



@ The Royal Society of Medicine: 1 Wimpole Street SW1



# Radiofrequency Radiation from Wireless Communication Sources Are Safety Limits Valid?

International Commission on Biological Effects of Electromagnetic Fields



Dr. Kent Chamberlin

Dr. Erica Mallery-Blythe

Dr. James Lin

David Gee

Prof John Frank



14<sup>th</sup> June 2-5pm

Refreshments Provided

Invitation only

RSVP to:

# **NIR Health Effects, Vulnerable Groups and the Critical Role of Medical Doctors**

**International Commission on Biological Effects of  
Electromagnetic Fields**

**Royal Society of Medicine 14<sup>th</sup> June 2023**

---

**Dr. Erica Mallery-Blythe**

**Declarations:**

Special Expert: International Commission on Biological Effects of Electromagnetic Fields  
(ICBE-EMF)

Founder of PHIREmedical.org (Physicians Health Initiative for Radiation and Environment)

Honorary Member British Society of Ecological Medicine (BSEM)

Medical Advisor Oceania Radiofrequency Scientific Advisory Association (ORSAA)

Member International Guidelines on Non-Ionising Radiation (IGNIR)

Medical Advisor ES-UK

# Introduction:

---



1. Quick overview of safety standard deficits
2. Vulnerable groups
3. Acute + Chronic Health Effects
4. Public health significance
5. Characterisation / definitions
6. Research inadequacies
7. Litigation and mitigation
8. Requirement for biological safety limits

COMMENT

Open Access



# Scientific evidence invalidates health assumptions underlying the FCC and ICNIRP exposure limit determinations for radiofrequency radiation: implications for 5G

International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF)\*

## Abstract

In the late-1990s, the FCC and ICNIRP adopted radiofrequency radiation (RFR) exposure limits to protect the public and workers from adverse effects of RFR. These limits were based on results from behavioral studies conducted in the 1980s involving 40–60-minute exposures in 5 monkeys and 8 rats, and then applying arbitrary safety factors to an apparent threshold specific absorption rate (SAR) of 4W/kg. The limits were also based on two major assumptions: any biological effects were due to excessive tissue heating and no effects would occur below the putative threshold SAR, as well as twelve assumptions that were not specified by either the FCC or ICNIRP. In this paper, we show how the past 25 years of extensive research on RFR demonstrates that the assumptions underlying the FCC's and ICNIRP's exposure limits are invalid and continue to present a public health harm. Adverse effects observed at exposures below the assumed threshold SAR include non-thermal induction of reactive oxygen species, DNA damage, cardiomyopathy, carcinogenicity, sperm damage, and neurological effects, including electromagnetic hypersensitivity. Also, multiple human studies have found statistically significant associations between RFR exposure and increased brain and thyroid cancer risk. Yet, in 2020, and in light of the body of evidence reviewed in this article, the FCC and ICNIRP reaffirmed the same limits that were established in the 1990s. Consequently, these exposure limits, which are based on false suppositions, do not adequately protect workers, children, hypersensitive individuals, and the general population from short-term or long-term RFR exposures. Thus, urgently needed are health protective exposure limits for humans and

Events - International Commission on the  
Biological Effects of Electromagnetic Fields  
([icbe-emf.org](http://icbe-emf.org))

**FACT SHEET**

**Scientific Evidence Invalidates Health Assumptions of Government Exposure  
Limits for Radiofrequency Radiation (RFR): Implications for 5G<sup>1</sup>**



INTERNATIONAL COMMISSION ON THE BIOLOGICAL EFFECTS OF ELECTROMAGNETIC FIELDS

**FCC/ICNIRP FALSELY CLAIM**

**SAR Heating Effect**  
4 W/kg No Effect Possible

60 mins **Acute** experiments can predict **Chronic** effects.

No increase in brain tumors & studies biased

**WRONG**

Same Absorption

Same Sensitivity To RFR

Untested YET Safe

**UNTESTED**

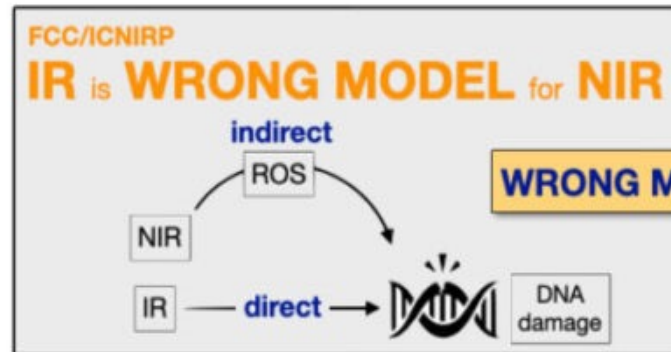
modulation pulsing polarization, frequency

**FCC/ICNIRP IGNORE**

Synergistic effects with RFR & other environmental agents

Environment at risk

**IGNORED**



**FCC/ICNIRP established**

**ARBITRARY SAFETY FACTORS**

**ARBITRARY**

Whole Body	SAR 4W/kg HARMFUL	50-fold safe	10 g tissue 2 W/kg	1 g tissue 1.6 W/kg	Safe
	SAR 4W/kg HARMFUL	10-fold safe	10 g tissue 10 W/kg	1 g tissue 8 W/kg	Safe
		Localized			

Scientific evidence invalidates health assumptions underlying the FCC and ICNIRP exposure limit determinations for radiofrequency radiation: implications for 5G, Oct 2022

– Assumption 7)

- **Absorption Susceptibility** in Children

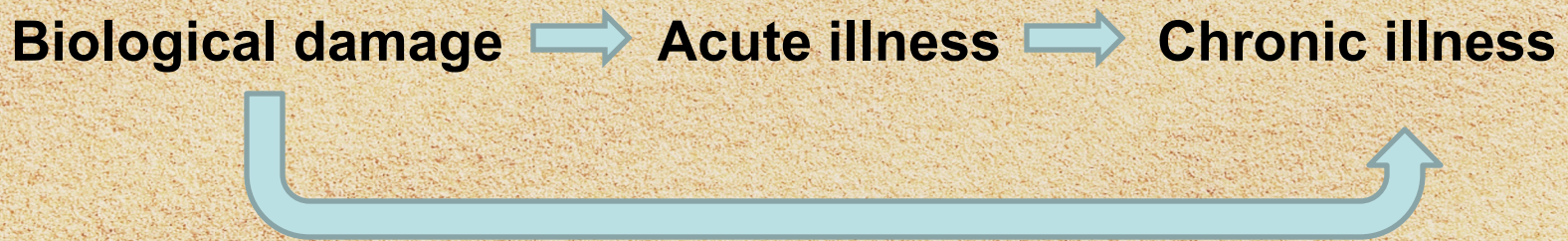
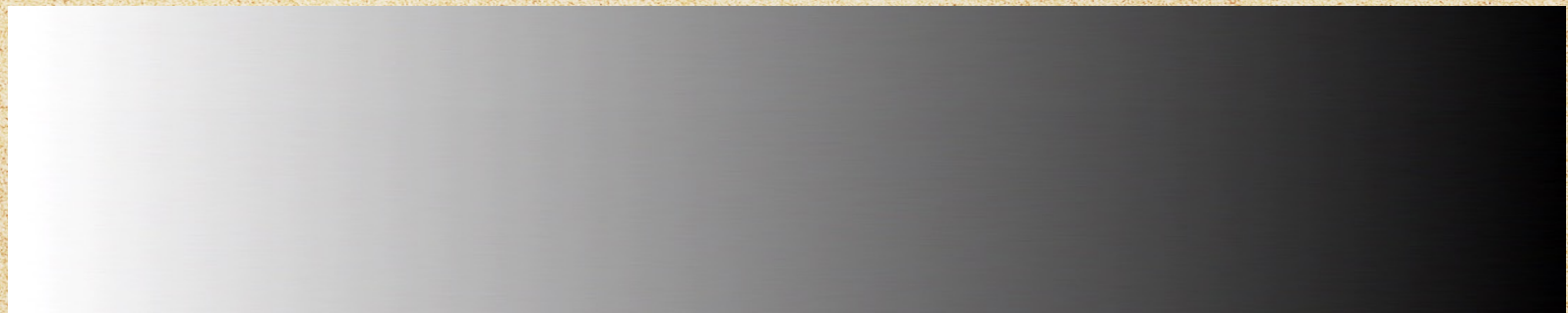


– Assumption 8)

