

The Potential Benefits and Plausible Hazards of 5G Telecommunications

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European Environment Agency (EEA)
Visiting Fellow, Brunel University,**



**Europe in Bloom:
a living façade at the EEA
Copenhagen**



BIODIVERSITY

A motivating maxim.....?

***“Philosophers have hitherto interpreted
the world: the point however is to
change it”***

(See Marx’s gravestone, Highgate Cemetery, London)

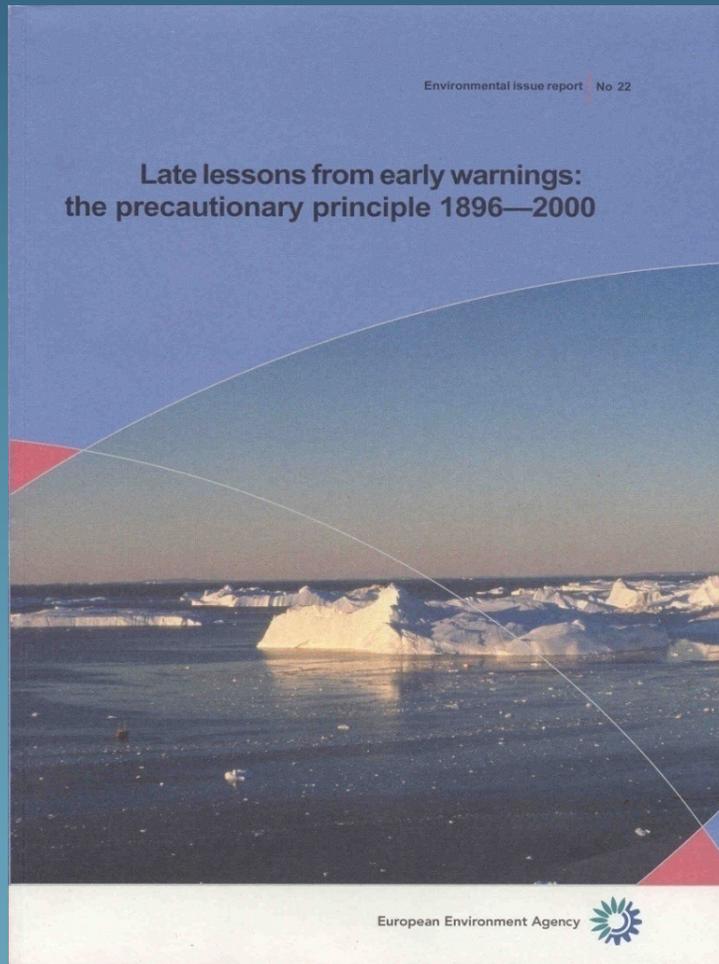
Scientists, Policymakers & Citizens main concerns about 3-5G

- Health-eg Cancer & Electro-sensitivity from 3-5G
- Increased human exposures to RF waves from 3-5G
- Environment-harm to bees, trees, insects
- Reduced Privacy & Cyber Security
- Compromised Human Rights-see Danish legal Opinion
- Democracy-local planning rights largely removed
- Liability –Most Insurance companies won't cover EMF; successful cancer compensation cases have begun
- Space Pollution from thousands of 3-5G Satellites -see Astronomers Appeal & IAU Statement Feb 2020

Homo Sapiens (stupidus?) as slow learners?

34 case studies

2001



2013



34 case studies in 2 vols EEA 2001, 2013

RED= 24 chemicals chapters

BOLD= Vol 2

‘Environmental chemicals’

- **Beryllium**
- PCBs
- CFCs
- TBT antifoulants
- Mercury
- Tobacco
- Perchloroethylene
- Booster biocides
- DBCP
- DDT
- Vinyl chloride
- Bis phenol A

Ecosystems

- Ecosystems resilience
- Great Lakes pollution
- Fish stock collapse
- Acid rain
- **Bee decline, France**
- Invasive alien species
- Floods
- **Climate change**

Transport fuel additives

- Benzene
- MBTE
- Lead

‘Micro technologies’

- Nano
- GMOs v Agroecology

Animal feed additives

- BSE, ‘mad cow disease’
- Beef hormones
- Antibiotics

- Asbestos

Pharmaceuticals

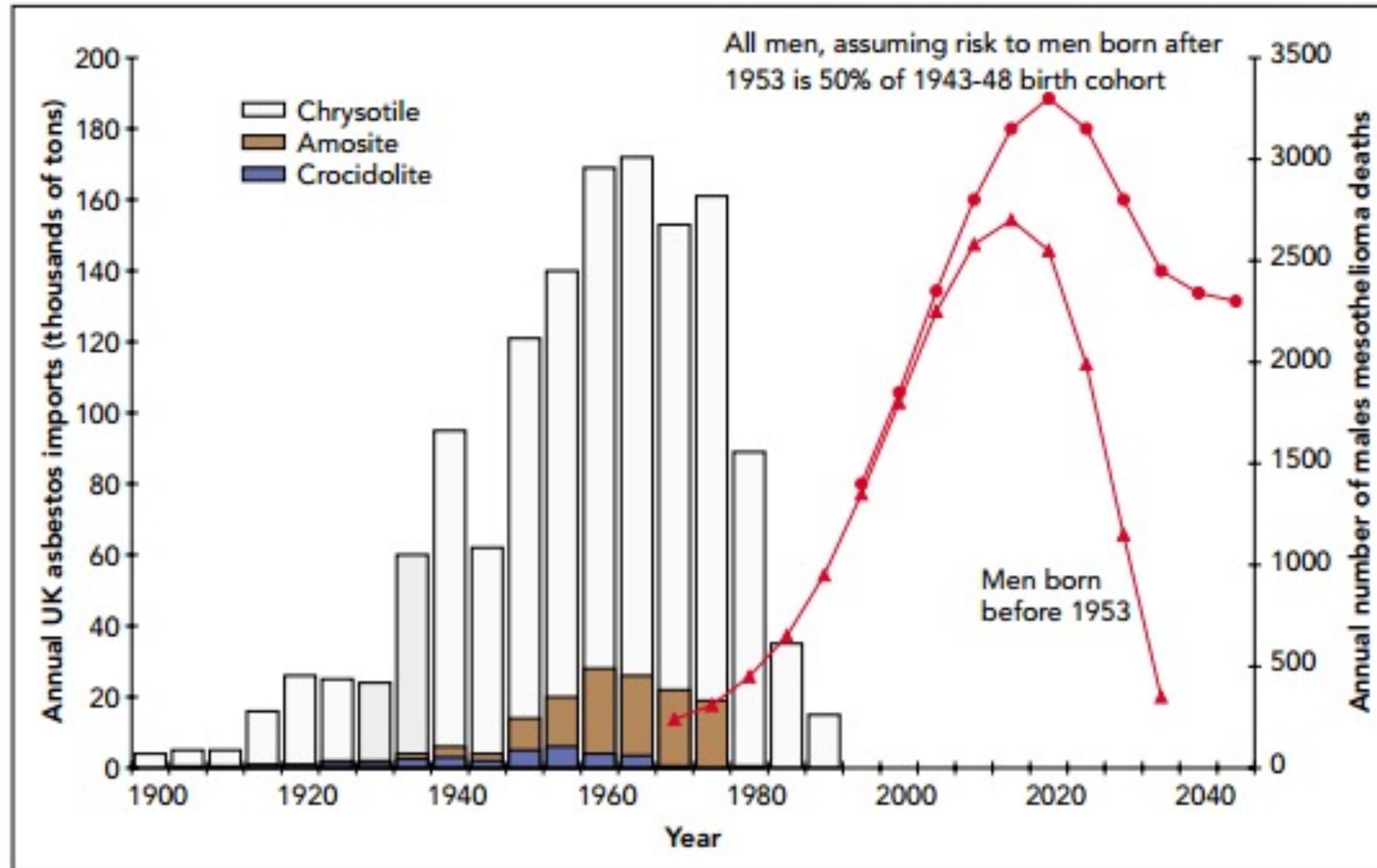
- Contraceptive pill
- DES

Radiations

- X-rays
- Mobile phones
- Nuclear: Fukushima



UK asbestos imports and predicted mesothelioma deaths



Something light
Cornered

by Mike Baldwin

10-7 © 2013 Mike Baldwin/Dist. by Universal Uclick www.cornered.com
ccornered@gmail.com

Baldwin



“What’s important is that we learn from what we must never admit happened.”

