

WHO国際EMFプロジェクトの動向

国立保健医療科学院

牛山 明

非電離放射線に関する国際諮問委員会

国際電磁界プロジェクト 第25回国際諮問委員会

(2020年6月29日～7月1日 オンライン開催 参加者約100名)

- WHOの活動、非電離放射線(NIR)に関する活動の紹介 ※
- 非電離放射線(NIR)防護について NIR Philosophy ※
- NIRを用いた美容機器 ※

- WHOの電磁界に関する活動報告
- 最近の研究活動のレビュー
- 国際ガイドライン(ICNIRP、IEEE/ICES)
- 5Gに関しての情報共有

(※のセッションは、EMFプロジェクトとUVプログラムの共同会議)

WHOから提供された主な話題

- 1) WHOの紹介
 - ・組織再編、Webサイトのリニューアル
- 2) WHO環境保健クライテリアの進捗状況
- 3) NIR International Standardsの進捗
- 4) その他
 - 5G情報の提供
 - 5Gに関するデマ情報に対する対応 等

1) WHOの紹介

- 非電離放射線については、Dept of Environment, Climate Change and Health (環境および気候変動と健康部門)に所属

Departmentが作成した小冊子(2019)



Introduction.....

Key messages.....

Burden of environment-related disease.....

Strategies to combat environment-related disease...

WHO actions.....

Part I: Key risks to health.....

Ambient air pollution..... 大気汚染

Household air pollution..... 室内空気汚染

Water..... 水

Sanitation and hygiene..... 衛生

Chemical safety..... 化学物質安全性

Radiation..... 光・電磁波・放射線

Climate change..... 気候変動

Part II: Priority settings for action.....

Environmental health in emergencies.....

Workplaces.....

Cities.....

Housing.....

Health care facilities.....



MAIN WHO ACTIONS

WHO actions on the adverse health effects of radiation include the following:

Radiation safety standards

Develop radiation safety standards and support countries in their implementation.

Information

Produce information on the effects of radiation through advocacy and communication.

Emergencies

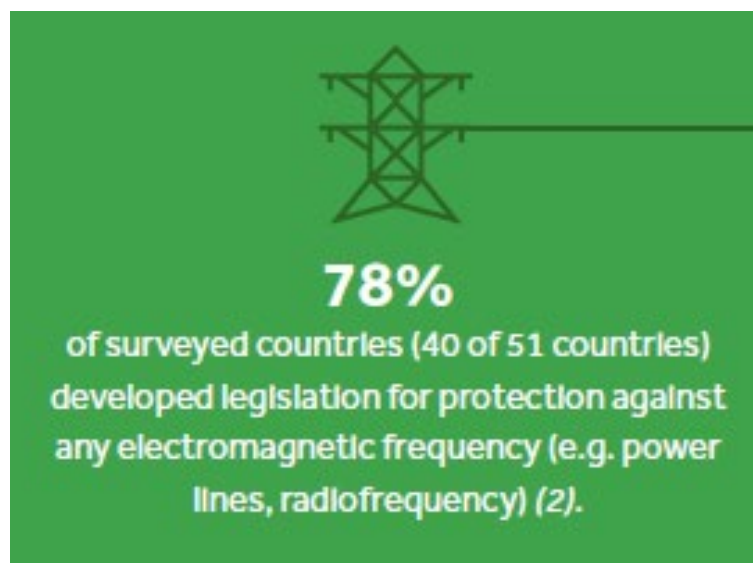
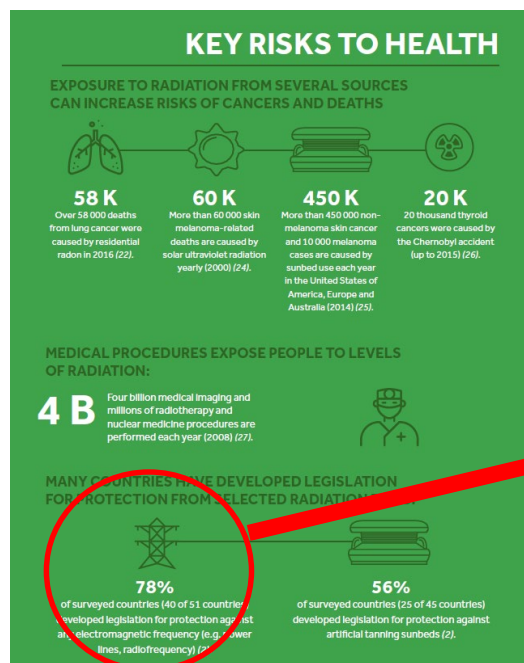
Coordinate preparedness and public health response to radiation emergencies.

