Response to the public inquiry concerning the increase of the protection limit against electromagnetic radiation from 6 to 14.5 V/m in the Brussels Region

Original article in French :
https://www.stop5g.be/fr/htm/Reponse-enquete-5G-Bruxelles_aout22.htm *(August 13, 2022)*

The environmental impact report[1] of the draft ordinance of the Brussels Region to increase the limit of protection against radiofrequency electromagnetic fields (RF-EMF[2]) from 6 to 14.5 V/m implicitly considers that the deployment of 5G is inevitable and does not at any point consider the possibility of staying with the current situation (2G, 3G and 4G). Both the saturation of the current network and the deployment of 5G are considered inevitable, while the possibility of taking adequate measures to limit data traffic is not mentioned. The report (or its "non-technical summary") has a first major bias.

It is regrettable that an administration such as *Brussels Environment* which is supposed to be independent from the executive power publishes such a biased report, just like the setting up of the deliberative citizens' commission "5G" by this executive. As a reminder, this commission, composed of 15 deputies and 45 citizens chosen at random from the Brussels population, was supposed to answer the question "*How do we want 5G to be implemented in the Brussels-Capital Region, taking into account the environment, health, economy, employment and technological aspects*? From the outset, there was no room in this commission for citizens opposed to the deployment of 5G who had no choice but to refuse to participate[3] . Claiming to be based on the "recommendations" of this Commission, as is done in the report, is therefore inadmissible, whether it be for the recommendation "to adopt a strict (sic) emission standard of 14.5 V/m", the "environmental measures" to be taken, the "complementary or corrective measures", etc.

Climate change

On the vital issue of anthropogenic climate change, which we do not need to revisit in the light of current events[4] , the conclusions of *Brussels Environment* in the summary seem to be unacceptably light: despite the observation that "the *telecommunications sector* is *a major consumer of energy and emitter of greenhouse gases*" (page 9 of the summary) and, as everyone knows, despite the enormous efforts to be made to reduce greenhouse gas emissions, the increase in energy consumption and greenhouse gas production linked to the deployment of 5G is quietly envisaged, as this aspect is not even mentioned in the conclusions of this summary (most readers of the study will be satisfied with reading the summary, which is nevertheless 18 pages long, while the report is 90 pages long).

However, the point is much better made in the conclusions of the report (page 86) where it states: "*... although environmental provisions are included in the Ordinance, they will only be able to slightly mitigate the significant increase in energy consumption and waste generation generated by the deployment of 5G compared to such deployment under the current Ordinance (alternative 0), which is moreover in opposition to the Region's climate and environmental objectives aiming at a reduction of GHG emission and sustainable, sober, local and circular consumption.*" Why not have left this sentence in the conclusions of the summary?

ICNIRP, a tool for the lobby

With this report, *Brussels Environment is* continuing the democratic smoke and mirrors process initiated by the executive at the same time as it disinforms and contributes to the ignorance factory dear to the telecoms lobby, particularly with regard to international protection standards, notably those of the ICNIRP (International Commission on Non-Ionizing Radiation Protection), which would protect against the "only proven biological effect", namely the thermal effect[5] ; there are many other "potential" biological and even health effects[6] , but no study has shown a causal relationship (section 1.3.1.f of the summary, page 11).

In this respect, the report simply cites studies favourable to the ICNIRP and telecom lobby's theses and ignores all the others, in fact thousands of studies published over the last 50 years. For example, what the report says about genetic effects is particularly appalling and reaches the highest levels in the art of disinformation: "*Reassuringly, the results show that the more scientifically serious a study is, the weaker the observations of genetic lesions*" (on these genotoxic effects, see below). A fortiori, the authors of the report cannot be counted on to expose the meta-analyses that show that the conclusions of studies on biological and health effects depend on the method of financing: for the most part, studies financed by industry do not show biological or health effects, unlike those financed by public funds or by bodies independent of industry. This influence is not new: for 85 studies on the genotoxicity (DNA damage) of RF-EMF published from 1990 to 2005, 43 studies showed an effect, 42 found none, a more or less equal distribution (which is not unusual in this type of comparison). What is remarkable, however, is that 32 of the 35 studies funded by the US Air Force and mobile phone industry lobby showed no effect; moreover, one of the three lobby-funded studies that did find an effect was almost not published (source: *www.microwavenews.com/RR.html*).[7]

Most countries in the world rely on the recommendations of the ICNIRP, which is a private institution under German law created in 1992 by Michael Repacholi to best serve the needs of the telecom industry. It operates like a closed club: its members decide who can join and only those who defend the idea that if there are no thermal effects, there can be no health consequences are admitted. It does not apply any rules of transparency or independence, since on the contrary most of its past or present members are known for their links with the telecom industry.

