

Dear Madam or Sir,

The subject of my entry: I understand that the U.S. Department of Health and Human Services (HHS), headed by The Honourable Robert F. Kennedy, Jr., and the U.S. Federal Communication Commission (FCC), both are seeking public input on electromagnetic fields and wireless radiation.

In my entry, I want to focus on the need for support to persons with the functional impairment electrohypersensitivity under the UN Convention on the Rights of Persons with Disabilities (aka the UN Special Human Rights Act for Persons with Functional Impairments). A recent example for me is an American lady, Xxxxxx Yyyy's, electrohypersensitivity disability which requires that the wireless smart meter that has been installed in her apartment building shall be replaced - upon her request - with an analogue meter.

According to my information, the USA adheres to the same UN Convention as the rest of the UN world, meaning that all businesses, including housing, medical institutions, schools, and public transportation, must seek accommodation if a person with a disability requests it. At this point, it must be emphasized that the UN Convention on the Rights of Persons with Disabilities (aka the UN Special Human Rights Act for Persons with Functional Impairments) only speaks about complete accessibility as the end station for any accessibility measures and strategies.

People with the functional impairment electrohypersensitivity will experience symptoms such as headaches, pressure in their head and cognitive problems, when exposed to radiation from smart meters, cell phones, WiFi routers, and other wireless devices. Some may not be able to enter a house, building, store, school, or hospital, because their symptoms are aggravated by e.g. Wi-Fi and cell phone base stations in these buildings. It should also be noted that with continuous exposure to radiation from e.g. a smart meters people with the functional impairment electrohypersensitivity can experience an increase in their symptoms.

Thus, the quality of life for persons with the functional impairment electrohypersensitivity will be vastly improved as soon as you acknowledge the specific needs of them, and you will - in addition - meet the UN Human and Civil Rights' demands on complete accessibility. The latter talks about "the human right for people with functional impairments to live an equal life in a society based on equality".

Introduction

My name is Dr. Olle Johansson, and I am a professor, retired from the world-renowned Karolinska Institute and the equally renowned Royal Institute of Technology, Stockholm, Sweden, both with their close associations to the Nobel

Prizes in Physiology or Medicine, Chemistry and Physics, respectively, and I am hereby submitting testimony about the need to ensure complete accessibility for persons with the functional impairment electrohypersensitivity.

I have been contacted before by several residents of your beautiful country, most recently by residents in the state of California, in connection with the above-mentioned accessibility demand, as well as about other proposed base station installations, wireless systems near and in schools, and more. Already now, I would point out that children are more vulnerable to these kinds of radiation exposures. You may also be aware that I have presented my views at the Italian Parliament at a meeting organized by Mr. Maurizio Martucci, Mr. Giorgio Cinciripini, and others; and so I have done several times before; I had the great honour to lecture in 2022 in Asker, Norway, about the functional impairment electrohypersensitivity, and I have made an additional number of many other journeys to various countries - including the USA - around the planet.

For many years, I have been studying the health effects of wireless devices and technologies, such as cell phones, WiFi, and general wireless infrastructure. My research decades ago was instrumental to determine the old CRT computer monitors were biologically harmful and that's why we switched them out for the potentially less impactful flat-screen monitors. I also played a similar role in the protection of pregnant women in front of computers.

The functional impairment electrohypersensitivity

Electrohypersensitivity exists, and - according to the UN - it is not up to any authorities, parliaments or governments to decide that. It is only the decision of the person with the functional impairment/disability to make. The core definition of functional impairments is that they are always dependent on the environment, an environment that may be alright for one person but not for another.

The accessibility measures for a person with the functional impairment electrohypersensitivity is not a matter for medical doctors, but for civil servants at the municipality offices, for building biologists, technicians, electricians, etc.