Research agendas

Develop research agendas on radiation-related topics.

Evidence-based policy

Assess health risks from radiation exposure and provide evidence-based policy options, guidelines and tools, for example on radiation safety in medicine, sunbed use, radon control, and emergency preparedness and response.



NIR Workplan (2020-21)

GPHG	0667-RF EHC	RF EHC: Radiofrequency fields monograph
GPHG	0668-NIR BSS	NIR BSS: Standards for non-ionizing radiation protection
GPHG	0702-NIR tools	NIR tools: Guidance, tools and information products on assessing and managing non-ionizing radiation exposures
GPHG	0718-NIR Res Agenda	NIR Res Agenda: Updated research agendas for non-ionizing radiation (e.g. electromagnetic fields, ultraviolet radiation)
CSPS	RAD NIR support	RAD NIR support: Technical support (EMF/UV)
LEAD	NIR networks	NIR networks: EMF Project and Optical Project
LEAD	RP partnership	RP partnership: Global partnership in radiation protection

1) WHOの紹介 (Webサイトの更新)

<https://www.who.int/>

World Health Organization

Health Topics ▾

E

- Earthquakes
- Ebola virus disease
- Echinococcosis
- Elder abuse
- Electromagnetic fields**
- Emergency and trauma care
- Environmental health
- Epilepsy

Global Regions ▾

World Health Organization

HIJKLMNOPQF

Home / Health topics / Electromagnetic fields

Electromagnetic fields

Overview

WHO Response

As part of its charter to protect public health and in response to public concern over health effects of EMF exposure, the WHO established the [International EMF Project](#) in 1996 to assess the scientific evidence of possible health effects of EMF in the frequency range from 0 to 300 GHz. The EMF Project encourages focused research to fill important gaps in knowledge and to facilitate the development of internationally acceptable standards limiting EMF exposure.

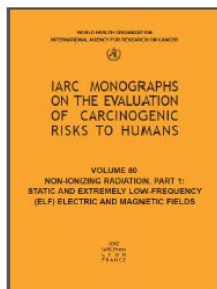
Fact sheets +

Q&As +

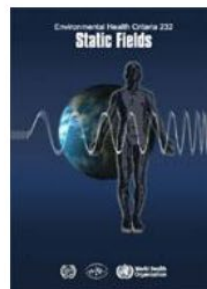
2) 環境保健クライテリア の進捗

- 低周波領域では、IARCの発がん性評価モノグラフを受けて、EHCを発行済み。
- 高周波のIARC発がん性評価は2013年に発刊
- 高周波(Radio Frequency)の環境保健クライテリア(EHC)の発行に向けての作業を進めている

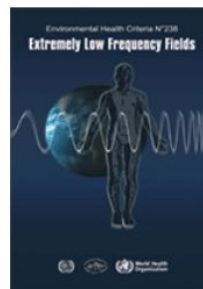
WHO Monographs on Electromagnetic fields



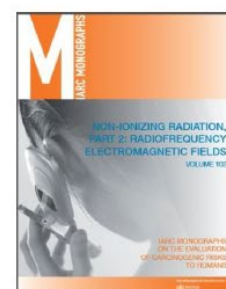
2002



2006



2007



2013



2012-xx

2018年に専門家に対し、優先するべきoutcomesについての調査を実施

International survey of priority outcomes (2018)



WHO will commission a number of systematic reviews that will analyze and synthesize the available evidence on the most important potential adverse health outcomes. Appropriate selection of these health outcomes is therefore key to producing a useful monograph, considering available resources and timeline of the project.

