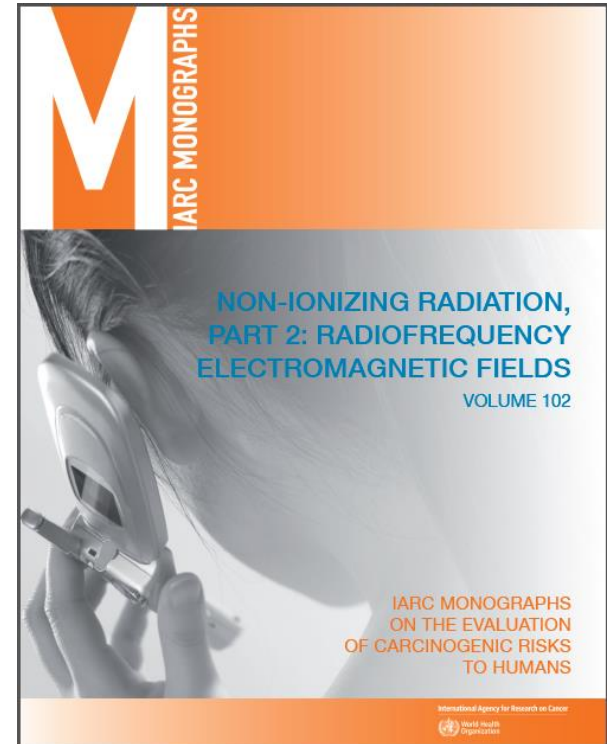
Health Risk Assessment



IARC Evaluation of Radiofrequency Fields

Volume 102 (2013)

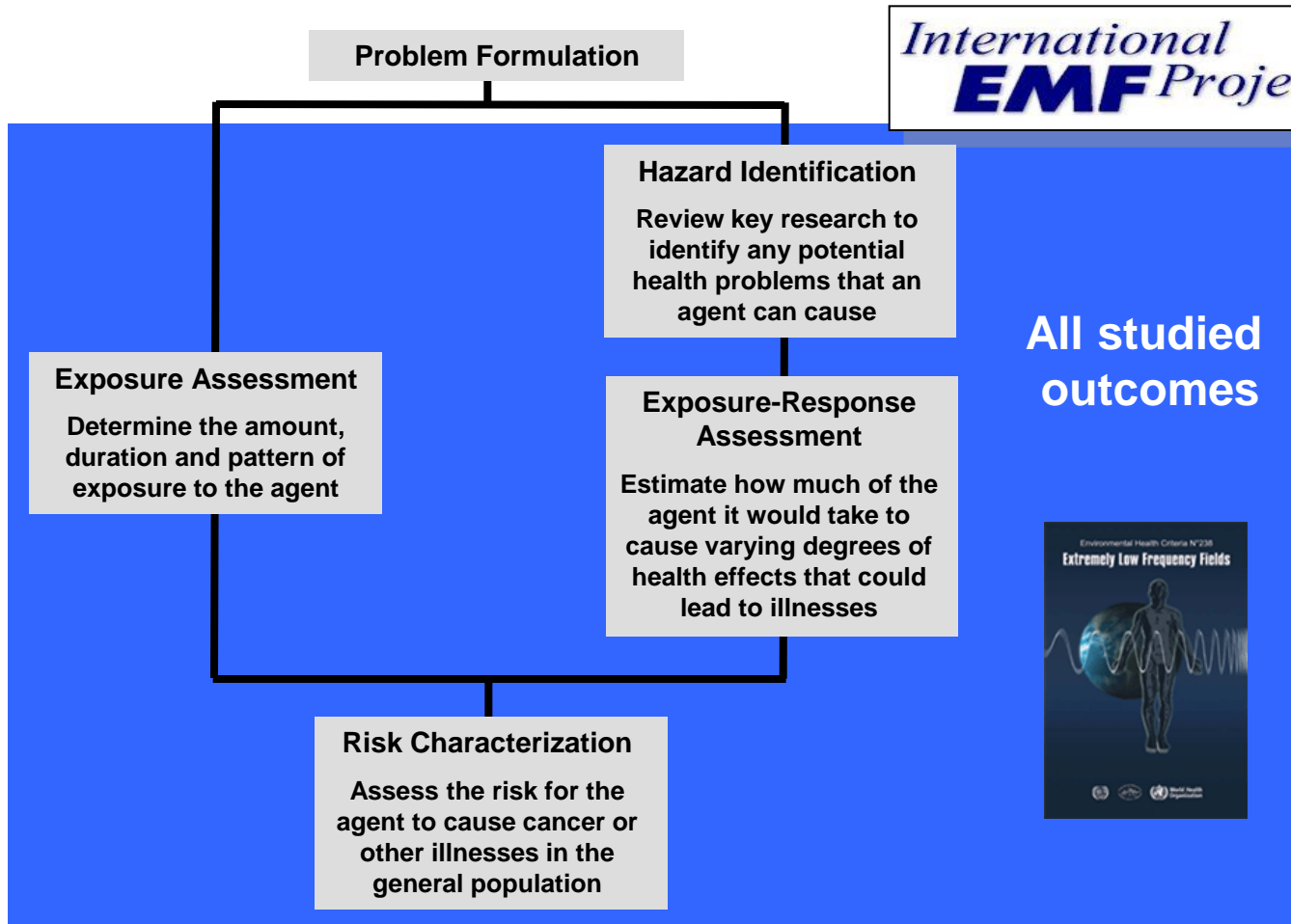
- RF fields classified as "*possibly carcinogenic to humans*" (*Group 2B*) based on
 - **limited evidence in humans**, based on positive association between glioma and acoustic neuroma and exposure to RF-EMF from wireless phones (epidemiologic studies)
 - **limited evidence in experimental animals** for the carcinogenicity of RF-EMF
 - **weak mechanistic evidence** relevant to RF-EMF-induced cancer in humans
- Evidence for other exposures (e.g. base stations, Wi-Fi) and outcomes (other cancers) considered insufficient for any conclusion



