

Evaluating and Managing Occupational Exposures to EMF

A draft WHO / NIOSH / ILO document

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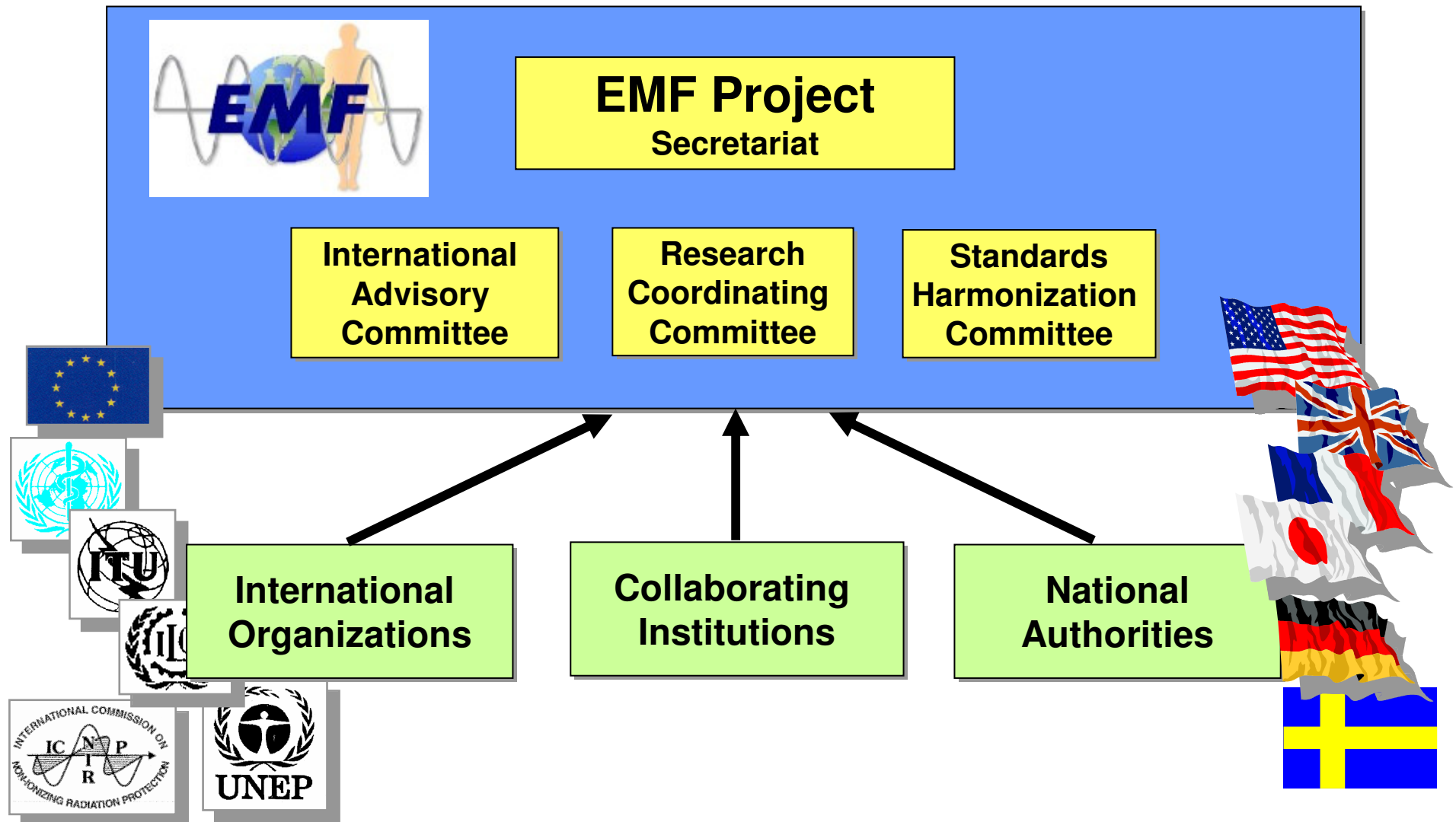


**World Health
Organization**



- Established in 1996
- To assess health and environmental effects of exposure to electromagnetic fields in the frequency range from 0 to 300 GHz
- A multinational, multidisciplinary effort to create and disseminate information appropriate to human health risk assessment for EMF
- Coordinated by WHO