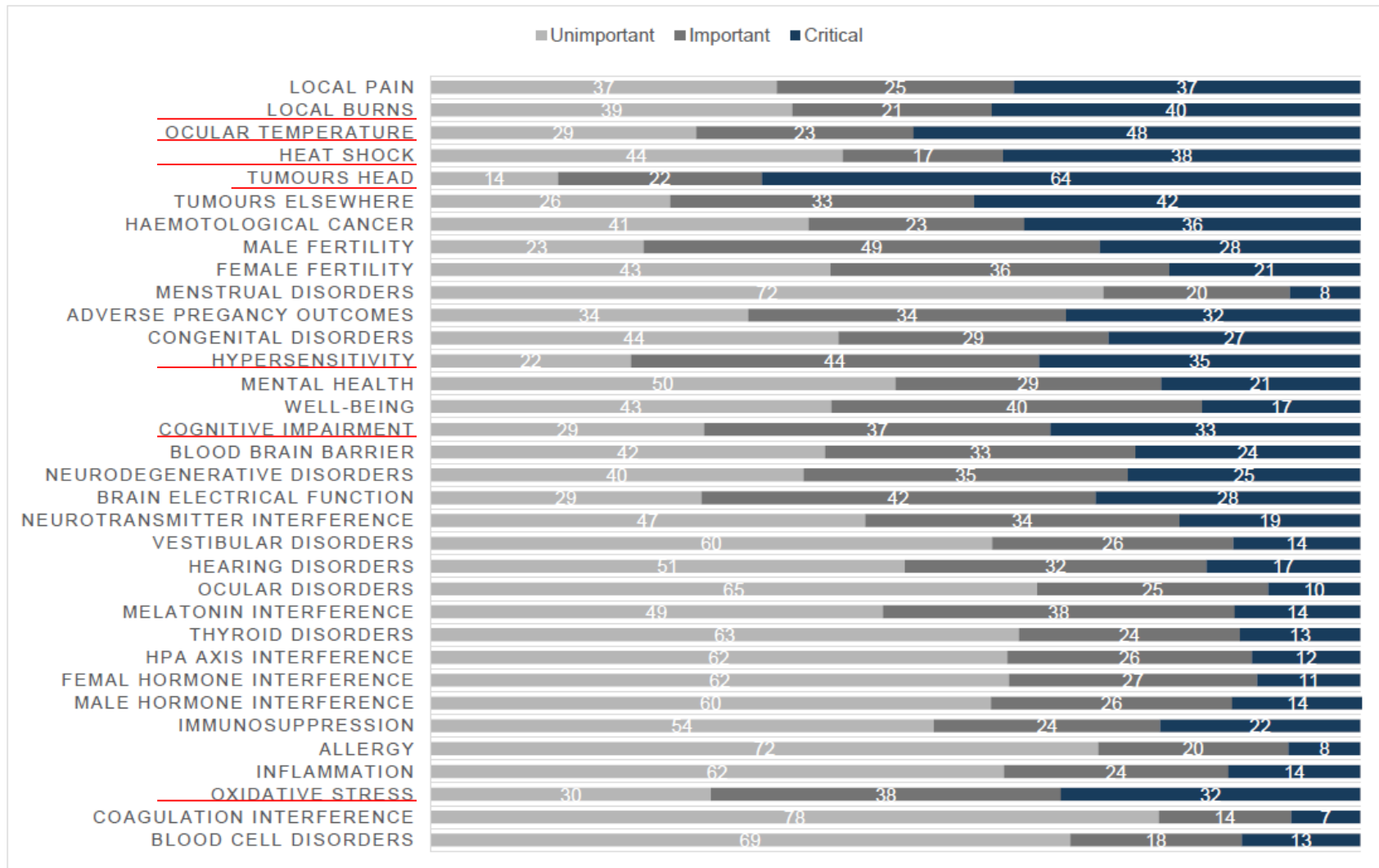
To prioritize health outcomes, WHO sought the opinion of experts on the topic of radiofrequency electromagnetic field exposures and health to complete an **online survey titled "Rating Potential Adverse Health Outcomes of Exposure to Radiofrequency Fields"** to help prioritize the health outcomes to be addressed systematically. Over 300 RF experts were invited, and 167 responses received.

Rating Potential Adverse Health Outcomes
of Exposure to Radiofrequency Fields

Survey Preliminary Results – Descriptive
Statistics

Note: Results are representative of completed survey responses collected up until June 28 2018.

International survey of priority outcomes (cont'd)



Call for Expression of Interest (2019)

The World Health Organization's (WHO) Radiation Programme has an ongoing project to assess potential health effects of exposure to radiofrequency electromagnetic fields in the general and working population. To prioritize potential diverse health outcomes, WHO conducted a broad [international survey](#) in 2018. Ten major topics were identified for which WHO will now commission systematic reviews to analyze and synthesize the available evidence.