3 General lessons from the 34 “Late Lessons” histories...

1. Research **eventually** shows that **Exposures expand** over time.....

2. the **Nature of Harm expands** over time....

3. And **harm is found to be caused at lower & lower levels of exposure...**

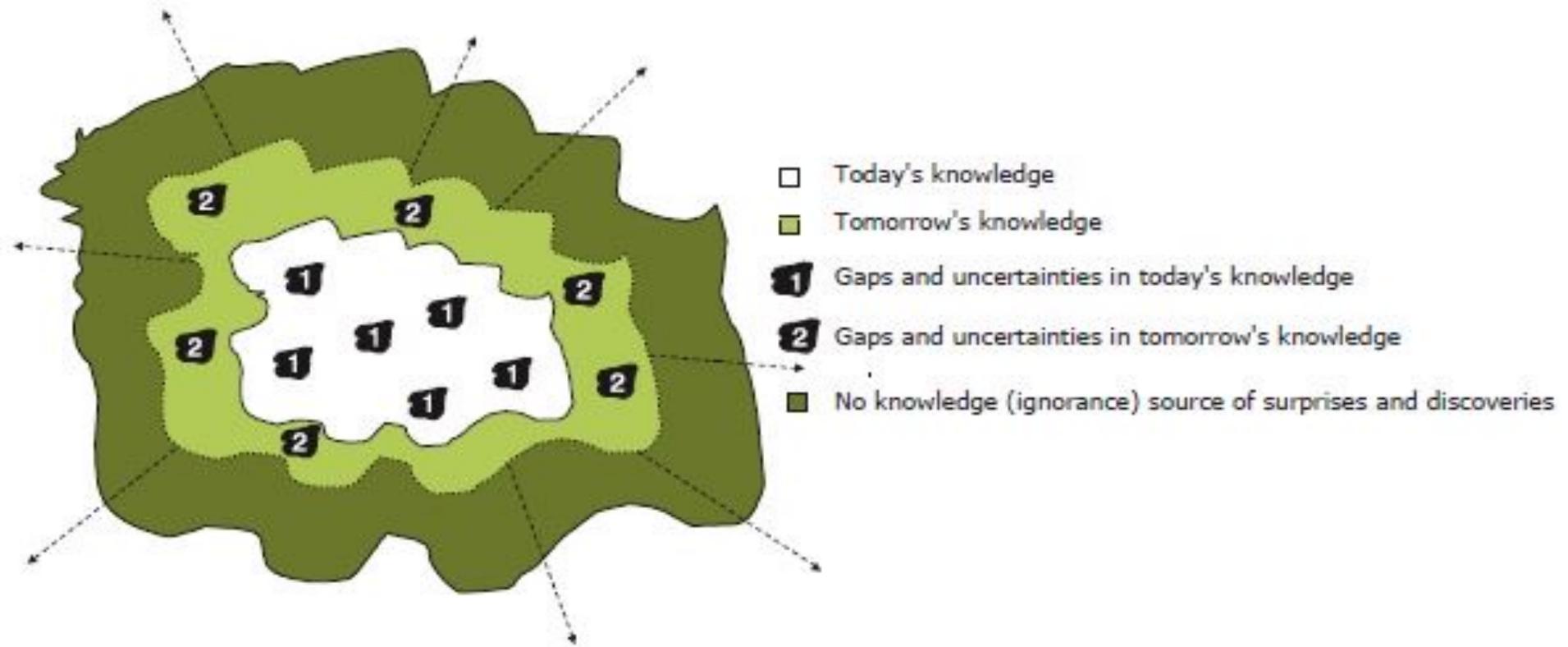
so exposure limits always come down....

often to zero eg for lead, strong radiations,
& all carcinogens

Main Sources of evidence about potential Harm from hazardous agents

- **Theoretical** eg CFCs cause hole in ozone layer
- **Experience** eg radiographers/dentist using X rays 1900-1920s
- Studies of **Animals**: wildlife & laboratory eg the Pill & Fish; RF & rats/mice
- Studies of **Humans** eg radiologists 1920s; **mobile phone users 1999-2021**
- Studies of **Cells**
- **Analogy**-does it look similar to known hazard? Eg Vinyl bromide & chloride; **5G & 3-4G**
- **Insurance companies!** Eg asbestos 1918; **EMF 2019 (Swiss Re)**

Knowledge expands..... ..as does complexity, uncertainty, **variability** & ignorance



How many scientific papers are there on EMF & on 5G ? (June 1, 2020)

The [EMF-Portal archive](#) references more than **30,000** publications and presentations on **non-ionizing electromagnetic fields**.

It listed **133** on **5G research**:

Only 41 address issues other than technical or dosimetric issues including **potential biologic or health effects of 5G which are largely unresearched**.

The Portal is at the [University Hospital, RWTH, Aachen](#), Germany.

“No evidence of harm is not evidence of no harm”

“Currently (OCT 2020) no peer-reviewed, empirical studies of the biologic or health effects from actual exposure to 5G radiation have been published”.

Joel M. Moskowitz, Ph.D.
Director
Center for Family and Community Health
School of Public Health
University of California, Berkeley

What meets Physics, Biology, Ecology, and Telecoms Engineering? **5G!**

If you thought the language of the Sciences was complicated...
try Telecoms engineering:

“As in LTE, the PSS and SSS in 5G NR represent the physical cell identity (PCI), and the PBCH carries the master information block (MIB) plus a few additional payload bits”.