ICNIRP's close relationship with industry has long been documented in the following surveys and documents:

1. *The International Commission on Non-Ionizing Radiation Protection: Conflicts of interest, corporate capture and the push for 5G.*
   In June 2020, Members of the European Parliament Klaus Buchner and Michèle Rivasi published a report on the independence of ICNIRP, the main conclusion of which is that "*for really independent scientific advice we cannot rely on ICNIRP. The European Commission and national governments, from countries like Germany, should stop funding ICNIRP. It is high time that the European Commission creates a new, public and fully independent advisory council on non-ionizing radiation*".
   Information and report on Michèle Rivasi's website: *michele-rivasi.eu/a-la-une/icnirp-conflits-d'interets-5g-et-capture-regulatoire* (report available in English and French).

[1] *https://environnement.brussels/thematiques/ondes-et-antennes/enquete-publique-projet-de-plan-regional-sur-lenvironnement-electromagnetique-bruxelles*

[2] RF-EMF: radiofrequency electromagnetic field (radiation) or microwave.

[3] See *La 5G et la démocratie cosmétique*, the letter from a citizen who refused to participate in this "fool's game" on the website of the newspaper *La Libre:*
https://www.lalibre.be/debats/opinions/2021/04/01/la-5g-et-la-democratie-cosmetique-ESTTTZNHA5DIBK7ZIDXC5ELYNQ/

[4] Dramatic floods, gigantic forest fires and other disasters that are no longer natural given their frequency and size, accelerated decline in biodiversity, etc.

[5] The thermaleffect: the heating of the tissues.

[6] In this section on the state of human health today (before 5G is deployed), there is no mention of health effects, although cancer and other diseases are mentioned in the potential effects. The report itself is hardly more specific on this point (page 39).

[7] In a similar vein (cancer caused by very low frequency EMF), but more recent*: Extremely low frequency electromagnetic fields and cancer: How source of funding affects results*. David O.Carpenter. 2019.
https://doi.org/10.1016/j.envres.2019.108688

2. *How much is safe?*
An investigation by *Investigate Europe* journalists: "*Some scientists are sounding the alarm about potential health risks caused by radiation from mobile technology. Completely unfounded, assure most radiation safety authorities. They take advise from a small circle of insiders who reject alarming research – and who set safety limits*".
www.investigate-europe.eu/publications/how-much-is-safe (January 2019).

3. *Self-referencing authorships behind the ICNIRP 2020 radiation protection guidelines.*
"... the ICNIRP 2020 Guidelines fail to meet fundamental scientific quality requirements and are therefore not suited as the basis on which to set RF-EMF exposure limits for the protection of human health. With its thermal-only view, ICNIRP contrasts with the majority of research findings, and would therefore need a particularly solid scientific foundation. Our analysis demonstrates the contrary to be the case. Hence, the ICNIRP 2020 Guidelines cannot offer a basis for good governance".
By Else K. Nordhagen and Einar Flydal in the journal *Reviews on Environmental Health* in June 2022.
https://www.degruyter.com/document/doi/10.1515/reveh-2022-0037/html

4. *Aspects on the International Commission on Non-Ionizing Radiation Protection (ICNIRP) 2020 Guidelines on Radiofrequency Radiation.*
"*ICNIRP's conclusion on cancer risks is:* 'In summary, no effects of radiofrequency EMFs on the induction or development of cancer have been substantiated'. *This conclusion is not correct and is contradicted by scientific evidence. Abundant and convincing evidence of increased cancer risks and other negative health effects are today available. The ICNIRP 2020 guidelines allow exposure at levels known to be harmful. In the interest of public health, the ICNIRP 2020 guidelines should be immediately replaced by truly protective guidelines produced by independent scientists*".
By: Hardell L, Nilsson M, Koppel T, Carlberg M. Published in Journal of Cancer Science and Clinical Therapeutics, 2021.
doi:10.26502/jcsct.5079117.