Through this Call, WHO invites eligible teams to indicate their interest in undertaking a systematic review on one (or more) of the following topics:

↓ [SR1 – Cancer \(human observational studies\)](#)

⇨ pdf, 525kb

↓ [SR2 – Cancer \(animal studies\)](#)

⇨ pdf, 628kb

↓ [SR3 – Adverse reproductive outcomes \(human observational studies\)](#)

⇨ pdf, 634kb

↓ [SR4 – Adverse reproductive outcomes \(animal and in vitro studies\)](#)

⇨ pdf, 633kb

↓ [SR5 – Cognitive impairment \(human observational studies\)](#)

⇨ pdf, 633kb

↓ [SR6 – Cognitive impairment \(human experimental studies\)](#)

⇨ pdf, 633kb

↓ [SR7 – Symptoms \(human observational studies\)](#)

⇨ pdf, 631kb

↓ [SR8 – Symptoms \(human experimental studies\)](#)

⇨ pdf, 631kb

↓ [SR9 – Effect of exposure to RF on biomarkers of oxidative stress](#)

⇨ pdf, 628kb

↓ [SR10 – Effect of exposure to heat from any source on pain, burns, cataract and heat-related illnesses](#)

⇨ pdf, 526kb

Expressions of interest (cont'd)

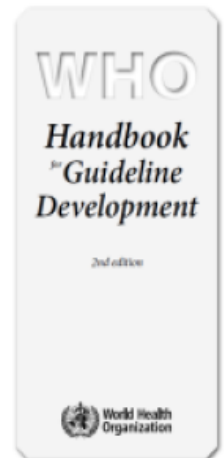
Systematic review topic	Number of applications
Cancer (observational studies)	9
Cancer (experimental studies)	3 / 2
Adverse reproductive outcomes (observational studies)	4
Adverse reproductive outcomes (experimental studies)	2 / 2
Cognitive impairment (observational studies)	3
Cognitive impairment (experimental studies)	3
Symptoms (observational studies)	3
Symptoms (experimental studies)	3
Oxidative stress	4
Heating	0 / 1

WHO Environmental Health Criteria Radiofrequency Fields



Appraisal of the evidence for health risks associated with exposure to RF fields to result in several publications.

- A technical report as a scoping review of the scientific literature of studied health outcomes.
- A series of systematic reviews on priority health outcomes to be published in a special issue of *Environment International*
- 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.
- The **Task Chair** has been appointed



3) International Standards(についての進捗状況 (Fundamental safety principle:FSP)

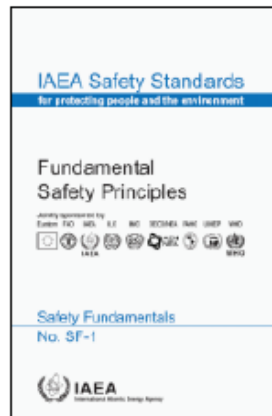
NIR-FSPは、IAEA によるIR 防護のFSPおよび基本安全基準(Basic Safety Standard: BSS) をモデルにし、WHO を含む国際機関が共同で作成。