Rohde & Schwarz *“EMF measurements in 5G” 2020, Germany.*

ELECTROMAGNETIC SPECTRUM

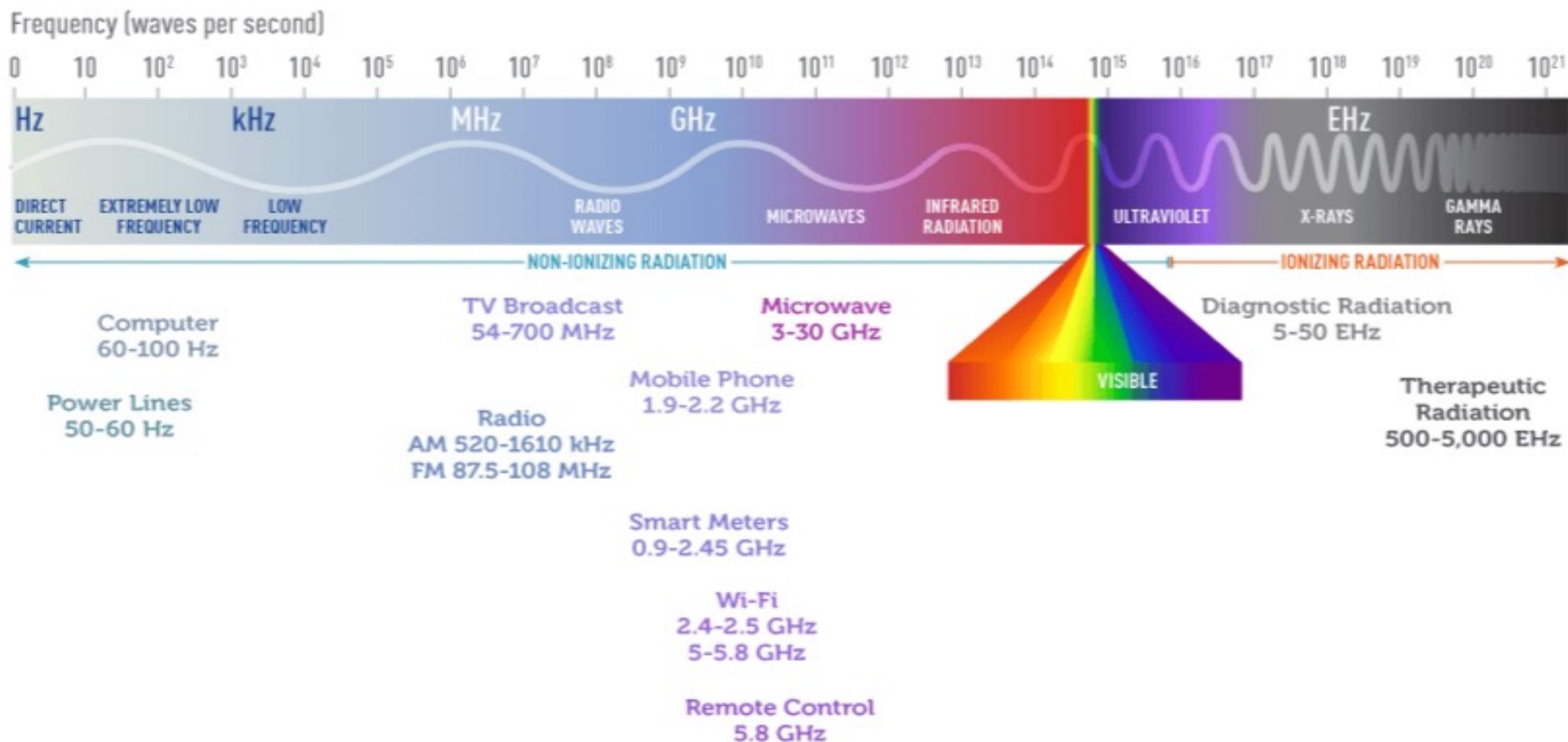
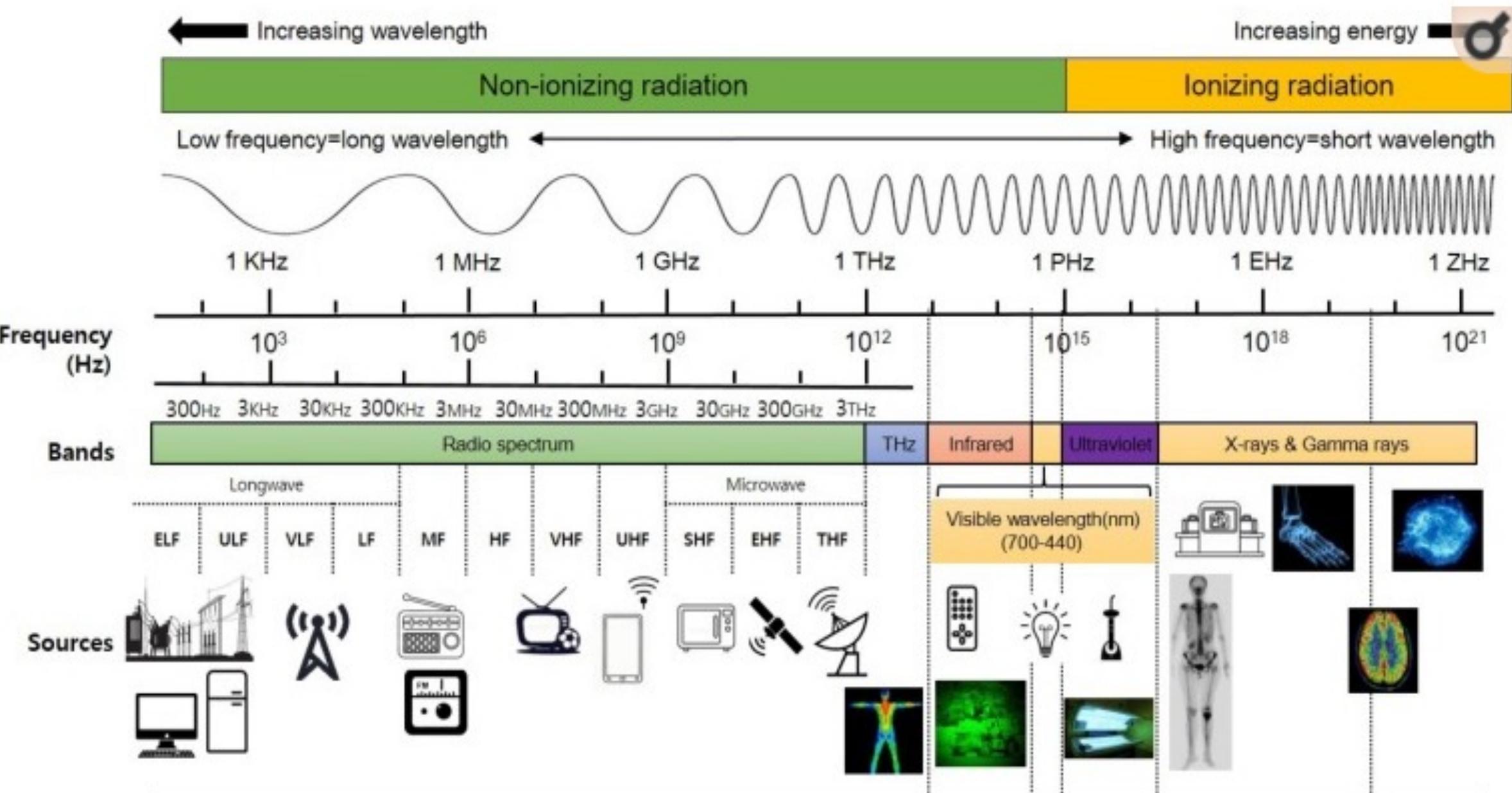


Figure 2: Electromagnetic spectrum. Source: <https://thinktankgreen.com/emf-testing/facts-education/electromagnetic-spectrum/>