- Differences in **Sensitivity**

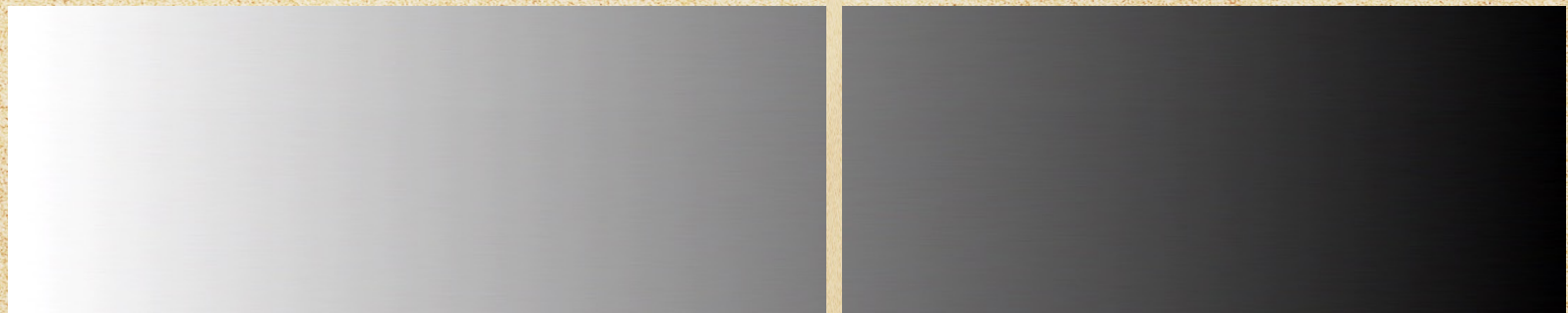


# The 'grayscale' of damage from environmental toxicants





# The 'grayscale' of damage from environmental toxicants



**Biological Effects** → **Acute illness** → **Chronic illness**

# ICNIRP 2002

- Variations in tolerance
  - Children
  - Elderly
  - Chronically ill people

# ICNIRP 2002 (cont)

- Separate guidelines needed?
- All encompassing guidelines?
- Anticipation of failure where there are:
  - Concomitant exposures
  - Underlying health complaints which elevate sensitivity

# ICNIRP Factsheet 2020:

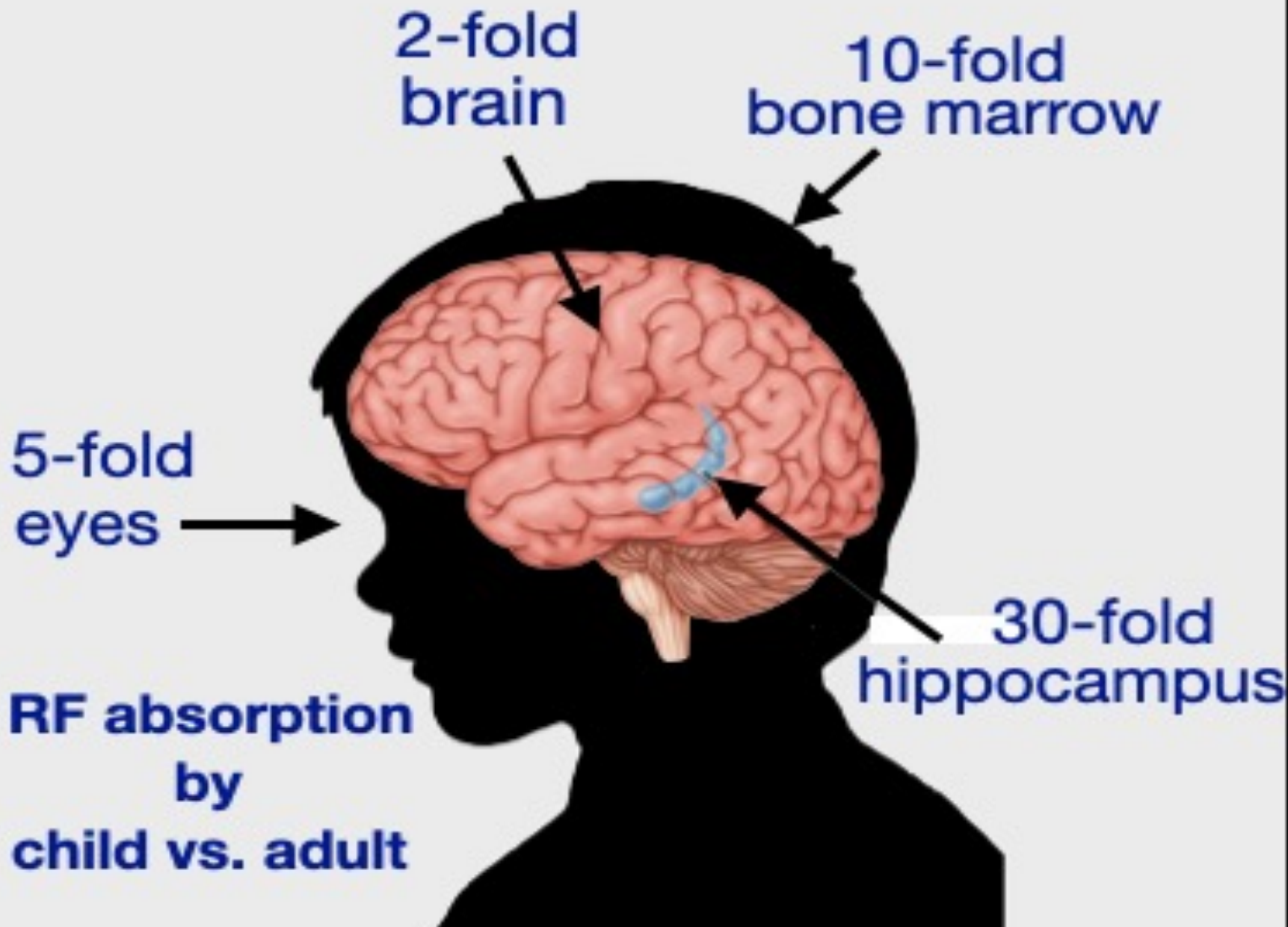
- **“...exposure values from adults have been used to set the restrictions”**
- **“ ...restrictions have not been set to separately account for EHS.”**



**WRONG ASSUMPTION 8)**  
**No differences in absorption of RF-EMF and susceptibility to this radiation.**

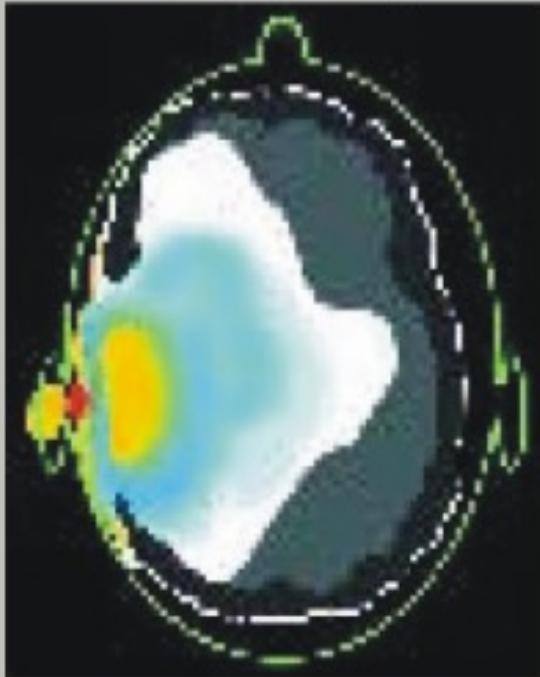
# ICNIRP Factsheet 2020

**“body core temperature in response to whole body exposure increases more in adults than in children, and so the exposure values from adults have been used to set the restrictions”**



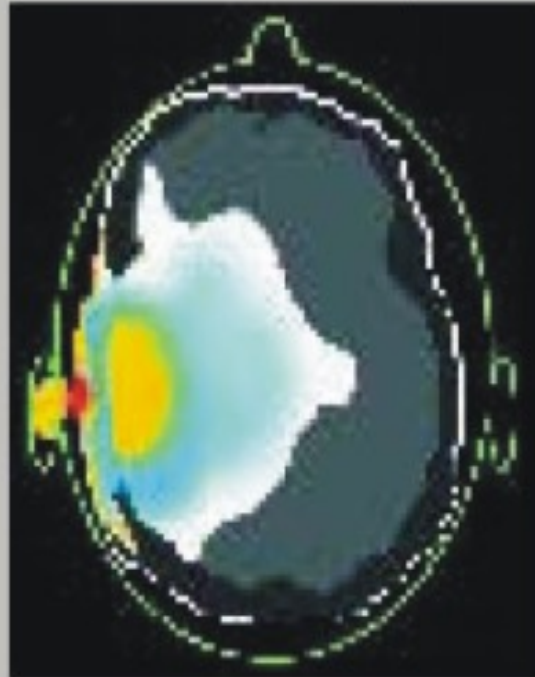
Gandhi O.P., Lazzi G., Furse C.M. (1996 vol.44, p1884-1897) :  
Electromagnetic Absorption in the human Head and Neck for  
Mobile Telephones at 835MHz and 1900MHz