I repeat: Electrohypersensitivity is not regarded as a disease or pathology, but as a functional impairment, previously termed "disability", and before that "handicap" (..it is, actually, now going to be changed into "functional variation", "functional variability", or "functional diversity", which are the politically and socially correct terms for special needs, previously called handicap, disability, or functional impairment).

So electrohypersensitivity is not at all regarded as a disease and, thus, has no diagnosis. The only 'patient' to be 'treated' - by accessibility measures - is the inaccessible, inferior environment. (But, of course, a medical doctor can treat symptoms of any disability, like a headache in a blind person.)

An impairment – by the UN definition – is not defined by someone else or proven by certain tests, etc. The impairment is always personal (private) and develops when in contact with an inferior environment. You recognize your own functional impairment. No one else.

The symptoms of the functional impairment electrohypersensitivity have been classified as an occupationally-related symptom-based diagnosis (code ICD-10; R68.8/late W90) by the Nordic Council of Ministers since 2000. *But the underlying cause still remains only the toxic environment; it is this environment which is the 'patient' with the 'diagnosis', and with accessibility measures, such as shielding and/or distancing, as the 'treatment'.*

In Sweden electrohypersensitive people have their own handicap organization, The Swedish Association for the Electrohypersensitive, and this organization is included in The Swedish Disability Federation (HSO). This also generates a governmental subsidy each year.

People with the functional impairment electrohypersensitivity - as well as all citizens - are entitled to have an equal life in a society based on equality (cf. the UN). One of the most important principles to achieve this is the one about complete accessibility. (Regarding so-called "white zones", I have always said "no" to permanent white zones because they are a violation of all international and national disability laws and regulations, as well as human rights laws for all of us. On the other hand, it is possible to imagine that people who are electrohypersensitive are provided with access to good transitional environments while adapting their home environment, work environment, leisure environment, etc., to complete accessibility. In this way, the white zones become an acknowledgment from society that there is a problem, and that one must immediately establish a society in which everyone is welcome (=complete accessibility). Finally, they become the first step in a multistage rocket for all electrohypersensitive persons worldwide.)

It all boils down to that in all UN countries - having cosigned the UN Convention on the Rights of Persons with Disabilities (aka the UN Special Human Rights Act for Persons with Functional Impairments), and similar documents - you have the same protection as the Swedish electrohypersensitive persons.

Finally, note that Professor Bengt Arnetz, of the Uppsala University, Department of Applied Psychiatry, was able to present - at the hearing of the Swedish Council for Working Life Research on February 1, 1996 - his research results which completely excluded that the electrohypersensitive persons would be a psychologically or psychiatrically more burdened category of people. Some other uniform and unanimous explanation - apart from the attribution to surrounding artificial electromagnetic fields - has not been given. In other words, electrohypersensitivity is not a psychiatric disorder.

For much more information, please, see Johansson O, "Electrohypersensitivity: a functional impairment due to an inaccessible environment", Rev Environ Health 2015; 30: 311-321

Adverse health and biological effects of artificial electromagnetic fields, such as from cell phone systems, like 5G, WiFi, wireless smart meters, wireless, baby alarms, powerlines, and much more.

Wireless communication is now being implemented in our daily life in a very fast way. At the same time, it is becoming more and more obvious that exposure to electromagnetic fields may result in highly unwanted health effects. This has been demonstrated in a very large number of studies and includes cellular DNA damage

(which may lead to the initiation of cancer as well as mutations that carry down generations), disruptions and alterations of cellular functions like increases in intracellular stimulatory pathways and calcium handling, disruption of tissue structures like the blood-brain barrier (which may allow toxins to enter the brain), impact on the vessel and immune functions, and loss of fertility. It should be noted that we are not the only species in jeopardy, practically all animals, plants, and bacteria may be at stake. For the latter, Taheri et al (2017) have demonstrated that the exposure to 900 MHz GSM mobile phone radiation and 2.4 GHz radiofrequency radiation emitted from common Wi-Fi routers made *Listeria monocytogenes* and *Escherichia coli* resistant to different antibiotics. (Very similar results have recently been published regarding soil bacteria.) To say these findings are "scary" is a classical English understatement.