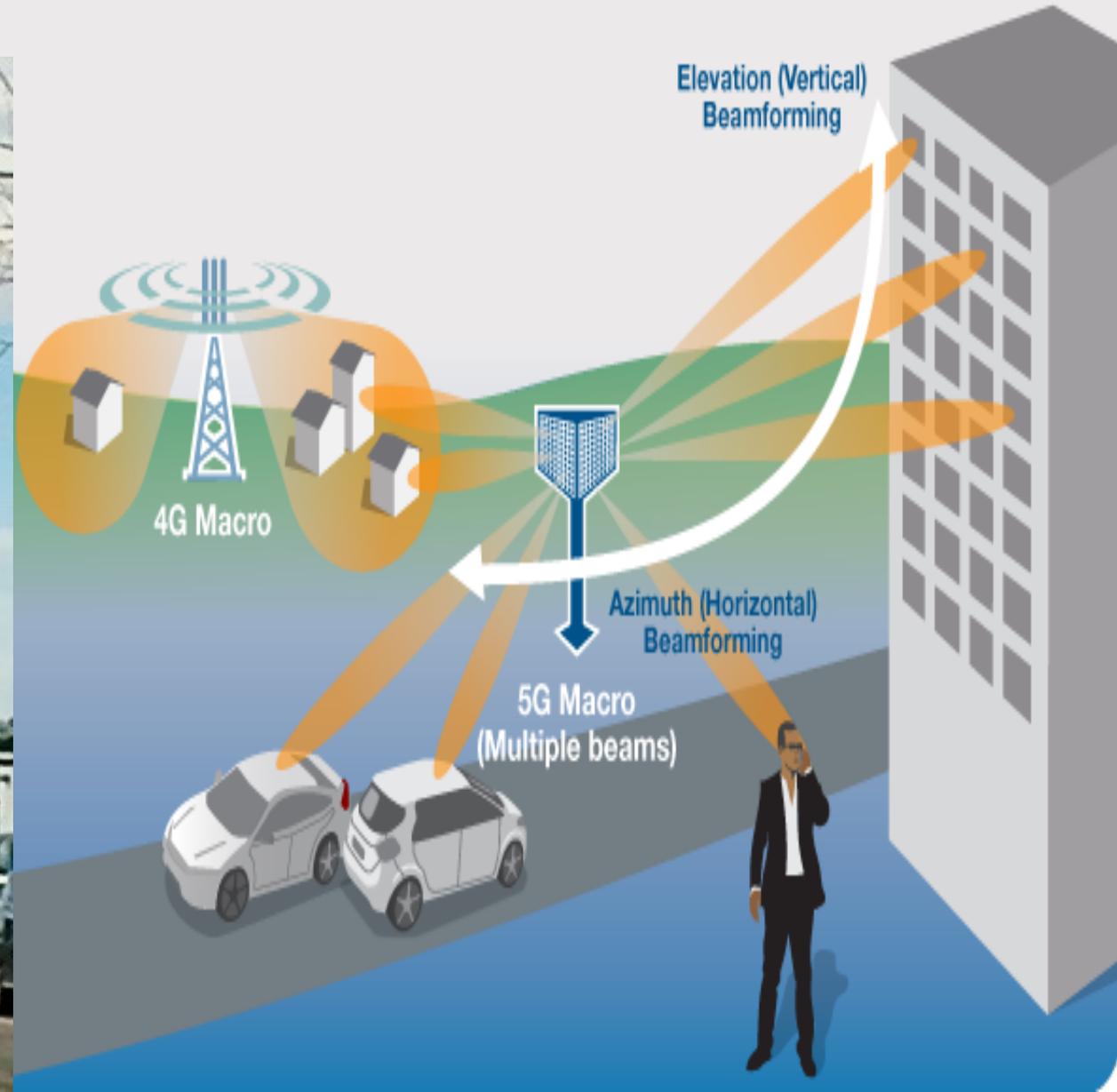






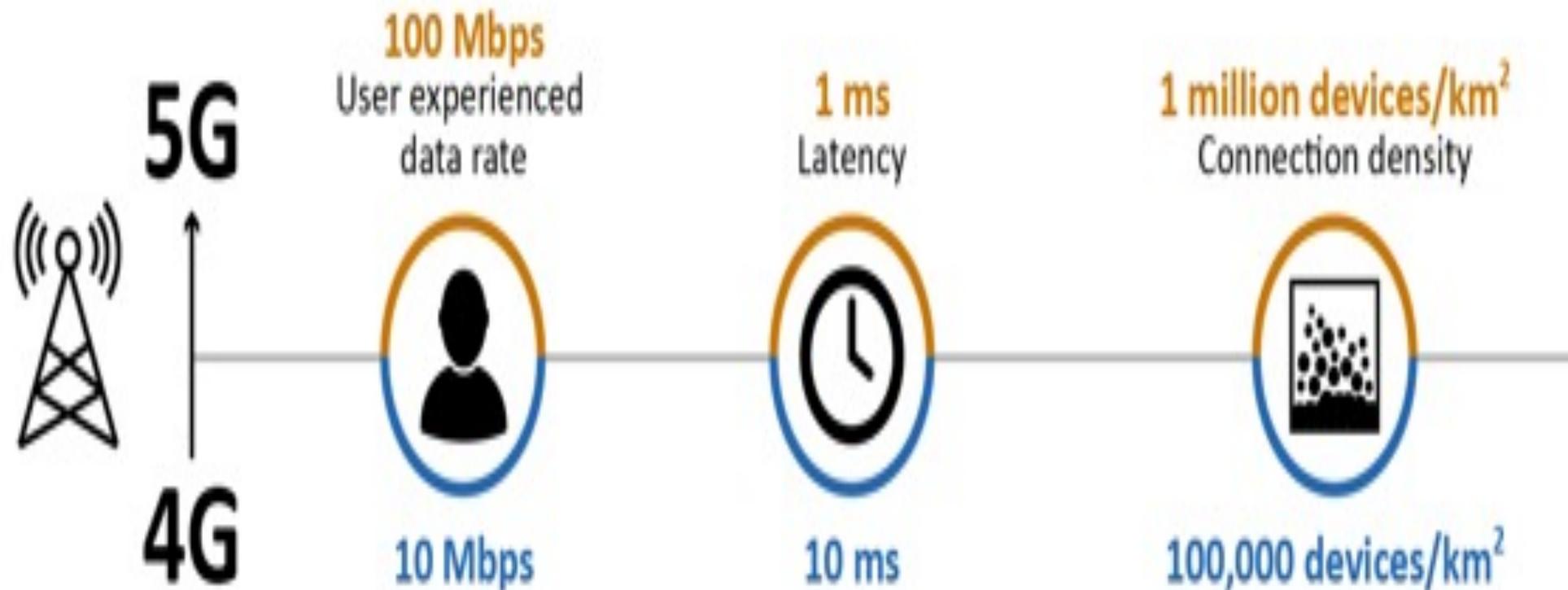
MIMO BEAMFORMING

4G and 5G antennas



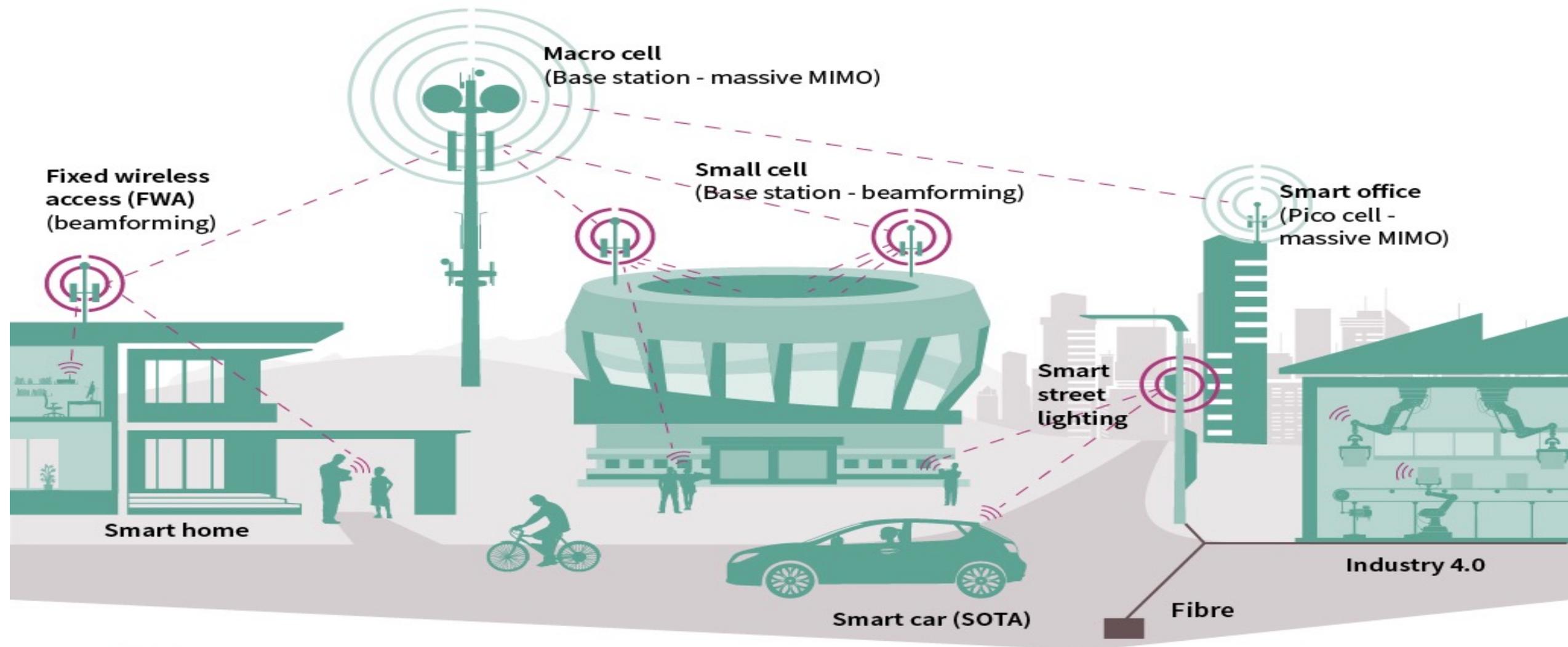


Some key Technical differences between 4G and 5G



Source: GAO depiction of International Telecommunication Union data. | GAO-21-26SP