5. *Conflict of interest and bias in health advisory committees: the case of the WHO working group on electromagnetic fields (EMF).*
Don Maisch. Published in 2006 in the journal of the Australasian College of Nutritional and Environmental Medicine (ACNEM). Also available in French on request.
https://www.researchgate.net/profile/Don-Maisch

Totally inadequate protection limits

"Based on this threshold [of the harmful thermal effect] and the precautionary principle, the ICNIRP recommends limiting the exposure of the population to radiation not exceeding 41.2 V/m. The current Brussels standard of 6 V/m is therefore 50 times[8] lower than the ICNIRP recommendation. The Brussels Region has one of the strictest standards in the world, stricter than in Flanders and Wallonia" (summary, page 8). In fact, this difference is very small, of the same order as the difference between plague and cholera as explained below.

The ICNIRP recommended limit is 41.2 V/m (volt/meter) for the electric field strength of radiation with a frequency of 900 MHz (megahertz), which, when converted to power density, equals 4.5 W/m² (watt/square meter).

The limits recommended by many independent experts for radiofrequencies (RF) are far below those of the ICNIRP, by a *factor of* about *100,000,* and thus also below those currently in force in Brussels (by a factor of 2000), in terms of power density. For example, the authors of the BioInitiative report[9] recommend a limit of the order of 5 µW/m² (microwatt/m² or 0.04 V/m) for the cumulative exposure of RF waves outside the home. For 2G, 3G and 4G, the European Academy of Environmental Medicine (EUROPAEM)[10] recommends 100 µW/m² (0.2 V/m), but 10 times less during the sleeping period and 100 times less for children and frail people (1 µW/m² , or 0.02 V/m). The *Institut für Baubiologie*[11] recommends similar values.

These limits may seem low, but they are not surprising when one considers that the ICNIRP values represent a billion of billions times the level of natural EMF at these frequencies (which means that the limits proposed by the independent experts are still more than a billion times higher than natural EMF).[12]

In addition, to carry data, the EMFs used for telephony are modulated, which does not exist in nature and represents a little understood component of their toxicity, which is nevertheless important according to some studies[13] .

A flawed measurement procedure

The Brussels Region follows the ICNIRP recommendations for the calculation or measurement of RF-EMF: the intensity level of an EMF is averaged over 6 minutes ("RMS value")[14] and does not take into account the instantaneous intensity peaks, which are the rule for mobile telephony and to which a "peak value" corresponds[15] . To illustrate this fundamental difference, let's just say that if you were to receive 100 needlesticks 1 mm deep in the heart (average value), you would not suffer any ill effects, whereas a single needle stick of 100 mm (peak value) could be fatal.

The ratio of peak to RMS in terms of power density is about 25 for a 2G, 3G or 4G antenna, but is much higher, about 1000, for a 5G antenna.[16] From this point of view, 5G could prove to be even more toxic than previous generations.

Why do the authors of the report not mention this well-known subterfuge?[17]

[8] V/m (electric field intensities) cannot be compared directly, unlike W/m² (electromagnetic field power densities). Intensities must be converted to power densities and then the densities compared. Alternatively, since the power density varies as the square of the intensity, it is sufficient to take the square of the ratio of the intensities: (41.2/6) squared equals about 50.

[9] *BioInitiative 2012. A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation*.
The *BioInitiative* report is the work of 29 independent scientists from 10 countries, all of whom are experts in the field (21 of whom have one or more PhDs and 10 of whom have one or more medical qualifications). It provides an overview of the state of knowledge of the effects of electromagnetic fields (EMF) on humans and living organisms, based on several thousand scientific studies.