Most recently, Australian scientists, in a pilot study published in late October 2024, reported on the effects of radiation from a baby monitor on sleep - not the sleep of babies, but the sleep of adults.

The researchers, Dr Nicole Bijlsma and colleagues, from RMIT University and the Australian College of Environmental Studies, exposed 12 healthy adults to baby monitor radiation of 2.45 GHz over a four-week period.

The results revealed some interesting effects on sleep.

- Participants reported poorer sleep when exposed to radiation from the baby monitor than when sham exposed.
- 27.3% of participants had insomnia during the exposure.
- During exposure, participants showed changes in brain wave patterns in the theta, beta, and gamma frequencies.
- Some people reported more effects of exposure on sleep than others, particularly older women.
- Repeated nightly exposure may have cumulative effects on sleep quality.

'This is the first study to examine the impact of repeated exposure to 2.45 GHz radiation on sleep in real-world conditions,' said lead researcher Dr. Nicole Bijlsma. 'Our findings suggest that exposure to common radiofrequency devices may disrupt sleep for some people.'

Because the effects are reproducibly observed and links to pathology can not be excluded, the Precautionary Principle should be in force in the implementation of wireless and Bluetooth technologies, including 5G, within the society. Therefore, policymakers immediately should strictly control exposure by defining biologically-based maximal exposure guidelines also taking into account long-term, non-thermal effects, and including especially vulnerable groups, such as the elderly, the ill, the genetically and/or immunologically challenged, children and fetuses, and persons with the functional impairment electrohypersensitivity. Until revised exposure guidelines are developed, professional adults responsible for human lives in institutional or group settings, such as apartment houses, other types of residential buildings, schools, offices, government buildings, hospitals, etc., should take heed of the large body of science showing serious risks and minimize these exposures at every opportunity by taking hard-wired, shielded approaches to internet and computer connectivity.

Science is providing ever more convincing evidence that the radiation emitted by our wireless telecommunications systems can affect biological systems including humans, wildlife, plants, and bacteria. These biological effects are acting even at very low exposure levels.

The consequences on health and the environment can be all the more serious because:

- exposure is ubiquitous, repeated and/or prolonged,
- radiation from wireless technologies is modulated, pulsed, polarized,
- some individuals may be more vulnerable (fetuses, children, sick patients, people with preexisting conditions), and/or the effects being much more prolonged (fetuses, children),
- exposure is combined with other pollutants, in our air, water, and food (e.g. chemical pollutants).

Damages on health and the environment are already noticeable at exposure levels similar to those currently found in our society, but also at substantially lower levels.

It is clearly not enough just to ensure exposure levels are below WHO recommended levels. WHO recommendations are designed to protect cells from excessive temperature increase successive to a single (!) maximal 30 minutes exposure to radiofrequency/microwave radiations in an otherwise radiation-free environment, thus very far from reality. The bases for these recommendations were established in the late 1990s and have not been revised since then, even though:

- wireless technologies have developed very rapidly over the past 20 years,
- exposure pattern has completely changed (ubiquitous, repeated, prolonged exposure, exposure of children, fetuses, etc.)
- considerable scientific progress has been made in the identification of biological and health effects.

Not everyone agrees on the question of absolute proof of damage because a certain number of unknowns remain, even at the scientific level. But there is no point using the fact that not all the grey areas have yet been dispelled to assert that there would be no health and environmental effects caused by the widespread deployment of wireless devices and networks. This could even end badly from a legal point of view.

To date, we can no longer deny that thousands and thousands of studies indicate very real effects. The unbridled development of wireless systems is, in the more or less short term, conflicting with the health and protection of ecosystems. Observations and return on experience indicate that damages are already in action.