Smart and connected - the communication of tomorrow with 5G



Base station (Macro cell, massive MIMO) < 6GHz



Small Cell (Beamforming) > 6 GHz

SOTA (Software over the air)

5G brings new radiations plus existing radiations

“The latest cellular technology, 5G, will employ millimeter waves for the first time in addition to microwaves that have been used for older technologies, 2G through 4G.

Given limited reach, 5G will require cell antennas every 100 to 200 meters, exposing many people to millimeter wave radiation.”

Scientific American article by Dr. Joel Moskowitz, Director of the Center for Family and Community, University of California, Berkeley. 2020

Exposures to EMF Radiations from 3-5G will often expand..and with increased complexity

- And will be **time varying**
- With **varying frequencies**
- And **wave forms**
- With **polarisation**
- And **pulsing**
- So **complex and very variable...**
- Which will often produce **inconsistent** results from research.....

“expect inconsistency from complexity & variability”

RF Exposures and Biological effects are complex

- Reported effects “*may be influenced by **exposure characteristics** (including SAR or power density, duration of exposure, carrier frequency, type of modulation, polarization, continuous versus intermittent exposures, pulsed-field variables, and background electromagnetic environment)*”,
- **biological parameters** (including cell type, growth phase, cell density, sex, and age, **variable sensitivities**) and
- **environmental conditions**”

so expect some “*inconsistent*” research findings

International Agency for Research on Cancer , Report on RF ,2011, p101/2

Expect **inconsistency** in research results from complexity....

“the complexity of environmental factors and of bee colonies means that the same conditions can never be reproduced”.

Maxim L ,van der Sluijs, “Systemic insecticides and honeybees” in *“Late Lessons from Early Warnings”* EEA, 2013.

Complexity requires the integration of many disciplines.....

*“The Precautionary Principle :with Application to the Genetic
Modification of Organisms & Nuclear Power”*

Nassim Nicholas Taleb, School of **Engineering**, New York University

Rupert Read, School of **Philosophy**, University of East Anglia

Raphael Douady, Institute of **Mathematics** and **Theoretical Physics**, C.N.R.S.,
Paris

Joseph Norman & Yaneer Bar-Yam New England **Complex Systems** Institute

EXTREME RISK INITIATIVE —NYU SCHOOL OF ENGINEERING WORKING PAPER SERIES, 2014

Corresponding author N Taleb, NNT1@nyu.edu

New Nobel prize for Transdisciplinary Science?

Summary of c 500 papers finding harmful effects of EMF

*“Effects include increased **cancer risk**, cellular stress, increase in harmful free radicals, genetic damages,*

*structural and functional changes of the **reproductive system**,*

learning and memory deficits,

neurological disorders, and negative impacts on general well-being in humans.

*Damage goes well beyond the human race, as there is **growing evidence of harmful effects to both plant and animal life”***

International EMF Scientists Appeal.

EMF Can have therapeutic effects.

- Some EMFs when focused on a specific region of the body where there is some dysfunction and when used at specific intensities **can have therapeutic effects** eg **EMF stimulation of bone growth**.
- There are something like 4000 papers on various therapeutic effects.
- Yet the Telecommunications Industry, and many Health/regulatory agencies prefer **to maintain the fiction that there are no non-thermal effects from EMF**

The expansion of cancer knowledge about EMF/RF from mobile phones

- 1999 1st human study **showing excess of brain tumours from mobile phones** (Hardell)
- 2007-11 **“Early Warnings”** from EEA & Council of Europe;
- in 2011/12 IARC (RF a **“possible carcinogen”**; BioInitiative Report)

Based largely on **2 main human studies** showing some evidence of brain cancer

- in 2015 (200+ EMF Scientists Appeal for **moratorium on 5G**)
- in 2018/20 National Toxicology Programme USA and Institute Ramazzini providing complementary & **“Clear Evidence”** of **cancer from animals**
- 2021 a majority of EMF scientists consider RF to be a **“proven or probable” human carcinogen and a co-carcinogen**

5G Space Pollution

- SpaceX ([“Starlink.”](#)) is launching **tens of thousands of small satellites into low-earth orbit for 5G.**
- SpaceX last year was given permission by the Federal Communications Commission to erect **up to one million antennas on earth to serve as transceivers linked to the satellites.**
- Astronomers say will damage their activities and cause collisions.

Military use of 5G

“The emergence of 5G technology..offers the Department of Defense the opportunity to take advantage, at minimal cost, of the benefits of this system for its own operational requirements.”

(“Defense Applications of 5G Network Technology,” Defense Science Board, a USA federal committee).

Such military benefits include *re-targeting of new generation of higher speed nuclear missiles.*

“5G holds the promise of ubiquitous high-speed data connectivity; vastly improved intelligence, surveillance, and reconnaissance; fast and secure command and control; more efficient logistics; swarming unmanned vehicles; and wide use of virtual reality and augmented reality”

[Military & Aerospace Electronics](#) website

Recent Reports on 5G

US General Accounting Office Report on 5G, 2020

“Deployment of 5G network technologies in the U.S. began in late 2018, and these initial 5G networks focus on enhancing mobile broadband.

These deployments are dependent on the existing 4G core network and, in many areas, produced only modest performance improvements”

“International bodies.. will need to develop additional 5G specifications and companies will need to develop, test, and deploy these technologies.

GAO identified the following challenges:

Spectrum availability and efficiency

Spectrum demand will likely continue to exceed supply.

- ▶ Research and development of technologies to make more efficient use of the spectrum (i.e., spectrum sharing technologies) are needed.
- ▶ A thorough understanding of propagation in higher frequencies, under various operating conditions, is needed.

Cybersecurity

5G networks provide some network security enhancements, but many of those will not be realized until complete, or “standalone,” 5G networks are deployed.

- ▶ 5G networks introduce new modes of cyberattack and expand the potential points of attack.
- ▶ 5G does not eliminate existing concerns around supply chains for network hardware.

Privacy

5G networks will exacerbate existing privacy concerns.

- ▶ 5G networks introduce new kinds of user data, including more precise location data.
- ▶ 5G networks are expected to produce far more data than current cellular networks.

Concern over possible health effects

Deployment of 5G technology may intensify existing public concern that radio frequency energy exposure affects health.

- ▶ Decision makers need policy-relevant information on the effects of 5G technology.
- ▶ Although there is no consistent evidence of health risks related to the radio waves used for 5G, responding to public concerns remains a challenge, in part due to the unknown long-term health effects.

The Netherlands Health Council Report

Sept 2020

*“it cannot be excluded that the incidence of **cancer, reduced male fertility, poor pregnancy outcomes and birth defects** **could be associated** with exposure to radiofrequency electromagnetic fields.*

*“However, the committee deems the relation between exposure and these and other diseases or conditions **neither proven nor probable**”.*

(Health Council of the Netherlands No. 2020/16e)

Netherlands Health Council on 5G “Concern & Caution”, 2020

- “The committee is especially **concerned about the potential health risks from long-term exposure to millimeter waves**”.
- “The committee recommends **not to use the 26 GHz frequency band for 5G** for as long as the potential health risks have not been investigated.”
- “Although the committee recommends adhering to the latest **(1990-2020) ICNIRP exposure guidelines**, we recommend.....
- “to take a **cautious approach** and keep exposures **as low as reasonably achievable**” ([ALARA](#)).