## How mobil phone radiation penetrates the brain



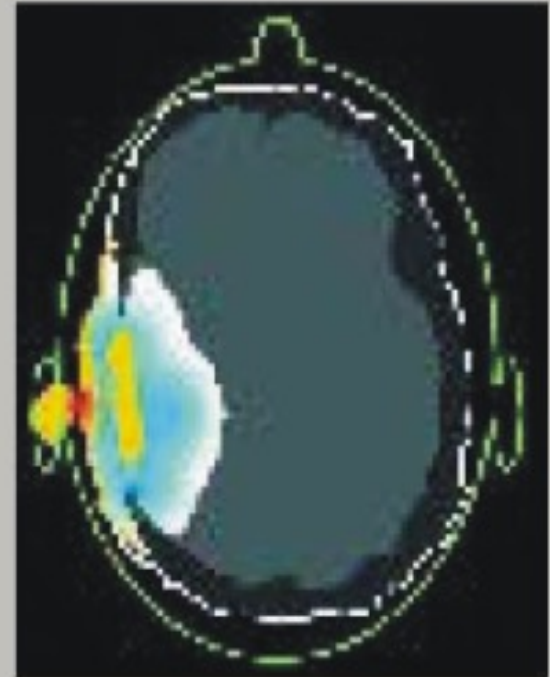
**5 year old**

Absorption rate : 4,49W/kg



**10 year old**

Absorption rate: 3,21W/kg



**Adult**

Absorption rate: 2,93W/kg

For a absorption rate of 2,93 W/kg of power absorptive by an adult : This same power will produce a absorption rate of 3,21 W/kg for a 10 year old child and absorption rate of 4,49 W/Kg for a 5 year old child.

[www.next-up.org](http://www.next-up.org)



# It is not simply about 'core body temperature'

- Local Exposures (NT Effects)

- Anatomy
- Tissue dielectrics
- Physiology



---

## Wireless technologies, non-ionizing electromagnetic fields and children: Identifying and reducing health risks

Devra Davis, PhD, MPH,<sup>a,b\*</sup> Linda Birnbaum, PhD,<sup>c,#</sup> Paul Ben-Ishai, PhD,<sup>d</sup>  
 Hugh Taylor, MD,<sup>e,h</sup> Meg Sears, MEng, PhD,<sup>f</sup> Tom Butler, PhD, MSc,<sup>g</sup> and  
 Theodora Scarato, MSW<sup>b</sup>

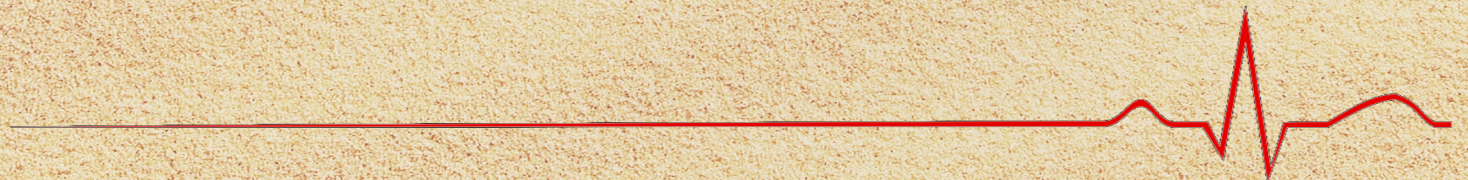
Children today are conceived and live in a sea of wireless radiation that did not exist when their parents were born. The launch of the digital age continues to transform the capacity to respond to emergencies and extend global communications. At the same time that this increasingly ubiquitous technology continues to alter the nature of commerce, medicine, transport and modern life overall, its varied and changing forms have not been evaluated for their biological or environmental impacts. Standards for evaluating radiation from numerous wireless devices were first set in 1996 to avoid heating tissue and remain unchanged since then in the U.S. and many other nations. A wide range of evidence indicates that there are numerous non-thermal effects from wireless radiation on reproduction, development, and chronic illness. Many widely used devices such as phones and tablets function as two-way microwave radios, sending and receiving various frequencies of information-carrying microwave radiation on multiple simultaneously operating antennas. Expert groups advising governments on this matter do not agree on the best approaches to be taken. The American Academy of Pediatrics recommends limited screen time for children under the age of two, but more than half of all toddlers regularly have contact with screens, often without parental engagement. Young children of parents who frequently use devices as a form of childcare can

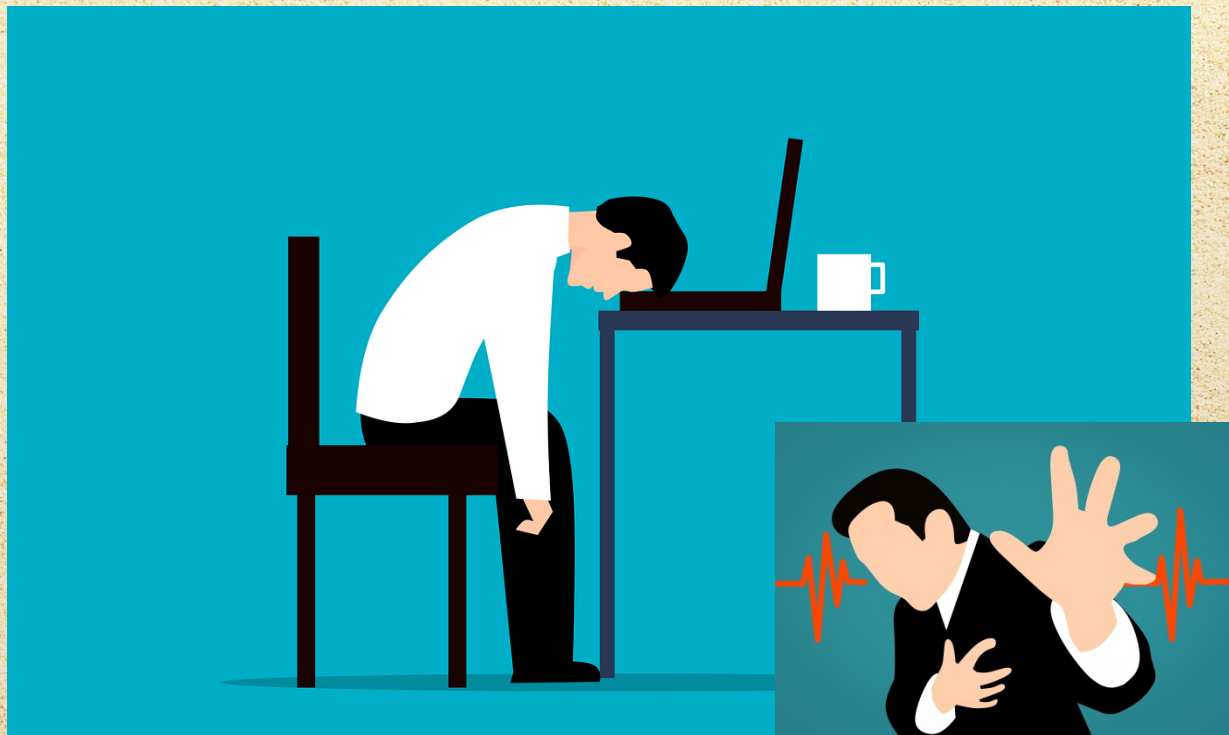
experience delays in speech acquisition and bonding, while older children report feelings of disappointment due to 'technoference'—parental distraction due to technology. Children who begin using devices early in life can become socially, psychologically and physically addicted to the technology and experience withdrawal upon cessation. We review relevant experimental, epidemiological and clinical evidence on biological and other impacts of currently used wireless technology, including advice to include key questions at pediatric wellness checkups from infancy to young adulthood. We conclude that consistent with advice in pediatric radiology, an approach that recommends that microwave radiation exposures be As Low As Reasonably Achievable (ALARA) seems sensible and prudent, and that an independently-funded training, research and monitoring program should be carried out on the long term physical and psychological impacts of rapidly changing technological milieu, including ways to mitigate impacts through modifications in hardware and software. Current knowledge of electrohypersensitivity indicates the importance of reducing wireless exposures especially in schools and health care settings.