- *bioinitiative.org* (2012. 1500 pages). Since 2012, it has undergone several updates.
- The French translation of the report summary: *electrosmog.grappe.be/doc/BIR/BioInitiative_Resume-pour-le-public_2014.pdf*

[10] European Academy for Clinical Environmental Medicine, *europaem.eu/en*

[11] Institut für Baubiologie, *baubiologie.de*

[12] *Planetary electromagnetic pollution: it is time to assess its impact.* Priyanka Bandara, David O Carpenter. 2018.
www.thelancet.com/journals/lanplh/article/PIIS2542-5196(18)30221-3/fulltext

[13] The roles of intensity, exposure duration, and modulation on the biological effects of radiofrequency radiation and exposure guidelines. Henry Lai & B. Blake Levitt. Electromagnetic Biology and Medicine. 2022.
https://doi.org/10.1080/15368378.2022.2065683

[14] Root meansquare.

[15] Or "peak value".

[16] *La face cachée de la 5G* (David Bruno, 2022), page 45.

[17] For example, it is well known that the peak signal power of a DECT cordless telephone base station can be up to 100 times higher than the average signal power.

The authors of the report misinformed?

Section 3.6 of the report (*Human Health*, page 39) is introduced by a preamble which states, among other things, that "*the state of the art presented below is therefore based essentially on the preliminary work carried out by the expert committee*".

It ends with this conclusion (page 41): "*For the frequencies currently used, the available data are the result of 20 to 30 years of research... In conclusion, the current state of knowledge does not make it possible to demonstrate any harmful effect, but neither does* it *make it possible to conclude that there is a total absence of effect on health.*

For anyone with any knowledge of the field, this extract from the report is shocking. On the one hand, the first data appeared after the end of World War II, almost 70 years ago, and on the other hand, the "*harmful effects*" are widely demonstrated, all things that are easy to verify.

Regarding the date of the first studies on the toxicity of artificial RF-EMF, here are two documents that attest to their antiquity. They show that the discovery of non-thermal " *harmful effects*" goes back nearly 70 years:

1. The report of a symposium on microwave hazards held in 1957 in Washington: *Proceedings of tri-service conference on biological hazards of microwave radiation, 15-16 July 1957.* Pattishall, Evan G. George Washington Univ, 1958. *https://archive.org/details/DTIC_AD0115603*

2. *More than 2000 Documents prior to 1972 on Bioeffects of Radio Frequency Radiation.*
Glaser, Z.R. [U.S.] Naval Medical Research Institute, 1972.
A bibliography of more than 2000 references on biological responses to radio frequency radiation, published up to June 1971.
Dr. Magda Havas, PhD. *https://magdahavas.com/from-zorys-archive/pick-of-the-week-1-more-than-2000-documents-prior-to-1972-on-bioeffects-of-radio-frequency-radiation/*

Among many other studies produced over 30 years ago, there are those on the blood-brain barrier (BBB) and the immune system.

Effect on the blood-brain barrier (BBB)

The BBB is a special layer of cells that protects the brain by preventing toxins in the bloodstream from reaching it. The opening of this barrier can lead to developmental diseases of the nervous system, neurodegenerative diseases (Alzheimer's, etc.) as well as the development of tumors in the brain.

In 1975, Allan Frey published the result of his research in the Annals of the New York Academy of Sciences: exposure to low-intensity 1.9 GHz microwaves opens the BBB in rats. Subsequently, other peer-reviewed studies confirmed Frey's findings, in particular those published by the team of Professor Leif G. Salford in the 1990s (Lund University). Leif G. Salford presented his research findings and concerns to the EU Parliament in 2000.

- *Permeability of the blood-brain barrier induced by 915 MHz electromagnetic radiation, continuous wave and modulated at 8, 16, 50, and 200 Hz*
Leif G. Salford et al. 1994.
https://pubmed.ncbi.nlm.nih.gov/8012056/
- *Cell Phone Health Risk?*
Allan Frey. 2012.
Allan Frey revisits his study published in 1975 and explains how corrupt scientists discredited him at the same time as they succeeded in dumbing down research on the health effects of electromagnetic radiation in the United States.
www.electrosmog.grappe.be/doc/sc/cerveau/Frey_Allan_Cell-Phone-Health-Risk_2012.pdf
- *Nerve Cell Damage in Mammalian Brain after Exposure to Microwaves from GSM Mobile Phones*
Leif G. Salford and others. 2003. Open access.
https://ehp.niehs.nih.gov/doi/10.1289/ehp.6039
- Leif G. Salford's presentation to the EU Parliament in 2000:
www.electrosmog.grappe.be/doc/sc/cerveau/Salford-Leif_Parlement-UE_2000.pdf