New Hampshire 5G Commission Nov 2020

Top Five Recommendations:

1. Recommends that state agencies include on their websites **information and warnings about radiofrequency (RF)** microwave radiation from all sources, including 5G small cells installed on **public rights-of-way** and specific warnings **concerning newborns, young children and pregnant women.**
2. Recommends that any new wireless antennae located on a state or municipal right-of-way or on private property **be set back from residences, businesses and schools.**

New Hampshire Recommendations...

3. Recommends that schools and public libraries **migrate away from wireless connections and instead use hardwired or optical connections.**
4. Recommends a statewide policy that would encourage the deployment of **fiber optic cable connectivity, internal wired connections, and optical wireless** to serve all commercial and public properties statewide.
5. Recommends that the State engage agencies with appropriate scientific expertise, including **ecological knowledge, to develop RF radiation safety limits that will protect the trees, plants, birds, insects and pollinators.**

NAS on the “Havana Syndrome” from EMF

*"many of the **acute**, sudden-onset, early phase signs, symptoms and observations reported by DOS employees **are consistent with RF effects**".*

*"many of the **chronic**, nonspecific symptoms are **also consistent with known RF effects**, such as dizziness, headache, fatigue, nausea, anxiety, cognitive deficits, and memory loss".*

"It is not necessary for RF energy sources to produce gross structural damage to cause symptoms".

"Rather, as with the Frey effect or potential thermoelastic pressure waves, RF sources may trigger symptoms by transiently inducing alterations in brain functioning".

NAS, "An Assessment of Illness in U.S. Government Employees and Their Families at Overseas Embassies" Dec 2020

2021: “the probability that RF causes brain cancer is high”

*“given the human, animal and experimental evidence, I assert that, to a reasonable degree of scientific certainty, **the probability that RF exposure causes gliomas and neuromas is high.**”*

Dr Chris Portier, retired head of National Toxicology Programme, USA, Mar 15th, Expert Report. Exhibit C. **Murray et al. v. Motorola**, Inc. et al. Superior Court for the District of Columbia. March 1, 2021. pp. 1-176. <http://bit.ly/PortierExpertReport>

Strengthening evidence of **electro-sensitivity** to RF in **children** and adults.

“EMFs”..can produce

“sleep disturbances, headaches, depression, fatigue, inattention, memory changes, dizziness, irritability, loss of appetite/body weight, anxiety, skin tingling, and EEG changes”

M Pall, Emeritus Prof of Biochemistry, Washington State University.

“Microwave frequency EMFs produce widespread neuropsychiatric effects”, J Chemical Neuroanatomy, 2016.

Prolonged use of smart phones may cause eye damage in children

“Our results indicate that longer smartphone use may increase the likelihood of multiple ocular symptoms, especially in children.”

Regulating use time and restricting the prolonged use of smartphones may prevent ocular and visual symptoms.”

“Smartphone overuse and visual impairment in children and young adults: a systematic review and meta-analysis, Jian Wang et al, [Journal of Medical Internet Research](#) Oct 2020

Blake Levitt & Henry Lai on Eco effects of RF

*“Our orientation was the entire living energetic biome, **how energy couples with living cells and unique non-human physiologies, natural magnetoreception mechanisms,** and what studies show about **interference with and/or potential override of natural EMF information in other species.**”*

We went long-view and long-form because our real target audience is environmentalists who know little, if anything, about EMFs -- given their penchant for attaching RF tracking devices to everything that moves with zero consideration for confounding variables”.

*We came at it **from the perspective of a living cell -- a coherent electrical system** -- not an engineering or weight-of-evidence model.”*

BL to DG, May 17, 2021

Systematic Review of EMF on Insects, 2020

“72 of 83 analyzed studies found effects of electromagnetic fields (EMF) on insects.

Disturbance of the sense of orientation; reduced reproductive ability and fertility; lethargy; changes in flight dynamics; failure to find food; reduced reaction speeds; escape behaviour; disturbance of the circadian rhythm; blocking of the respiratory chain and damage to the mitochondria;; mis-activation of the immune system; increased number of DNA strand breaks.

Field strengths 100 times below the ICNIRP limits have effects.

When planning the expansion of mobile networks, insect habitats should be protected from high-intensity EMF exposure”.

Alain Thill, Beilage in umwelt · medizin · gesellschaft 33,3/2020, Luxemburger Umweltorganisation AKUT

5G networks will increase outdoor radiations

The engineers found the fully deployed 5G mmWave network would result in significant increases in outdoor RF levels, and concluded

“5G mobile networks cannot yet be classified as safe for the public, and demands serious considerations before using mmWave communications for 5G networks, given the potential harms it could afflict on the public.”

“Radiation Analysis in a Gradual 5G Network Deployment Strategy,”
IEEE, 2020 Ahmad M. El-Hajj

First study on high RF exposures from 5G (Nov 10, 2020)

“In this article, the first case study has demonstrated how much EMF exposure is caused in a 5G system compared to 4G and 3.9G”.

“use of a 5G cell phone at 28 GHz could exceed ICNIRP radio frequency exposure limits when held at 8 centimeters (i.e., 3 inches) or closer to the head or body”

This new paper is published in an industry-sponsored journal, the November/December issue of ***IEEE Consumer Electronics Magazine***.

Seungmo Kim, Imtiaz Nasim. Human Electromagnetic Field Exposure in 5G at 28 GHz. IEEE Consumer Electronics Magazine. 9(6):41-48. Nov. 1 2020.

5G “will not solve problem of rural areas”.

“Since 5G that is capable of higher speeds to end users needs to use higher frequencies, this means it travels a lower distance, requiring more base station sites, and increasing the costs significantly.

“For this reason, 5G will not solve Government’s problem of getting rural areas connected to Gigabit speeds”.

Written evidence to UK Parliament Inquiry into 5G, April 2020, from Dr **Greig Paul (Lead Mobile Networks & Security Engineer)** DCMS 5G Rural Dorset Test bed & Trial Project, Member of UK 5G Security Group Electronic & Electric Engineering, University of Strathclyde

Fibre Optic Cables have much greater capacity than wireless

“One fiber-optic strand has greater bandwidth than the entire usable radio spectrum to 100 GHz”

...One fiber-optic cable can transmit over 10,000 Gbps compared with all wireless spectrum to 100 GHz.....which would have only 1,000 Gbps of capacity”

Rysavy Research, 2019, p 96

Wired Connections are better.....

*“Wired technologies such as fiber or coaxial cable are far superior to wireless as they are **faster, more reliable, resilient, energy-efficient, and more easily defended from cyber-attacks.***

*Above all, wired connections are significantly **less hazardous to our health and to other life forms** with whom we share this planet.”*

Dr Devra Davies, EMF and Cancer expert, EH Trust, USA

EMF: Two Scientific paradigms...

- *EMF* causes harm only via the high energy **tissue heating** paradigm: this is becoming updated by
- *EMF* also causing harm via the low energy **information physics/ cell signalling** paradigm

The rise and fall of scientific paradigms is common.

(See Thomas Kuhn, ***"The Structure of Scientific Revolutions"***)

ICNIRP on the NTP & Ramazzini animal studies, 2020

*“ICNIRP concluded that these substantial limitations (in methods) **preclude conclusions being drawn** concerning RF EMFs and carcinogenesis”.*

And they **“do not provide a reliable basis”** for **changing ICNIRP exposure guidelines** on radiofrequency radiation.