*Curr Probl Pediatr Adolesc Health Care 2023; 000:101374*

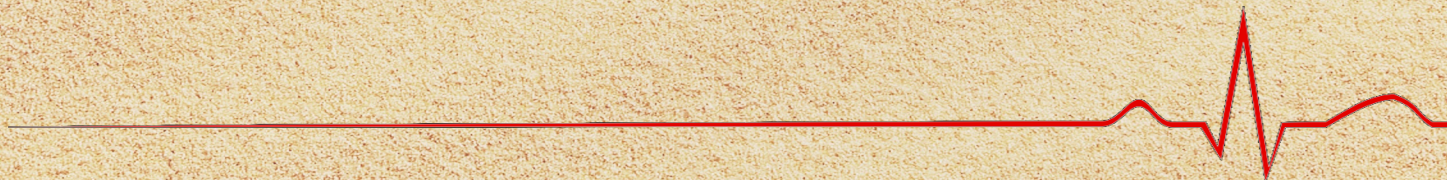


# **WRONG ASSUMPTION 8: NO DIFFERENCES IN SENSITIVITY**





# ACUTE EFFECTS OF NIR



# EESC European Economic and Social Committee (2019). Digitalisation – Challenges of Europe:



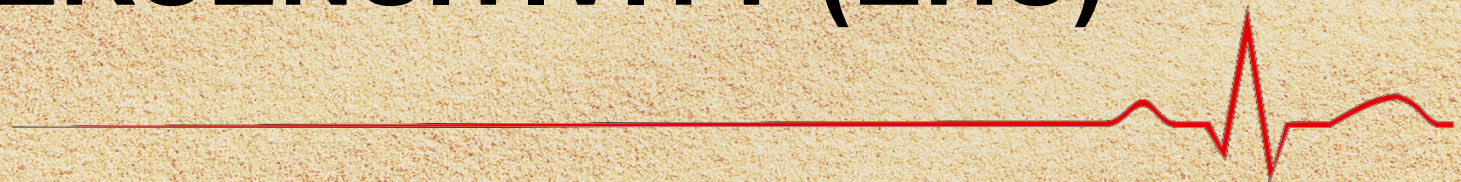
**3% - 5% of European population**  
**i.e. 37.4 million Europeans in 2020**

# Common EHS Triggers





# ELECTROMAGNETIC HYPERSENSITIVITY (EHS)



# Electromagnetic hypersensitivity : proceedings

International Workshop on Electromagnetic Field Hypersensitivity, Prague, Czech Republic, October 25-27, 2004

13 May 2006 | Report

Electromagnetic Hypersensitivity

International Workshop on  
Electromagnetic Field Hypersensitivity,  
Prague, Czech Republic,  
October 25-27, 2004

WHO  
International EMF Project  
Geneva, Switzerland  
2006

Download (1.2 MB)

## Overview

A WHO workshop on Electromagnetic Hypersensitivity was held in Prague on **October 25-27, 2004**. This meeting was arranged in collaboration with the National Reference Laboratory for Non-Ionizing Radiation, Ministry of Health, Czech Republic and was cosponsored by the European Commission Coordinated Action EMF-NET and the Action COST 281 (Potential Health Implications from Mobile Communication Systems) within the European Framework for Cooperation in the Field of Scientific and Technical Research.

Sensitivity to EMF has been given the general name "Electromagnetic Hypersensitivity" or EHS. It comprises nervous system symptoms like headache, fatigue, stress, sleep disturbances, skin symptoms like prickling, burning sensations and rashes, pain and ache in muscles and many other health problems. Whatever its cause, EHS is a real and sometimes a disabling problem for the affected persons. Their EMF exposure is generally several orders of magnitude under the limits of internationally accepted standards. The aim of the conference was to review the current state of knowledge and opinions of the conference participants and propose ways forward on this issue.

The meeting was conducted by the WHO International EMF Project as part of the scientific review process to determine biological and health effects from exposure to EMF. The



# WHO 2005

Sensitivity to EMF has been given the general name “Electromagnetic Hypersensitivity” or EHS. It comprises nervous system symptoms like headache, fatigue, stress, sleep disturbances, skin symptoms like prickling, burning sensations and rashes, pain and ache in muscles and many other health problems. Whatever its cause, EHS is a real and sometimes a disabling problem for the affected persons. Their EMF exposure is generally several orders of magnitude under the limits of internationally accepted standards.

# Electromagnetic Hypersensitivity

Is it caused by non-ionising EMR exposure?

ICNIRP suggest it is caused by the  
“Nocebo Response”



Physical symptoms created by  
psychological negative expectation  
(fear) – plausible?

# The Importance of Temporality

**If 'A' causes 'B',  
then A must precede B**

- **BUT**, symptoms have been repeatedly shown to develop before concerns of health effects.

# Temporality Falsifies the Nocebo Response

Bioelectromagnetics

## Does Electromagnetic Hypersensitivity Originate from Nocebo Responses? Indications from a Qualitative Study

Maël Dieudonné\*

*Centre Max Weber and Université Lumière–Lyon 2, Lyon, France*

Idiopathic Environmental Intolerance attributed to Electromagnetic Fields (IEI-EMF) is a condition in which symptoms are attributed to electromagnetic field (EMF) exposure. As electro-hypersensitive (EHS) people have repeatedly been observed, during provocation trials, to report symptoms following perceived rather than actual exposure, the hypothesis has been put forward that IEI-EMF originates from psychological mechanisms, especially nocebo responses. This paper examines this hypothesis, using data from a qualitative study aimed at understanding how EHS people come to regard themselves as such. Forty self-diagnosed EHS people were interviewed. A typified model of their attribution process was then elaborated, inductively, from their narratives. This model is linear and composed of seven stages: (1) onset of symptoms; (2) failure to find a solution; (3) discovery of EHS; (4) gathering of information about EHS; (5) implicit appearance of conviction; (6) experimentation; (7) conscious acceptance of conviction. Overall, symptoms appear before subjects start questioning effects of EMF on their health, which is not consistent with the hypothesis that IEI-EMF originates from nocebo responses to perceived EMF exposure. However, such responses might occur at the sixth stage of the process, potentially reinforcing the attribution. It remains possible that some cases of IEI-EMF originate from other psychological mechanisms. *Bioelectromagnetics*. 2015;9999:XX–XX. © 2015 Wiley Periodicals, Inc.

**Key words:** idiopathic environmental intolerance; IEI-EMF; illness narratives; attribution process; causal reasoning

# Temporality Falsifies the Nocebo Response

This model is linear and composed of seven stages: (1) onset of symptoms; (2) failure to find a solution; (3) discovery of EHS; (4) gathering of information about EHS; (5) implicit appearance of conviction; (6) experimentation; (7) conscious acceptance of conviction. Overall, symptoms appear before subjects start questioning effects of EMF on their health, which is not consistent with the hypothesis that IEI-EMF originates from nocebo responses to perceived EMF exposure. However, such responses might occur at the sixth stage of the process, potentially reinforcing the attribution. It remains possible that some cases of IEI-EMF originate from other psychological mechanisms.

# Those who claim EHS is not caused by EMF:

- Rely on 2 principles:
  1. Claimed absence of low intensity effects ('non-thermal')
  2. Negative outcome EMF provocation studies

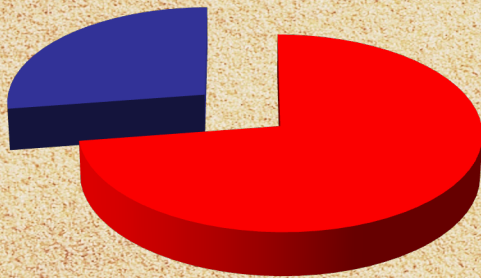
# Relevant Biological and Health Effects Proven, EHS symptoms are caused by NIR Exposure

**73% of RF Studies  
Show Neurological Effects  
Lai 2022 Bioinitiative Report**

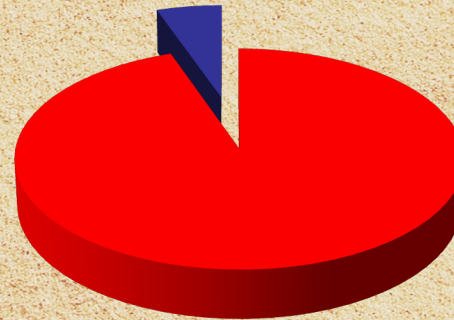
**95% Show Oxidative Stress  
(linked with EHS via biomarkers)  
ICBE 2022, Env Health**