Immune system

Starting in 1970, studies were conducted in the USSR on the effects of RF-EMF on the immune system of laboratory animals. The main conclusions are as follows:

- Chronic daily exposure of 100-500 µW/cm² can induce irreversible biological pathological reactions.
- 50 µW/cm² is the exposure threshold for adverse biological effects. These effects are not pathological, as the organism can compensate, but in the long term the continuous compensation can lead to adverse effects.
For comparison, the ICNIRP limit at the frequencies considered (around 2 GHz) is close to 1000 µW/cm² .
- This research has also shown a dose-dependent relationship in the effects of RF-EMF on the immune system.

Source: *Evidence for Effects on Immune Function*. BioInitiative Report, Section 8. *https://bioinitiative.org*

Genotoxic effects

In 1995, Henry Lai, professor of bioengineering at the University of Washington, and N.P. Singh published the first paper reporting DNA damage in the brain cells of rats exposed to radiation similar to that emitted by mobile phones.[18]

In June 2022, the same Henry Lai made an inventory of studies on the genotoxic effects of very low frequency and radio frequency (RF) electromagnetic radiation. For RF, he identified a total of 423 studies, of which 291 (68%) showed genetic effects and 132 (32%) did not.[19]

The precautionary principle misused

Page 27 of the report: "*The threshold for biological effects has been identified at 4W/kg, or 292 V/m2, which corresponds to an exposure beyond which the thermal effect is harmful, because the body is no longer able to evacuate the heat properly. The ICNIRP has established maximum exposure guidelines based on the precautionary principle and on the only known and proven effects* [i.e. the thermal effect alone, all other effects being denied]. *The precautionary principle implies that where there is uncertainty about the existence or extent of risks to human health and the environment, protective measures should be taken without waiting for the reality or seriousness of these risks to be fully demonstrated. Therefore, the ICNIRP applies a safety factor of 50 and recommends limiting the exposure of the population to radiation not exceeding 41.2 V/m. The current Brussels standard of 6 V/m is therefore 50 times lower than the ICNIRP recommendation*".

The authors of the report could not have defined the precautionary principle any better, but they show a staggering blindness with regard to all the scientific literature on the biological and health effects of RF-EMF, which allows them to say, without shame perhaps, that the precautionary principle is well respected. They also refuse to listen to the appeals of scientists and doctors from all over the world, which have been multiplying over the past 20 years. For example, let's mention the appeal initiated in 2015 and signed in April 2020 by 253 EMF specialists from 44 different countries; these scientists, all of whom have published peer-reviewed research on the biological and health effects of EMF, are calling for stricter exposure limits and asking that the potential biological impacts of 4G and 5G telecommunication technologies on plants, animals and humans be re-examined (*emfscientist.org*). Another example is the international appeal launched in 2018 calling for a halt to the deployment of the terrestrial and space-based 5G network (*5gspaceappeal.org*) having

[18] Acute low-intensity microwave exposure increases DNA single-strand breaks in rat brain cells.
Henry Lai and N.P. Singh. 1995.
https://pubmed.ncbi.nlm.nih.gov/7677797/

[19] Genetic Effects of Non-Ionizing EMF Abstracts (2022)
Henry Lai. 2022.
https://bioinitiative.org/wp-content/uploads/2022/06/Genetic-Effects-of-Non-Ionizing-EMF-Abstracts-2022.pdf

gathered over 300,000 signatures from scientists (7000+), engineers (14,000+), doctors (4400+) and citizens.

Economic cost of 5G deployment

The increase in energy consumption associated with the rollout of 5G will inevitably result in an increase in cost for mobile network users, especially as electricity prices are currently soaring. This is evident when one considers that, just for the operation of the 5G network, an increase in the country's electricity consumption of around 2% is commonly accepted.

It's to the point where the economic viability of 5G has been questioned by Orange France employees in a fortunately leaked internal document; they are also challenging the rollout of 5G on the basis of its environmental consequences: *www.stop5g.be/fr/doc/Orange_Pourquoi-stopper-la-5G_sept2020.pdf*

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