(Health Phys. 118(5):525–532; 2020)

Retired* Chief Toxicologist with NTP replies to ICNIRP, 2020

The ICNIRP statement on the NTP and Ramazzini animal studies contains
“numerous false and misleading statements”.

“the ICNIRP report excluded RFR-induced gliomas”..

ICNIRP: the NTP exposures were “75 times higher than the **whole-body** exposure limit for the general public” and therefore **“not able to inform on mobile-phone radiofrequency exposures.”**

But the *“NTP exposures to rat brains were similar to .. localized human exposures resulting from cell phones held next to the head”*

*after 30 years with NTP

Rising GBM cancer trends: Netherlands...

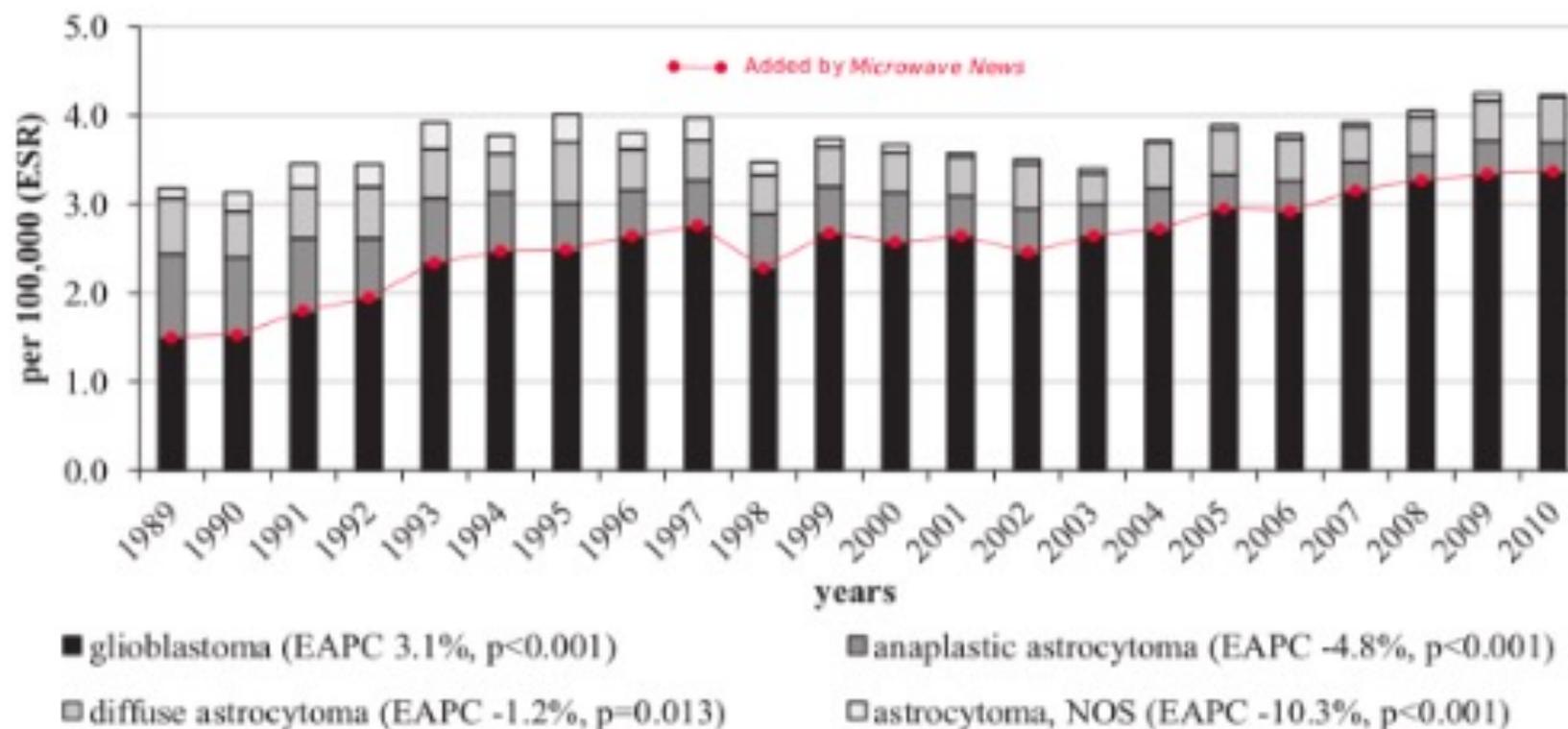
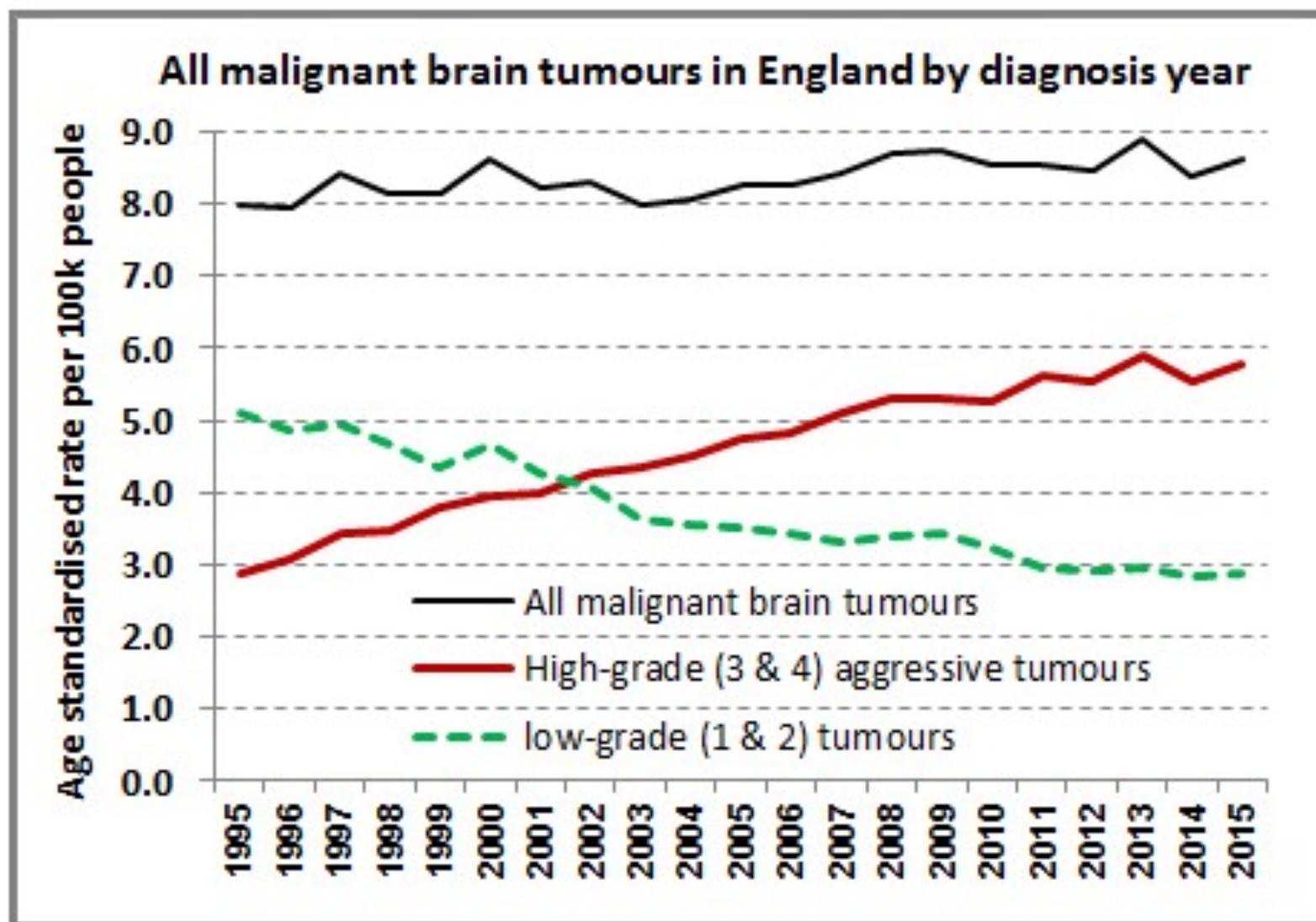


Fig. 1. Age-standardised incidence rates for astrocytic tumours in the Netherlands from 1989 to 2010.