Structure



Collaboration



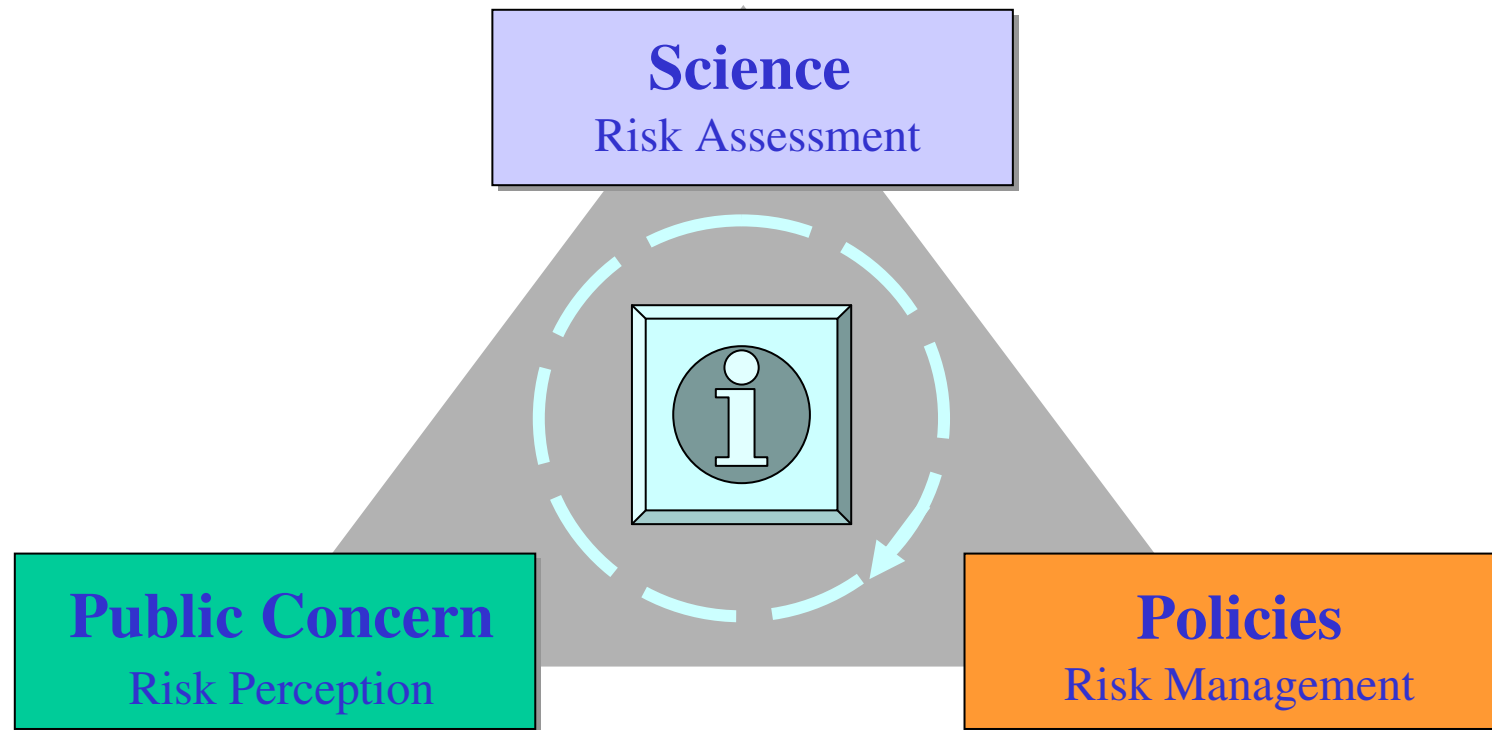
World Health
Organization



NIOSH *National Institute for
Occupational Safety and Health*



EMF: An environmental risk?

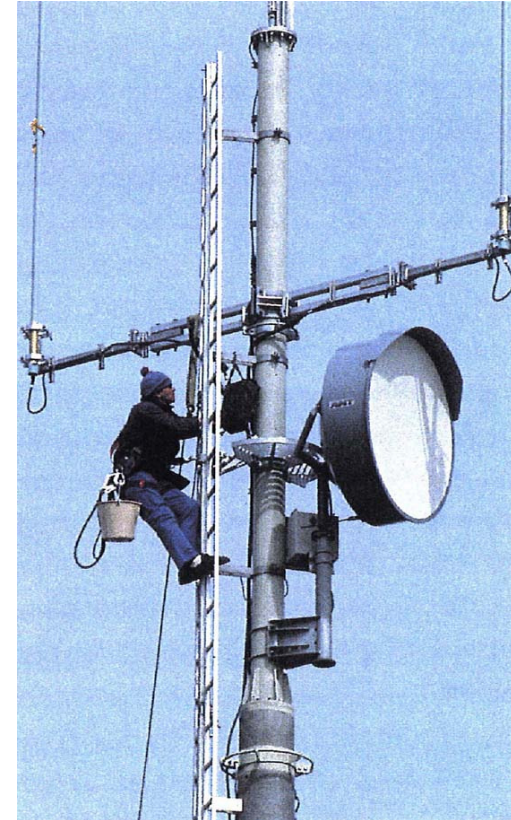


EMF Management Programmes

- For the public



- For workers



Scope

- To provide the outline of a practical management programme to protect workers from EMF at all frequencies (0-300 GHz)
- Level:
 - Practical and simple (for non-specialists)
 - Refer to other documents for more details