各国における防護の規制を支援、また防護の国際的な調和が目的。

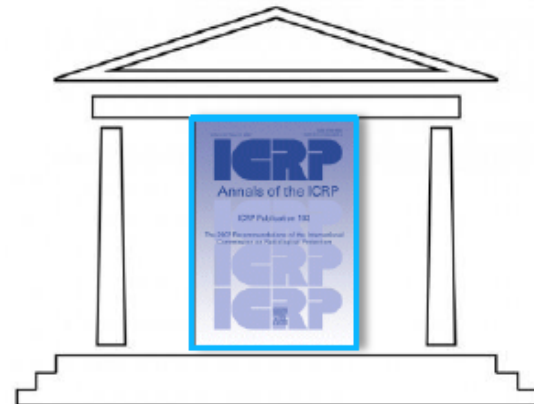
現在、コアグループで調整を行っているが、COVID-19のため作業が停滞中。

International standards

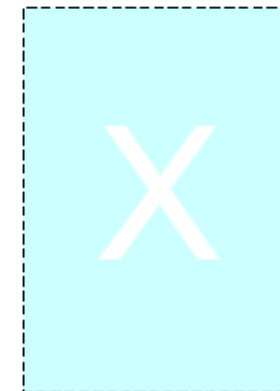
Ionizing radiation



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



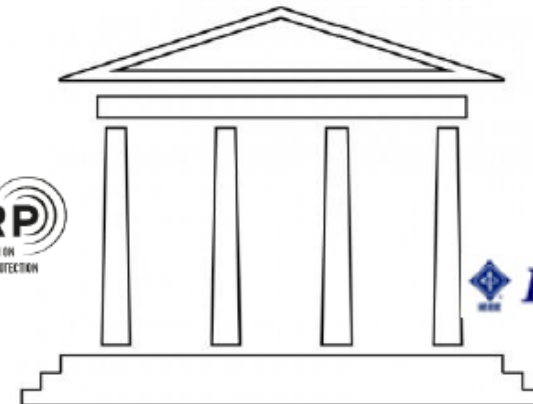
Non-ionizing radiation



ICNIRP
INTERNATIONAL COMMISSION ON
NON-IONIZING RADIATION PROTECTION

cie

ICES



Current structure

Foreword

1. **Introduction**
2. **General criteria**
3. **Public exposures**
4. **Occupational exposures**
5. **Medical exposures**

Definitions/Glossary

Abbreviations and acronyms

References

Working Title

A FRAMEWORK FOR NON-IONIZING RADIATION PROTECTION AND SAFETY

This document is prepared for consultation. It is a working draft and presents concepts that are under development and are subject to change. It is not for reference.

Date: April 2020

This regulatory framework for Non-ionizing Radiation Protection document, drafted by a group of experts in the regulatory and NIR technical fields, is being developed as a collaborative approach to reflect an international consensus on what constitutes a high level of safety for protecting people from adverse health effects of non-ionizing radiation.

This project has been discussed in the annual meetings of the WHO International Advisory Committee (IAC) on Non-ionizing Radiation since 2014.

You are invited to read this draft and provide comments regarding the applicability of the different criteria to your country or your area of expertise, whether there are gaps, errors or areas that lack clarity. At this stage, please do not spend time on wordsmithing.

4) その他 5Gに関する情報共有

- Webサイトに5Gに関するQ&Aを掲載



WHO and 5G

- WHO Questions and Answers
(published 27 February 2020)
<https://www.who.int/news-room/q-a-detail/5g-mobile-networks-and-health>

What is 5G?



What are the main differences between 5G and previous technologies?



Exposure levels



What are the potential health risks from 5G?



What are the international exposure guidelines?



What is WHO doing?



- Webサイトに5Gに関するQ&Aを掲載

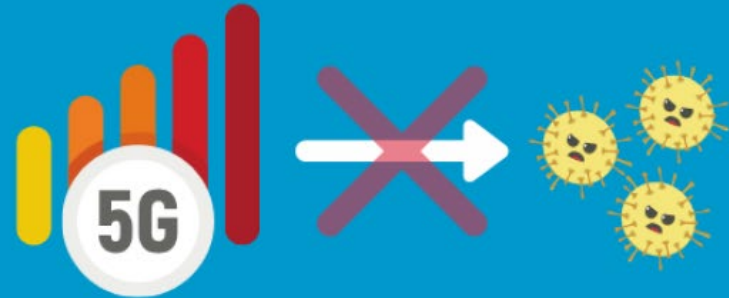
WHO and 5G (cont'd)

WHO COVID-19 mythbuster



Viruses cannot travel on radio waves/mobile networks.
COVID-19 is spreading in many countries that do not have 5G mobile networks.
COVID-19 is spread through respiratory droplets when an infected person coughs, sneezes or speaks.
People can also be infected by touching a contaminated surface and then their eyes, mouth or nose.

FACT:
5G mobile networks
DO NOT spread COVID-19



#Coronavirus #COVID19

8 April 2020

[https://www.who.int/images/default-source/health-topics/coronavirus/myth-busters/web-mythbusters/eng-mythbusting-ncov-\(15\).tmb-1920v.png](https://www.who.int/images/default-source/health-topics/coronavirus/myth-busters/web-mythbusters/eng-mythbusting-ncov-(15).tmb-1920v.png)