**Consistency:  
Neurological Effects**

**Coherence: Oxidative  
Stress (95%) positive  
findings**



■ Effect  
244/336  
■ No Effect  
92/ 336

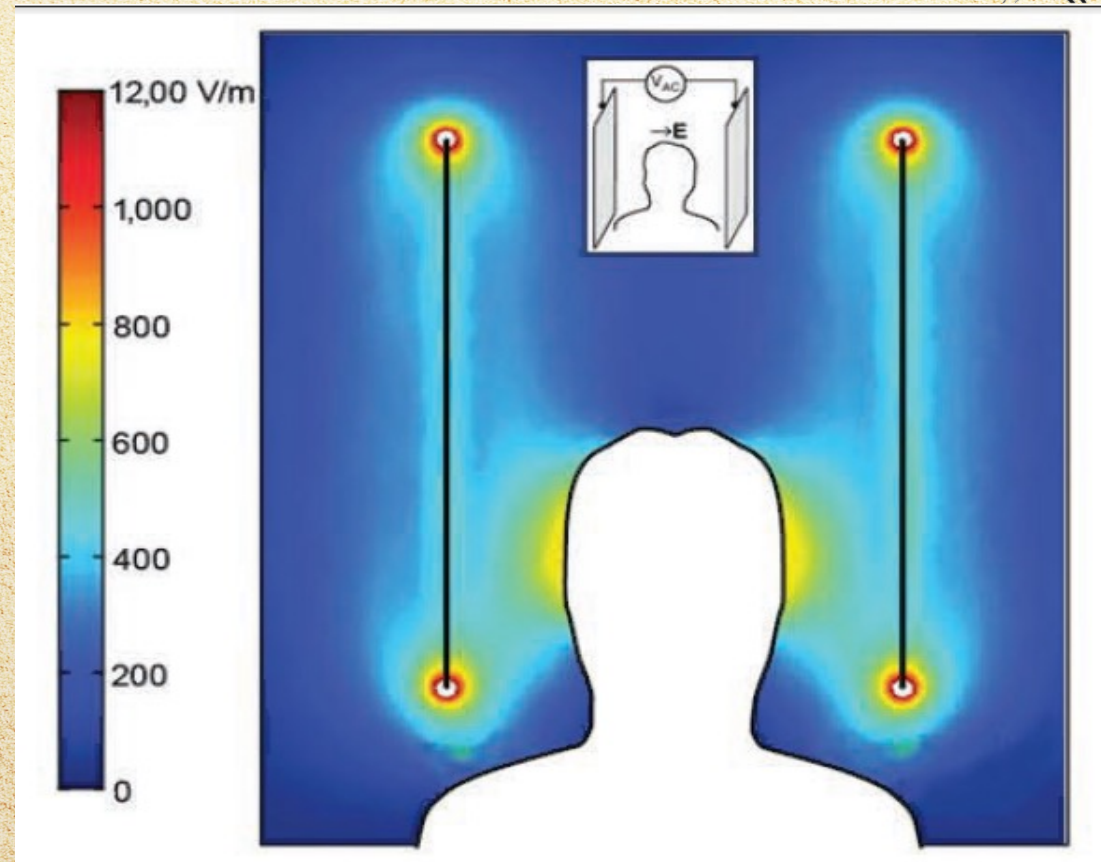


■ Effect  
124/131  
■ No Effect  
(7/131)



# Those who claim EHS is not caused by EMF:

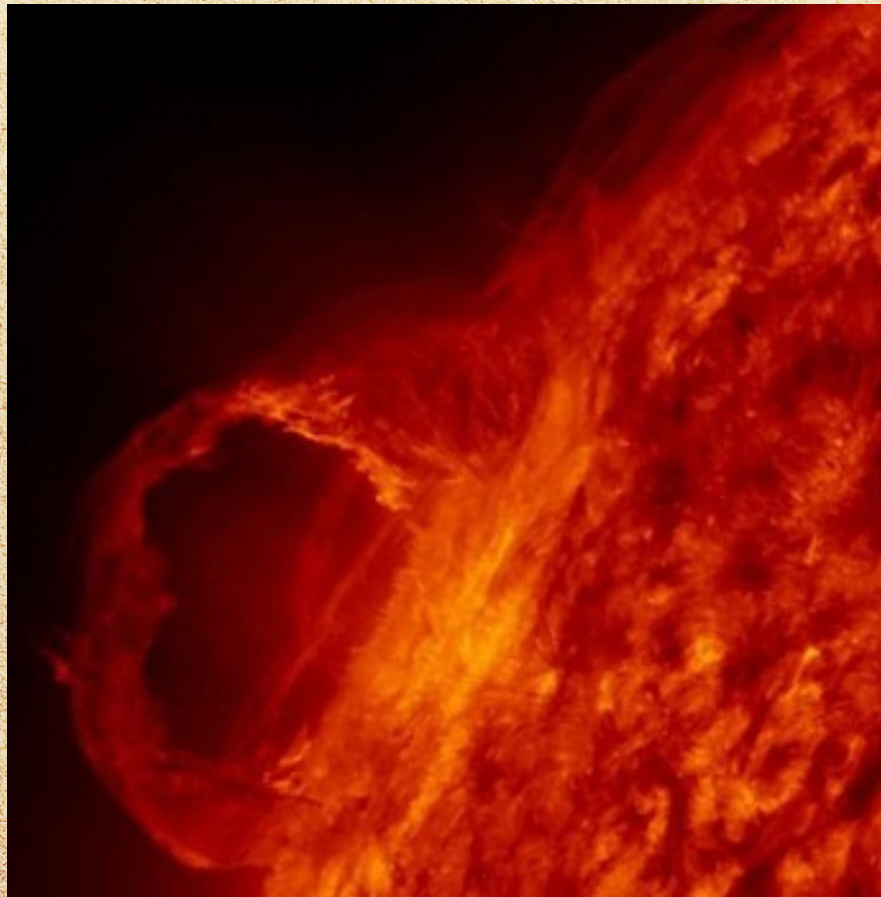
- Rely on 2 principles:
  1. ~~Claimed absence of low intensity effects~~  
(‘non-thermal’)
  2. Negative outcome EMF provocation studies



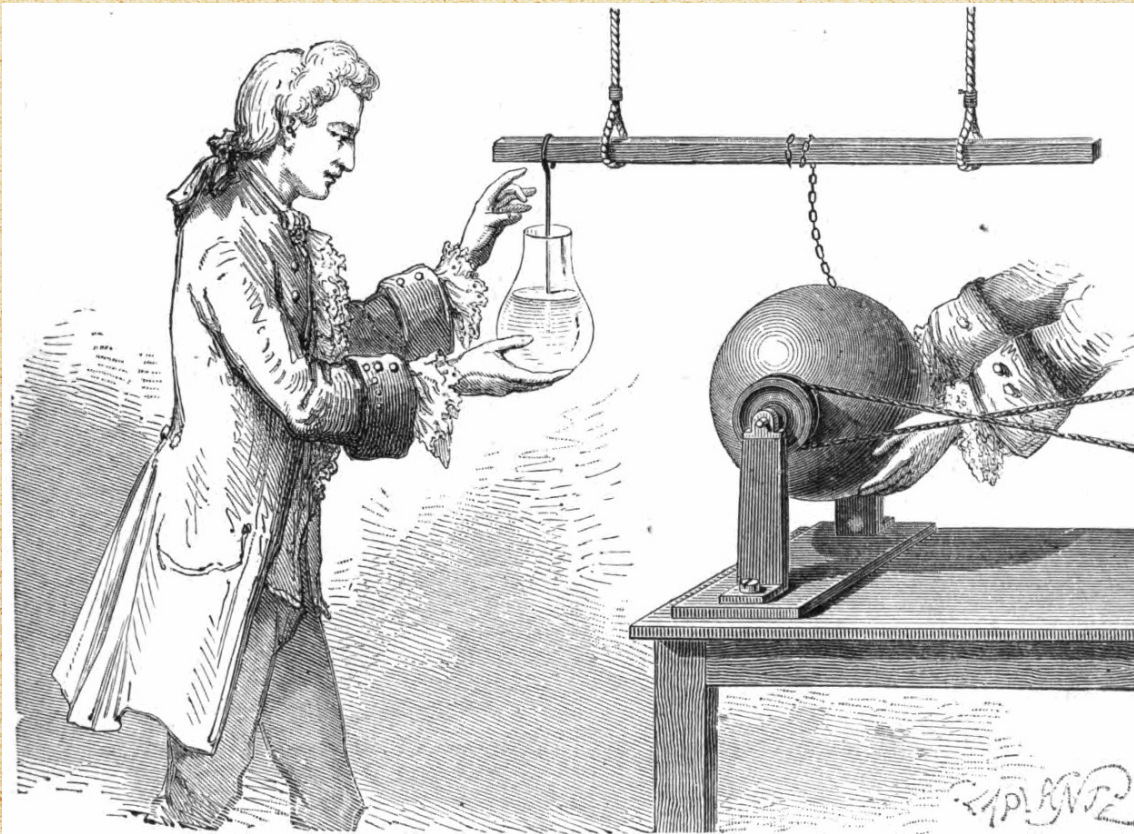
# PROVOCATION STUDIES



# Human 'EMF provocations' have taken many forms...



... Have been going for a long while



# EMF'S EFFECTS ON CHILDREN'S HEALTH AND DEVELOPMENT

**Effects of mobile phone use on sleep quality and health.** A study conducted in Bavaria, Germany, investigated the effects of mobile phone use on sleep quality and health in children and adolescents. The study included 54 mothers and 54 children (ages 6-13 years). Mobile phone use was measured using a questionnaire and a diary. Sleep quality was measured using the Children's Sleep Questionnaire (CSQ). The study found that mobile phone use was associated with poorer sleep quality and increased symptoms of hyperactivity/attention deficit disorder (ADHD). The association was stronger in children who used mobile phones for longer durations and who used them in the bedroom. The study also found that mobile phone use was associated with increased symptoms of anxiety and depression. The authors concluded that mobile phone use may have adverse effects on children's health and development, and that parents should limit their children's mobile phone use.