Audience

- Target audience:
 - Employers
 - Occupational hygienists
 - EMF consultant
 - Workers and trade unions



Topics for consideration

1. Introduction
2. What are EMF?
3. Sources of exposure
4. Health effects
5. Standards and guidelines
6. Exposure measurements
7. Exposure controls
8. EMF occupational management plans
- References
- Appendices



Topics for consideration

1. Introduction

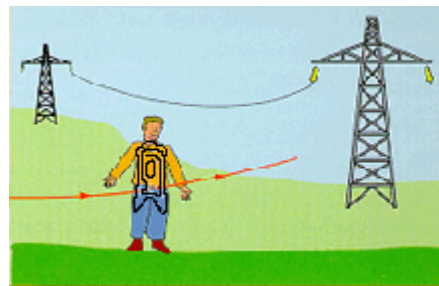
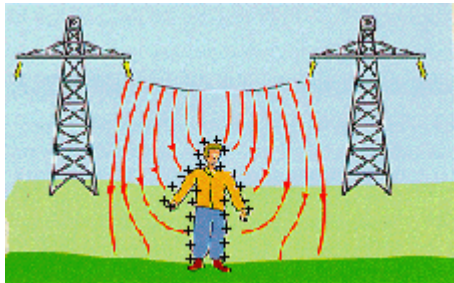
- Motivation (EC Directive, WHO's Global Plan of Action, ...)
- Aims
- Objectives
- Audience

Topics for consideration

1. Introduction

2. What are EMF?

- Static fields, ELF fields, RF fields
- Physical properties and how EMF interacts with body



$B(T)$

$J (A/m^2)$

$P (W/m^2)$

$SAR (W/kg)$...

Topics for consideration

1. Introduction
2. What are EMF?
3. Sources of exposure



Topics for consideration

1. Introduction
2. What are EMF?
3. Sources of exposure to workers
 - Review of workplace sources (freq., exposures, results from good surveys, ..)
 - Exposures to workers under normal and extreme exposure conditions
 - References to more focused documents
 - *Typical vs. comprehensive?*

Topics for consideration

1. Introduction
2. What are EMF?
3. Sources of exposure to workers
4. Health effects
 - Brief review, summarizing existing WHO and national reviews
 - Simple language, covering the EMF frequency range



Topics for consideration

1. Introduction
2. What are EMF?
3. Sources of exposure to workers
4. Health effects
5. Standards and Guidelines
 - ICNIRP, IEEE exposure guidelines
 - CENELEC, IEEE and other measurement standards (basis for compliance)
 - *Any other standards?*



Topics for consideration

6. Exposure measurements

- Static, ELF, RF fields
- Instruments, procedures (purpose-dependent)



Topics for consideration

6. Exposure measurements

- Static, ELF, RF fields
- Instruments, procedures (purpose-dependent)
- Types of exposure assessment (walk-through monitoring, source survey, spot measurement surveys, personal monitoring, ...)



Topics for consideration

7. Exposure controls

- Static, ELF, RF fields
- Engineering controls (prevent or contain exposures)
- Administrative controls (control exposures)
- Personal protective equipment (devise barriers)

- *Controlled areas ?*
- *Other controls?*

Topics for consideration

8. EMF occupational management plan
 - General obligations and duties (responsibilities, authorities and an administrative plan)
 - Exposure assessment
 - Exposure controls
 - Medical surveillance (normal and abnormal conditions)
 - Training
 - Plan review
 - *Flowchart ...?*

Topics for consideration

- Appendices

- Examples of radiation occupational programmes in different countries (*e.g. ??*)
- EC Directive
- *Others ??*

Open questions

- Definition of worker
- Subpopulations (pregnant women, children)



Open questions

- Format

- A stand-alone document
- An *ILO Occupational Safety and Health series* document
 - NIR (1985), RF (1986), power frequencies (1994), RF dielectric heaters and sealers (1998)

- Design

- *Need illustrations ... please*

- *Comments?*

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Topics for consideration

1. Introduction
2. What are EMF?
3. Sources of exposure
4. Health effects
 - *Typical vs. comprehensive?*
 - *Anything else would be useful?*
5. Standards and guidelines
 - *Any other standards?*
6. Exposure measurements
 - *Controlled areas ?*
 - *Other controls?*
7. Exposure controls
 - *Flowchart ...?*
 - *Subpopulations (pregnant workers, children,. ..)*
8. EMF occupational management plans
 - Appendices
 - References

Definitions

- Occupationally exposed population consists of adults exposed under controlled conditions who should be trained to be aware of potential risks and to take appropriate precautions (ICNIRP)

or

- Occupationally exposed population consists of individuals experiencing EMF exposure in the course of performing their work
- Occupational exposure is limited to the duration of the working day and the working lifetime

or ... ???