Agents Classified by IARC (950)

IARC Classification	Examples of Agents
Carcinogenic to humans (107) (usually based on strong evidence of carcinogenicity in humans)	Asbestos Alcoholic beverages Benzene Mustard gas Radon gas Solar radiation Tobacco (smoked and smokeless) X-rays and Gamma
Probably carcinogenic to humans (59) (usually based on strong evidence of carcinogenicity in animals)	Creosotes Diesel engine exhaust Formaldehyde Polychlorinated biphenyls (PCBs)
Possibly carcinogenic to humans (267) (usually based on evidence in humans which is considered credible, but for which other explanations could not be ruled out)	RF fields ELF magnetic fields Coffee Gasoline engine exhaust Pickled vegetables Styrene

Health Risk Assessment (cont'd)



Scope

- Frequency range:
 - 100 kHz - 300 GHz
 - Include UWB, pulses, mm-waves
- Sources:
 - RFID, EAS, mobile telephony, radar, smart meters, ...
- Health benefits not included
 - Hyperthermia, MRI, medical treatments, diathermy, RF ablation surgery
- Systematic review of scientific evidence of health risks
- Update on research recommendations
- Review of national RF policies



EHC on RF Fields

Preamble

1. Summary and recommendations for further study
2. Sources, measurements and exposures
3. Electric and magnetic fields inside the body; SAR and heat
4. Biophysical mechanisms; tissue heating
5. Brain physiology and function
6. Auditory, vestibular and ocular function
7. Neuroendocrine system
8. Neurodegenerative disorders
9. Cardiovascular system and thermoregulation
10. Immune system and haematology
11. Fertility, reproduction and development
12. Cancer
13. Health risk assessment
14. Protective measures

Annexes



**By disease
category**



Electromagnetic fields (EMF)

[EMF Home](#)[About electromagnetic fields](#)[EMF Project](#)[Research](#)[Standards](#)[EMF publications & information resources](#)[Meetings](#)

Radio Frequency fields: Environmental Health Criteria Monograph

Consultation on the scientific review for the upcoming WHO Environmental Health Criteria

The consultation is open until 15 December 2014

The World Health Organization is undertaking a health risk assessment of radiofrequency electromagnetic fields, to be published as a monograph in the Environmental Health Criteria Series. This publication will complement the monographs on static fields (2006) and extremely low frequency fields (2007), and will update the monograph on radiofrequency fields (1993).

The draft chapters of this document containing the scientific content are now open for consultation by RF experts. We are seeking comments on the accuracy and completeness of these chapters. Please note that the literature searches have been

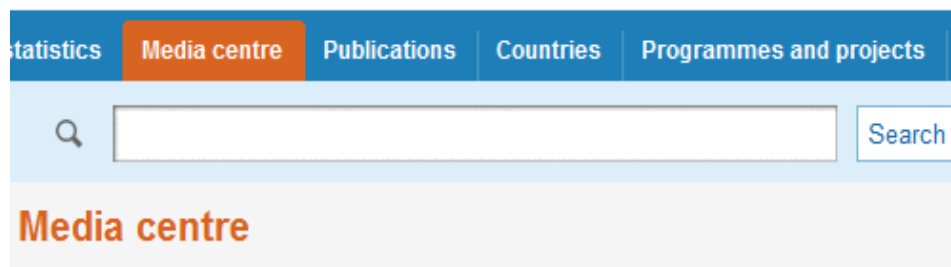
[Share](#)[Print](#)**Last update:**

31 October 2014 16:17 CET

**Extended until
15 December 2014**

mHealth an ITU/WHO initiative

العربي | 中文 |



ITU and WHO launch mHealth initiative to combat noncommunicable diseases

Plan to save lives and reduce costs agreed at ITU Telecom World 2012

Joint ITU/WHO news release

17 OCTOBER 2012 | DUBAI, UNITED ARAB EMIRATES - The International Telecommunication Union (ITU) and WHO today launched a new partnership called the 'mHealth' Initiative to use mobile technology, in particular text messaging and apps, to help combat noncommunicable diseases (NCDs) such as diabetes, cancer, cardiovascular diseases and chronic respiratory diseases.