**Mobile phone use and sleep quality.** A study conducted in the Netherlands investigated the effects of mobile phone use on sleep quality in adolescents. The study included 1,174 adolescents (ages 15-17 years). Mobile phone use was measured using a questionnaire. Sleep quality was measured using the Children's Sleep Questionnaire (CSQ). The study found that mobile phone use was associated with poorer sleep quality. The association was stronger in adolescents who used mobile phones for longer durations and who used them in the bedroom. The study also found that mobile phone use was associated with increased symptoms of anxiety and depression. The authors concluded that mobile phone use may have adverse effects on adolescents' sleep quality and mental health.

**Mobile phone use and ADHD symptoms.** A study conducted in the Netherlands investigated the effects of mobile phone use on ADHD symptoms in adolescents. The study included 1,174 adolescents (ages 15-17 years). Mobile phone use was measured using a questionnaire. ADHD symptoms were measured using the ADHD Rating Scale (ADHD-RS). The study found that mobile phone use was associated with increased ADHD symptoms. The association was stronger in adolescents who used mobile phones for longer durations and who used them in the bedroom. The study also found that mobile phone use was associated with increased symptoms of anxiety and depression. The authors concluded that mobile phone use may have adverse effects on adolescents' ADHD symptoms and mental health.

**Mobile phone use and anxiety/depression.** A study conducted in the Netherlands investigated the effects of mobile phone use on anxiety and depression in adolescents. The study included 1,174 adolescents (ages 15-17 years). Mobile phone use was measured using a questionnaire. Anxiety and depression were measured using the Children's Depression Inventory (CDI) and the Children's Anxiety Scale (CAS). The study found that mobile phone use was associated with increased symptoms of anxiety and depression. The association was stronger in adolescents who used mobile phones for longer durations and who used them in the bedroom. The study also found that mobile phone use was associated with poorer sleep quality. The authors concluded that mobile phone use may have adverse effects on adolescents' mental health and sleep quality.

**Mobile phone use and hyperactivity/ADHD.** A study conducted in the Netherlands investigated the effects of mobile phone use on hyperactivity/ADHD symptoms in adolescents. The study included 1,174 adolescents (ages 15-17 years). Mobile phone use was measured using a questionnaire. Hyperactivity/ADHD symptoms were measured using the ADHD Rating Scale (ADHD-RS). The study found that mobile phone use was associated with increased hyperactivity/ADHD symptoms. The association was stronger in adolescents who used mobile phones for longer durations and who used them in the bedroom. The study also found that mobile phone use was associated with increased symptoms of anxiety and depression. The authors concluded that mobile phone use may have adverse effects on adolescents' hyperactivity/ADHD symptoms and mental health.

**Mobile phone use and cognitive function.** A study conducted in the Netherlands investigated the effects of mobile phone use on cognitive function in adolescents. The study included 1,174 adolescents (ages 15-17 years). Mobile phone use was measured using a questionnaire. Cognitive function was measured using a battery of tests including a working memory task, a verbal fluency task, and a math task. The study found that mobile phone use was associated with poorer cognitive function. The association was stronger in adolescents who used mobile phones for longer durations and who used them in the bedroom. The study also found that mobile phone use was associated with increased symptoms of anxiety and depression. The authors concluded that mobile phone use may have adverse effects on adolescents' cognitive function and mental health.

# Methodological Flaws in EMF Provocation Studies



## Preparation phase:

- Selection of participants
- Appropriate exclusions
- Trigger frequencies identification
- Trigger intensities identification
- Onset of symptom identification
- Offset of symptoms identification
- Other triggers identification
- Identification reliability
- Identification symptom contrast
- Washout all symptoms
- EMF background hygiene
- Chemical / other sanitation
- Double / Triple Blinded Protocol

## Exposure provocation phase:

- Trigger frequencies used
- Trigger intensities used
- Onset time correctly encompassed
- Offset + Washout encompassed
- Cumulative symptoms prevented
- 'Sham' exposures zero EMF
- 'Real' exposure profiles.
- Control for interference
- Attrition Effects

## Post study analysis phase:

- Appropriate data analysis
- Appropriate outcome reporting
  
- **Imprecision**

# Methodological Flaws in EMF Provocation Studies



## Preparation phase:

- Selection of participants
- Appropriate exclusions
- Trigger frequencies identification
- Trigger intensities identification
- Onset of symptom identification
- Offset of symptoms identification
- Other triggers identification
- Identification reliability
- Identification symptom contrast
- Washout all symptoms
- EMF background hygiene
- Chemical / other sanitation
- Double / Triple Blinded Protocol
  
- Major ethical questions

## Exposure provocation phase:

- Trigger frequencies used
- Trigger intensities used
- Onset time correctly encompassed
- Offset + Washout encompassed
- Cumulative symptoms prevented
- 'Sham' exposures zero EMF
- 'Real' exposure profiles.
- Control for interference
- Attrition Effects

## Post study analysis phase:

- Appropriate data analysis
- Appropriate outcome reporting
  
- Imprecision

# Experiment Falsifies the Nocebo Response

International Journal of Neuroscience

Volume 121, Issue 12, 2011

Select Language ▼

[Translator disclaimer](#)



Research Article

## Electromagnetic Hypersensitivity: Evidence for a Novel Neurological Syndrome

**DOI:** 10.3109/00207454.2011.608139

David E. McCarty<sup>a</sup>, Simona Carrubba<sup>a</sup>, Andrew L. Chesson Jr.<sup>a</sup>,  
Clifton Frilot II<sup>b</sup>, Eduardo Gonzalez-Toledo<sup>c</sup> & Andrew A.  
Marino<sup>a\*</sup>

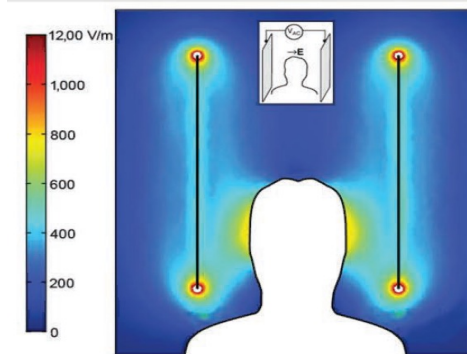
pages 670-676

**Publishing models and article dates explained**

Received: 25 May 2011

Accepted author version posted online: 28 Jul 2011

Published online: 05 Sep 2011



**FIGURE 1.** Spatial distribution of the external electric field (E) in the mid-sagittal plane. E was generated by applying  $V_{AC} = 100$  volts to parallel metal plates while the subject was electrically isolated (insert), and calculated at all points in the subject's environment. Average E surrounding the head was about 300 V/m.



# Experiment Falsifies the Nocebo Response

|. *Discussion:* The subject demonstrated statistically reliable somatic reactions in response to exposure to subliminal EMFs under conditions that reasonably excluded a causative role for psychological processes. *Conclusion:* EMF hypersensitivity can occur as a *bona fide* environmentally inducible neurological syndrome.