I would like to remind you that, in 2011, the World Health Organization classified the radiofrequency and microwave emissions of wireless technologies as possible carcinogens for certain brain tumours. A similar classification had already been done - by the World Health Organization - 10 years earlier, in 2001/2002, regarding the risk of childhood leukemia in relation to powerfrequency magnetic fields. However, cancer is only one of the long-term consequences of prolonged exposure. Radiofrequency radiation affects our cells long before cancer develops. Our body reacts with oxidative stress and inflammatory processes. When the exposure is repeated or prolonged, these mechanisms are maintained and may cause sleep problems & even sleep disorders (cf. above), disturbances in cognitive and

reproductive functions, damage to cells and DNA. In the long run, the body's defense systems are being exhausted and diseases are threatening:

- repeated infections,
- infertility,
- developmental disorders (e. g. embryonic),
- neurological and neuropsychiatric disorders,
- cardiovascular diseases,
- neurodegenerative diseases including Alzheimer's disease,
- cancers.

Fetuses, and children, are particularly affected because they may be more vulnerable, and/or the effects being much more prolonged. Also, they form the only basis for the future of mankind.

Every generation of wireless technology also swells the ranks of electrohypersensitive people who physically suffer from being exposed to electromagnetic radiations, whether or not they are aware of their electrohypersensitivity. Nocebo or psychological explanations are clearly not sufficient to explain the phenomenon.

5G

Deploying 5G (the 5th Generation mobile telephony technologies) in addition to existing technologies, for sure, has increased exposures for all. But beyond the additional layer of electromagnetic pollution it constitutes, there is a strong suspicion that 5G, because of its highly artificial nature due to new and different technological specificities (frequencies, modulations, pulsations, narrowly focused and directional beams, densification of the antenna networks), will present even more serious health and environmental risks than existing technologies.

Engineers and the telecom industry readily argue that there is nothing to worry about because the high-frequency radiation of 5G will be absorbed mainly at the periphery of the body. This is based on the presumed skin characteristic that the higher the frequency of radiation, the shallower the depth of radiation penetration. In other words, most of the electromagnetic absorption (and heating) would occur over the first few millimeters of the body's surface. But from practical tests, no such shielding effect has ever been demonstrated pointing to that the penetration is, after all, total.

Concluding that there is no risk is, furthermore, forgetting that surface effects can be significant on external cells and tissues (skin, eyes for example), as well as on all blood cells which will pass the outer portion of the skin every five minutes. There are reasons to suspect that the deployment of 5G may be accompanied by an increase in the number of melanomas and other skin cancers and eye disorders.

But not only surface effects are of concern. There is also a strong suspicion that 5G radiation can have impacts far beyond the peripheral layers of the body. Living materials are not just homogeneous and inert conductive materials. It is a major mistake to omit the complexity of biological systems capable of responding to external electromagnetic stimuli otherwise than just through heating. Electromagnetic disturbances and chemical mediators (e.g. inflammatory mediators) can rapidly be spread throughout the body and induce biological (non-thermal) effects deep into the body. Such disturbances will also have an ideal avenue of spread

via the peripheral nerves, the latter being found as superficial as 20-40 µm from the outer surface.

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A genuine hygienic safety standard

One should also remember that Professor Paolo Vecchia, head of ICNIRP at the time, at a conference at the Royal Society in London, said this in 2008 about using ICNIRP's (ICNIRP = the International Commission on Non-Ionizing Radiation Protection) technical exposure guidelines:

"What they are not:

Mandatory prescriptions for safety

The "last word" on the issue

Defensive walls for industry or others"

(verbatim quote from voice recording)

He strongly emphasized that the ICNIRP guidelines are only technical in nature, and never were intended to be used as safety recommendations for medical issues or biological ones.