EAPC stands for estimated annual percentage change

Source: Adapted from Ho et al, *European Journal of Cancer*, 2014, p.231



<http://www.saferemr.com/2018/03/brain-tumor-incidence-trends.html>

“The Case for Action”

“All scientific work is incomplete..

...that does not confer on us the freedom to ignore the knowledge we already have or to postpone the action that it appears to demand at the given time”

“Environment & Disease: association or causation?” Bradford Hill, Proc Roy. Soc Med ,1965, 58, 295-300

The “foresight” (precautionary) principle

‘The Irish Potato Famine and Precaution-1846

"Are you to hesitate in averting famine which may come, because it possibly may not come?"

Is it not better to err on the side of precaution than to neglect it utterly?"

Sir Robert Peel, UK Parliament, 27 March 1846

Origins of the PP: German Clean Air Act 1974 & Report 1985

The **vorsorgeprinzip** (“foresight”, or “precautionary, principle”) is a “**principle that justifies political action**” with elements of :

- **General reduction of environmental burdens** (limitations of the “assimilative capacity of the environment” ie **planetary boundaries**)
- Promotion of clean production & **innovation**
- **Anticipatory Research** & monitoring

- **Action** to reduce risks **before “specific hazards are encountered”**
- Costs of action not to be disproportionate to likely benefits: the **proportionality principle** now also in EU law.

The Bergen Ministerial Declaration on the Precautionary Principle, 1990

*“In order to achieve sustainable development **policies must be based on the precautionary principle**”*

*“Environmental measures must. **anticipate, prevent** and attack the causes of environmental degradation”*

*Where there are threats of serious or irreversible damage **lack of full scientific certainty should not be used as a reason** for postponing measures to prevent environmental degradation”.*

EEA working definition of the Precautionary Principle

“The PP provides *justification* for public policy actions in situations of *scientific complexity, uncertainty and ignorance,*

- where there *may* be a need to act in order to avoid, or reduce, *potentially serious or irreversible threats* to health or the environment,
- using *appropriate strengths of scientific evidence*, and
- taking into account the likely *pros and cons of proportionate actions and inactions*”.

Gee, “*More or less precaution?*”, in “Late Lessons”, EEA,2013.

Ethics, not Science, determines action/inaction

**The case specific & “*appropriate*” strength of
evidence for precautionary action is an **Ethical
choice, (*within a political context*),****

not a Scientific issue

**And the Ethical choice turns upon the
consequences of being wrong.....**

*Who benefits, and who gains, **from being wrong in acting, or not acting**, early enough to prevent harm?*

Short term, specific, partial, economic interests?

Or the longer term general health & wellbeing of people and their environments?

Some actions to protect the public and environment from EMF & 5G

[407 international scientists and doctors](#) from 47 nations have called for a [moratorium on deployment of 5G](#), as of **Oct 2020** in their [5G Appeal](#), 2017

"5G will substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place. RF-EMF has been proven to be harmful for humans and the environment."

BRAG Citizen Science RF monitoring Project, 2021

The color coding used in the **BRAG** scale is as follows:

- **Green** for values below **1,000 microW/m²**;
Amber for values between **1,000 and 10,000**;
Red for values between **10,000 and 100,000**; and
Black for values above **100,000 microW/m²**
- **Green (1000 microW/m²)** is the guideline recommended in the **Salzburg Resolution (2000)** and by the **BioInitiative Report (2007)** for long-term exposure and is based on the **precautionary approach**.
- **Black (100,000 microW/m²)** is the guideline recommended by **Russia, China, Italy, Switzerland**, most of **Eastern Europe**, as well as the city of **Toronto** and is based on **biological effects**.
- Values that exceed **10,000,000 microW/m²** are in violation of the ICNIRP guidelines in most of **Western Europe** and in the **U.S.** and this guideline is based on a **thermal or heating effect**.

<https://globalemf.net/results/the-results-are-trickling-in-for-can-you-brag-about-your-city/>

The dearth of data on RF Exposures

“Until now, systematic and coordinated efforts to monitor EMF exposure are rare.

Furthermore, virtually nothing is known about personal exposure levels.

This lack of knowledge is detrimental for any evidence-based risk, exposure and health policy, management and communication”.

Durrenberg et al, 2014, “EMF Monitoring—Concepts, Activities, Gaps and Options”, International Journal of Environmental Research and Public Health

5G Appeal asks the EU

“to take all reasonable measures to halt the 5G RF-EMF expansion until independent scientists can assure that 5G and the total radiation levels caused by RF-EMF (5G together with 2G, 3G, 4G, and WiFi) will not be harmful for EU-citizens, especially infants, children and pregnant women, as well as the environment”.

Other Actions.....

- [150 community groups](#) are trying **to block 5G rollout** in the [U.S.](#)
- the Environmental Health Trust and Children's Health Defense along with multiple plaintiffs are [sueing the US FCC](#) over its **inadequate RF exposure limits**
- US compensation case with **Brian cancer victims v Motorola**, July 2021
- Some UK scientists and lawyers are taking [Judicial Review Court Action against Public Health England](#) over its inadequate reliance on **outdated exposure limits** and on the **poor quality EMF evidence evaluation** from the pro Industry body, ICNIRP.
- Another UK group have taken **Judicial Review Court Action against the Government** for ignoring evidence when introducing **restrictions on local Planners** to protect the public from the radiations of 2-5 G.

“Healthy Heavens Trust Declaration.”

- *“We are a professional network of lawyers and relevant experts, dedicated to redirecting the 5G Juggernaut toward balance and wisdom.”*
- *Our species is rushing toward a future that **feeds our addiction to speed, instant gratification, energy consumption, and disconnection from Earth**. By creatively working together, we have a chance to cause a shift.”*
- The [5G International Legal Action Network](#) led by attorneys Julian Gresser and Amber Yang

Some Sources of Information

EM-Radiation Research Trust UK <https://www.radiationresearch.org>

American Academy of Pediatrics. "Cell Phone Radiation & Children's Health: What Parents Need to Know." <http://bit.ly/AAPrecs>

Athens Medical Association. "16 Rules to Reduce Wireless Radiation Exposure." <http://bit.ly/2pOt2HG>

Baby Safe Project. "What You Need to Know about Wireless Radiation and Your Baby." bit.ly/BabySafeEMR

City of Berkeley. [Berkeley Cell Phone "Right to Know" Ordinance.](#)

Canadians for Safe Technology. "Wireless Safety Tips. <http://bit.ly/C4STtips>

Connecticut Department of Public Health. "Cell Phones: Questions and Answers about Safety." <http://bit.ly/cellphoneFAQsConn>

Consumer Reports. "Cell Phone Radiation Warnings." <http://bit.ly/CRwarnings>

Electrosensitive Society. "How to reduce your exposure <http://bit.ly/ESsafetytips>

Environmental Health Trust. "10 Tips to Reduce Cell Phone Radiation." <http://bit.ly/EHT10tips>

Other Sources of Information

- Space Pollution <https://iau.org/news/pressreleases/detail/iau2001/>
- US Lawyers letter to School Administrators. https://bb8a81a9-3ada-4e52-8cea-849c89f091c7.filesusr.com/ugd/2cea04_d9585c0ed1c54a96b8faf9c52c0dbfa2.pdf
- <https://www.techsafeschools.org/about>
- <https://ehtrust.org/dr-devra-davis-and-environmental-health-trust-open-letter-on-5g/>
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