Those who claim EHS is not caused by EMF:

- Rely on 2 principles:
  - ~~1. Claimed absence of low intensity effects~~  
(‘non-thermal’)
  2. Negative outcome EMF provocation studies

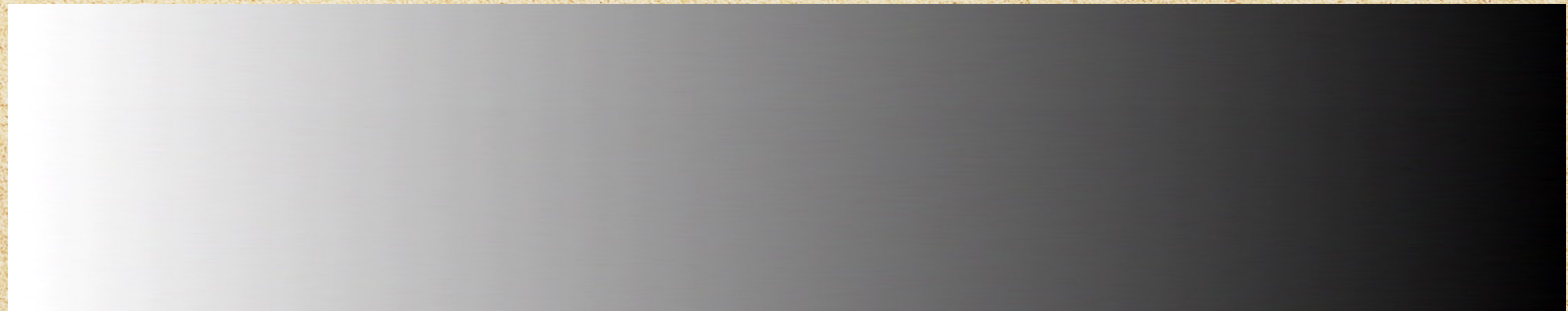
Those who claim EHS is not caused by EMF:

- Rely on 2 principles:
  - ~~1. Claimed absence of low intensity effects  
(‘non-thermal’)~~
  - ~~2. Negative outcome EMF provocation studies~~

# Admissions from ICNIRP 2020

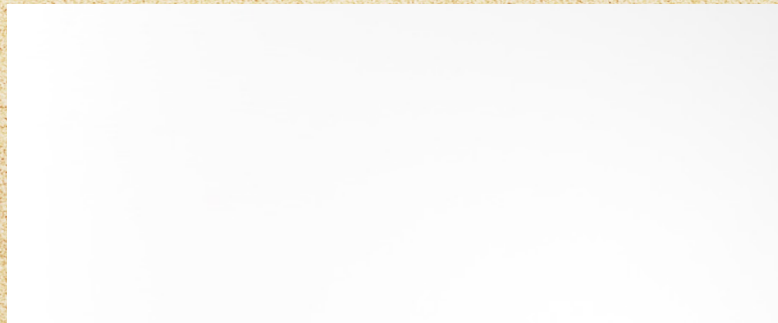
- it is not always easy to draw a clear distinction between biological and adverse health effects, and indeed this can vary depending on individual susceptibility to specific situations.”

# Further mistakes from ICNIRP 2020

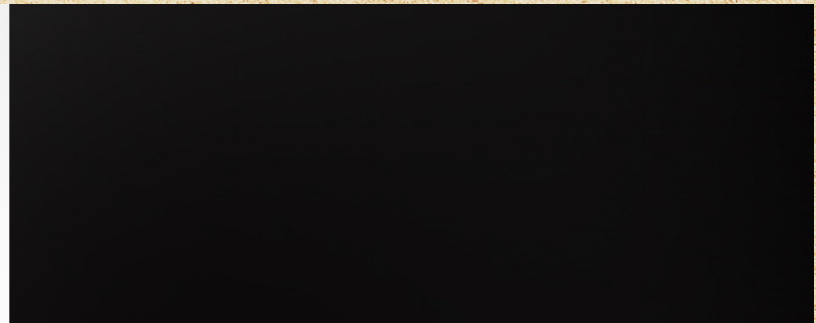


**Biological Effects**  **Health Effects**

# Further mistakes from ICNIRP 2020



**Biological Effects**



**Health Effects**

# Not Classified as “Health Effects”:

- **Tingling sensation** from electric or magnetic fields;
- **Light flickering** from stimulation of the retina
- **Microwave hearing** from expansion of soft tissues

**“Such perceptions may sometimes lead to discomfort and annoyance.. “**

**“The exposure circumstances under which discomfort and annoyance occur vary between individuals.”.**

# In reality...

- **Symptoms signify substantial biological disruption.**
- **EHS people don't experience merely 'discomfort'**

**They can experience severe pain  
and broad ranging, disabling symptoms  
(as noted by WHO – 2005)**

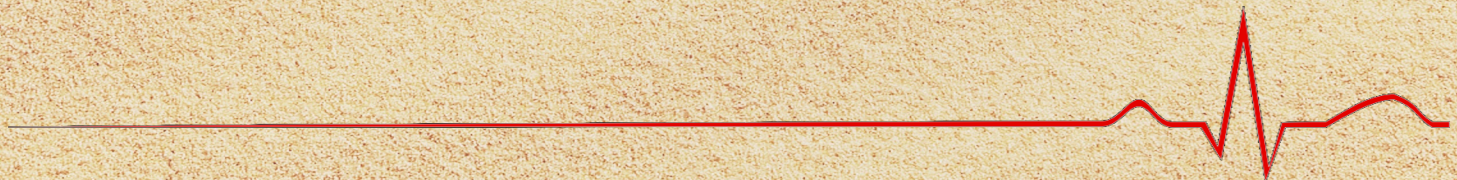


# Global Successful Legal Actions Regarding EHS

- **UK - EHS Child won EHCP for EHS awarding mandatory low EMF school accommodations:** [Education Health Care Plan \(EHCP\) awarded \(Aug 2022\) for UK child on the basis of Electromagnetic Hypersensitivity \(EHS\). – Phire Medical](#)
- **UK - Social Worker receives early pension and ESA for EHS:** [‘Early ill-health retirement and Employment Support Allowance awarded on the basis of Electromagnetic Hypersensitivity \(EHS\) – Further detailed Press Release’ – Phire Medical](#)
- **Australia – Scientist awarded 75% of his salary as compensation:** <http://www8.austlii.edu.au/cgi-bin/viewdoc/au/cases/cth/aat/2013/105.html>
- **USA - LAUSD accommodates EHS teacher in low EMF classroom:** <https://www.prlog.org/12381499-los-angeles-unified-school-district-accommodates-teacher-who-fell-ill-after-wireless-installation.html>



# CHRONIC HEALTH EFFECTS



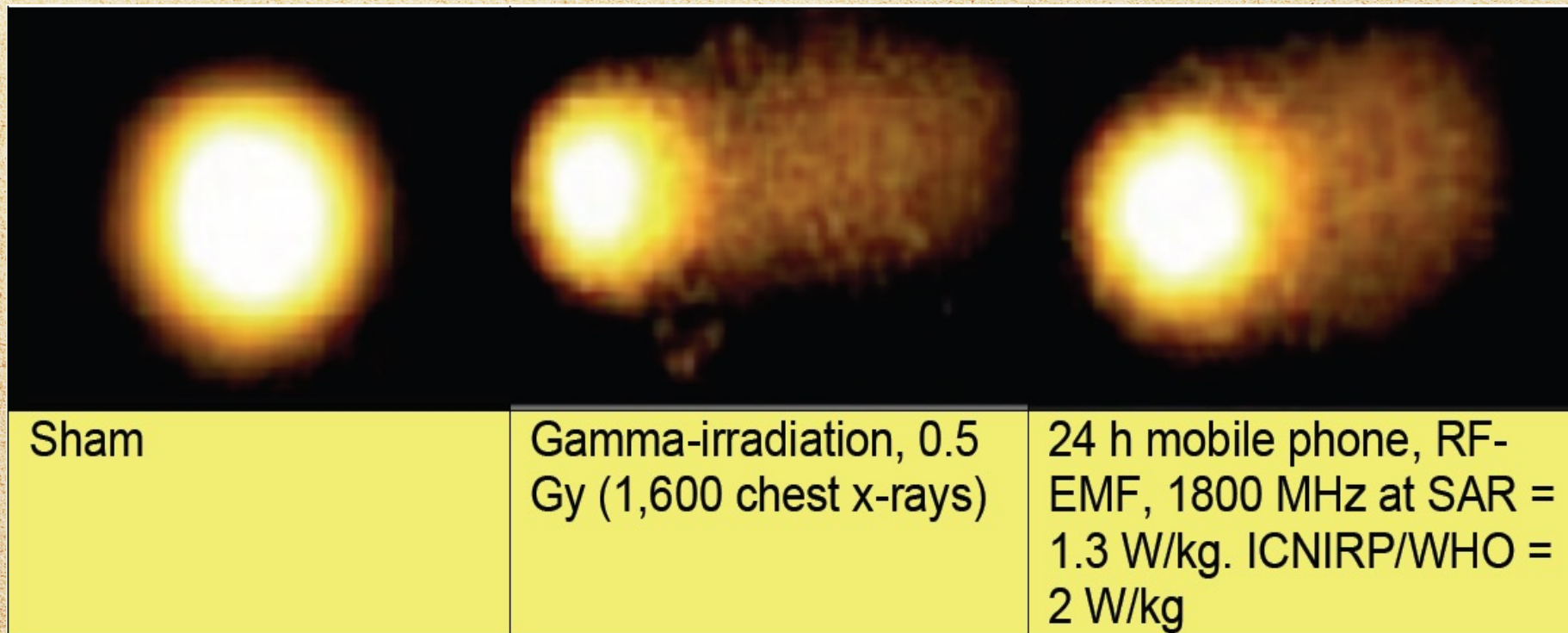
# ICBE Factsheet (Carcinogenicity):

2. Since 2002, multiple robust epidemiologic studies of cell phone radiation<sup>2</sup> have found **increased risks for brain tumors** which are supported by evidence of carcinogenicity of the same cell types (glial cells and Schwann cells) from animal studies.<sup>4,5</sup>

# The EU Funded 'Reflex Study'

## Evidence of Damage from EMF

### DNA Breakage



Comet Assay - a typical picture after RF-EMF-exposition of HL60 leukaemia cells, Adlkofer (2004).