Challenges to governments....

- Rapidly evolving RF technologies
- Launched on the market before health evaluation
- Disparities in risk management measures and regulations around the world
- Concern from the public

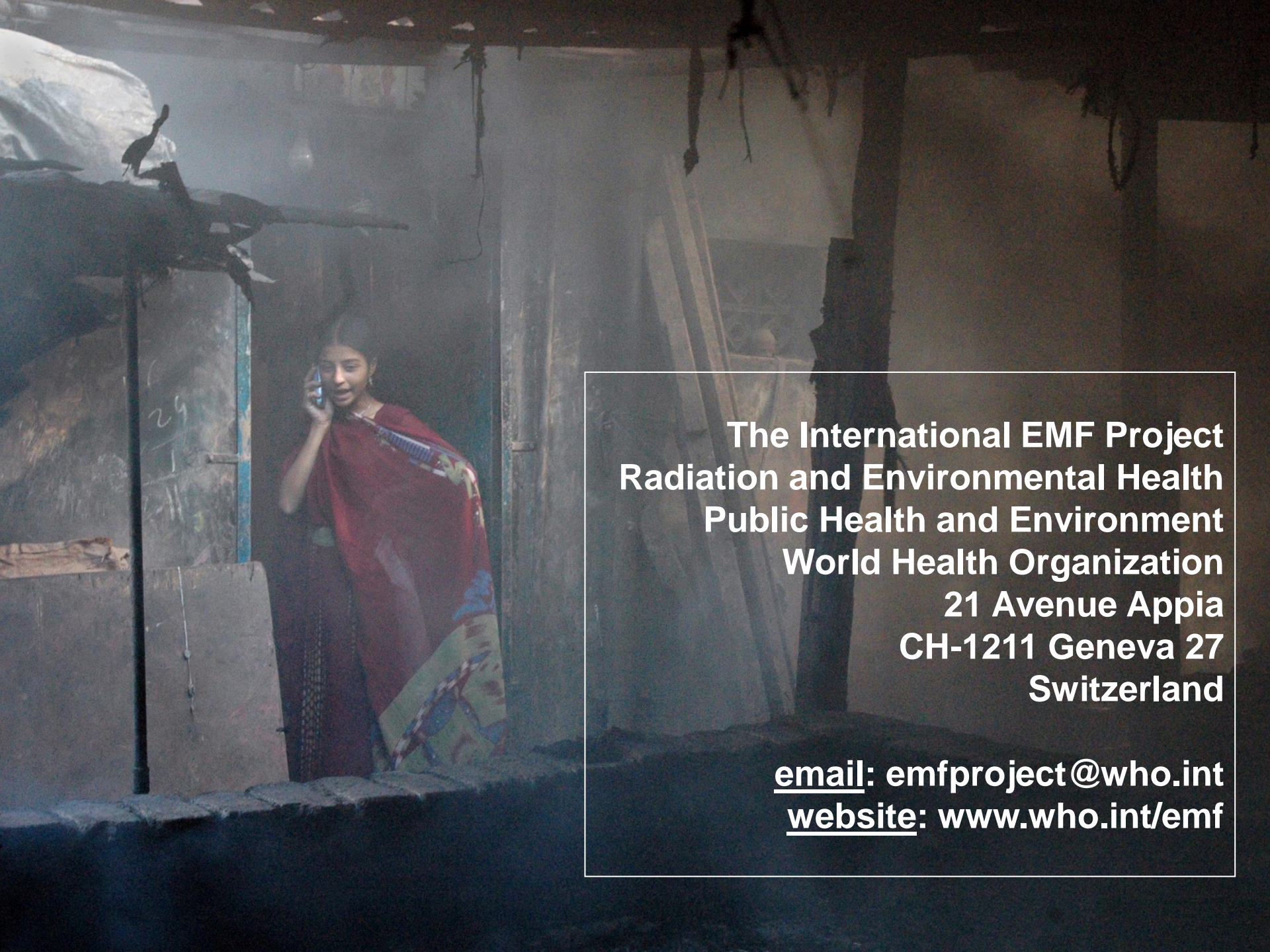


Conclusions

- Need for clear roles and responsibilities in government on this topic
- Need for adoption and compliance of health-based standards
- Need for a public information program and dialogue with stakeholders
- Need for promoting research to reduce uncertainty

We are a "global village"





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Radiation and Environmental Health
Public Health and Environment
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