# International Agency for Research on Cancer

---



World Health  
Organization

PRESS RELEASE  
N° 208

31 May 2011

## IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS

Lyon, France, May 31, 2011 -- The WHO/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as **possibly carcinogenic to humans (Group 2B)**, based on an increased risk for **glioma**, a malignant type of brain cancer<sup>1</sup>, associated with wireless phone use.



**NTP**  
National Toxicology Program  
U.S. Department of Health and Human Services

NTP TECHNICAL REPORT ON  
THE TOXICOLOGY AND  
CARCINOGENESIS STUDIES IN  
SPRAGUE DAWLEY  
(HSD:SPRAGUE DAWLEY® SD®)  
RATS EXPOSED TO  
WHOLE-BODY RADIO  
FREQUENCY RADIATION AT A  
FREQUENCY (900 MHz)  
AND MODULATIONS  
(GSM AND CDMA)  
USED BY CELL PHONES

NTP TR 595

NOVEMBER 2018

# Peer-Review of NTP

Table thanks to: Joel M. Moskowitz, PhD, School of Public Health, UC Berkeley, March 30, 2018  
Electromagnetic Radiation Safety: Evidence of Carcinogenicity

A	Sex	Modulation	Tumor	NTP Draft Report	Expert Panel (vote)
Rat	Male	GSM	<b>Heart: Schwannoma</b>	some evidence	<b>clear evidence (8-3)</b>
Rat	Male	CDMA	<b>Heart: Schwannoma</b>	some evidence	<b>clear evidence (8-3)</b>
Rat	Male	GSM	<b>Brain: Glioma</b>	equivocal	<b>some evidence (7-4)</b>
Rat	Male	CDMA	<b>Brain: Glioma</b>	equivocal	<b>some evidence (6-4-1)</b>
Rat	Male	GSM	Brain: Granular Cell	equivocal	equivocal (11-0)
Rat	Male	GSM	Prostate gland	equivocal	equivocal (11-0)
Rat	Male	GSM	Pituitary gland	equivocal	equivocal (10-1)
Rat	Male	CDMA	Pituitary gland	equivocal	equivocal (11-0)
Rat	Male	GSM	<b>Adrenal gland</b>	equivocal	<b>some evidence (6-4-1)</b>
Rat	Male	GSM	Pancreas	equivocal	equivocal (11-0)
Rat	Male	CDMA	Liver	equivocal	equivocal (11-0)
Rat	Female	GSM	Heart: Schwannoma	no evidence	<b>equivocal (9-2)</b>
Rat	Female	CDMA	Heart: Schwannoma	no evidence	<b>equivocal (9-2)</b>
Rat	Female	CDMA	Brain: Glioma	equivocal	equivocal (8-3*)
Rat	Female	CDMA	Adrenal gland	equivocal	equivocal (10-0-1)
M	Male	GSM	Skin	equivocal	equivocal (8-3)
M	Male	GSM	Lung	equivocal	equivocal (11-0)
M	Male	CDMA	Liver	equivocal	equivocal (10-1)
M	Female	GSM	Lymphoma	equivocal	equivocal (9-2)
M	Female	CDMA	Lymphoma	equivocal	equivocal (11-

# Ramazzini Institute Study



## Environmental Research

Volume 165, August 2018, Pages 496-503



Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission

L. Falcioni, L. Bua, E. Tibaldi, M. Lauriola, L. De Angelis, F. Gnudi, D. Mandrioli, M. Manservigi, F. Manservigi, I. Manzoli, I. Menghetti, R. Montella, S. Panzacchi, D. Sgargi, V. Stollo, A. Vornoli, F. Belpoggi  



# Conclusions:

- The RI findings on far field exposure to RFR are **consistent with and reinforce the results of the NTP study on near field exposure**, as both reported an increase in the incidence of tumors of the brain and heart in RFR-exposed Sprague-Dawley rats. These tumors are of the **same histotype of those observed in some epidemiological studies on cell phone users**. These experimental studies provide sufficient evidence to call for the **re-evaluation of IARC conclusions** regarding the carcinogenic potential of RFR in humans.



Contents lists available at ScienceDirect

# Environmental Research

journal homepage: [www.elsevier.com/locate/envres](http://www.elsevier.com/locate/envres)



## Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields (Monograph 102)<sup>☆</sup>

Anthony B. Miller<sup>a,\*</sup>, L. Lloyd Morgan<sup>b</sup>, Iris Udasin<sup>c</sup>, Devra Lee Davis<sup>d,e</sup>

<sup>a</sup> Dalla Lana School of Public Health, University of Toronto, Canada  
<sup>b</sup> Environmental Health Trust, Berkeley, CA, United States  
<sup>c</sup> Rutgers University School of Public Health, United States  
<sup>d</sup> Environmental Health Trust, Teton Village, WY, United States  
<sup>e</sup> Hebrew University of Jerusalem, Israel

### ARTICLE INFO

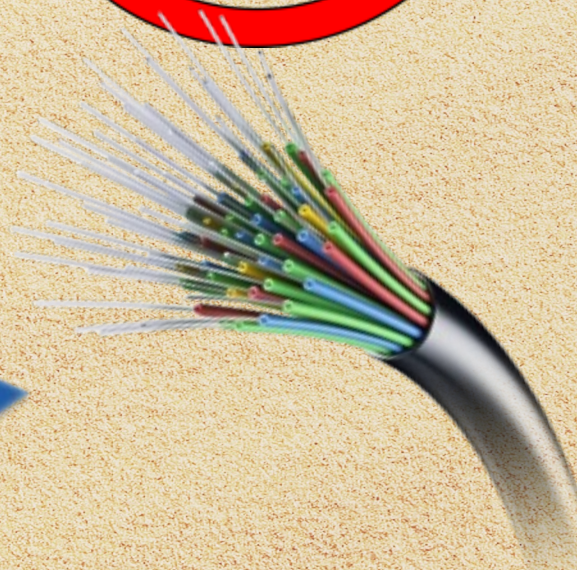
**Keywords:**

- Brain cancer
- Vestibular schwannoma
- Salivary gland tumor
- Electric hypersensitivity
- Glioma
- Meningioma
- Radio frequency fields
- Cell phones
- Mobile phones

### ABSTRACT

Epidemiology studies (case-control, cohort, time trend and case studies) published since the International Agency for Research on Cancer (IARC) 2011 categorization of radiofrequency radiation (RFR) from mobile phones and other wireless devices as a possible human carcinogen (Group 2B) are reviewed and summarized. Glioma is an important human cancer found to be associated with RFR in 9 case-control studies conducted in Sweden and France, as well as in some other countries. Increasing glioma incidence trends have been reported in the UK and other countries. Non-malignant endpoints linked include acoustic neuroma (vestibular Schwannoma) and meningioma. Because they allow more detailed consideration of exposure, case-control studies can be superior to cohort studies or other methods in evaluating potential risks for brain cancer. When considered with recent animal experimental evidence, the recent epidemiological studies strengthen and support the conclusion

# 'Remove, Replace, Reduce'



## **EESC European Economic and Social Committee (2019). Digitalisation – Challenges of Europe:**

- **Reinforce independence of bodies setting limits**
- **Binding safeguarding legislation reducing EMR**
- **Recognising this exposure as a cause of “functional disability and environmental illness.”**



# Summary

- Current guidelines fail to protect health
- Acute and chronic illness are associated
- Children have vulnerabilities which remain unaccounted for
- EHS is of major public health significance
- EHS symptoms are caused by anthropogenic NIR exposures
- Medical doctors need formalised educational training
- Medical Database Registry + specific ICD coding are required
- Management relies on avoidance of anthropogenic EMR
- Low EMR Zones (hospital + general public) are an emergency
- Moratorium on increased RF emissions is justified
- **Revised biological safety guidelines are urgently required**

# Bernadino Ramzzini



"it is much better to prevent than to cure, and **so much easier to foresee future harm and avoid it** rather than have to get rid of it after having fallen prey"

Thank you so much for listening

Thank you to my colleagues at ICBE-EMF  
and thank you to  
Collegium Ramazzini