Furthermore, it should be noted that only one hygienic safety value ever has been proposed: $0.0000000001-0.000000000001 \mu\text{W}/\text{m}^2$ – this is the natural background during normal cosmic activities; proposed by myself at a trade union meeting in Stockholm, already in 1997 (i.e. one year before the publication of ICNIRP's 1998 paper), as a genuine hygienic safety value, and since then many times repeatedly presented. (Given the highly artificial nature of the current wireless communication signals, e.g. of their pulsations and modulations, it may actually boil down to 0 (zero) $\mu\text{W}/\text{cm}^2$ as the true safe level.) And do not ever believe it is possible to play it "safer" by only somewhat reducing the exposure levels! (cf. Johansson O, "To understand adverse health effects of artificial electromagnetic fields... ..is "rocket science" needed or just common sense?", In: Essays on Consciousness – Towards a New Paradigm (ed. I. Fredriksson), Balboa Press, Bloomington, IN, USA, 2018, pp 1-38, ISBN 978-1-9822-0811-0). Ironically, this means that even a Precautionary Principle – if it is not firm enough – may not prove precautionary at all. Instead, it could lead to the classical "Late lessons from early warnings" or to my quote "Too late lessons from early warnings"... (Are you prepared to risk that for a set of toys, rather than life necessities..?)

So to believe that one single 6-, 10-, or 30-minute exposure of a fluid-filled plastic doll, in an otherwise completely radiation-free environment, only calculating acute heating effects, will be any form of safety measure is more than naive. It is dangerously naive.

Other types of 'precautionary principles' based on profit and potential future legal actions

The big players, like the WHO, the radiation protection authorities, the telecom manufacturers, the telecom operators, the insurance and the reinsurance industry, are not naive, and they have, therefore - legally - all 'abandoned ship', some more than 20-30 years ago, leaving the consumers and their parliaments and governments completely behind on a ship that floats helplessly around. The big player's decisions

are far more telling than any test tube, mice, or rat experiments I can show you, and it is therefore very high time to call these big players back. They sold us this "safe" ship, and now they need to prove that it actually is. And also for the other G:s, like 2G, 3G, and 4G, and the upcoming 6G and 7G, as well as for WiFi, powerfrequency magnetic fields, electric fields, etc.

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It is important to understand that, in fact, all living beings are electrosensitive!

Given the extraordinary electromagnetic sensitivity of living systems, it is not a surprise that they can be affected even at lower exposure levels, especially if the exposure is ubiquitous and prolonged. And the exposure levels, as you know, are not "low" - compared to the natural background of such frequencies the man-made ones come at colossal, astronomical, biblical levels; for example, the 3G systems are allowed at a maximal exposure level that is 1,000,000,000,000,000,000 times the natural background!

All around the world dramatic reductions in pollinating insect populations are noted, for instance in Germany where more than 75% of them are just gone, Canada has lost more than 90% of their honey bees, and the USA more than 90% of their bumble bees. I am particularly concerned about this because I already have a number of papers in my files dealing with this angle; I have even recently written a short commentary based on them: Johansson O, "To bee, or not to bee, that is the five "G" question", Newsvoice.se 28/5, 2019, <https://newsvoice.se/2019/05/5g-question-olle-johansson/>. I also know that other areas around the world have reported similar huge bee colony collapses, and my strong efforts now are to seek ways to conserve, protect and enhance our pollinators, wherever they reside, and thus conserve, protect and enhance ourselves. If we do not engage, then we certainly may head towards a moment in history where future generations - if any - will ask us "*Why didn't you react and act?*"

In summary

We all have an incredible opportunity to take a stand for our local residents' health by reversing the decision to install transmitters in - or on - their buildings. Such a step, while preventing more people from becoming ill, and preventing cumulative biological effects, that possibly all could experience, would also preserve owner's equity, as real estate values are known to significantly decline in high electromagnetic field environments.

Remember, this issue is *not* about natural exposures, it is about adverse health and biological effects of *artificial* electromagnetic fields. It behooves all of us to understand this distinction and take steps to minimize biologically dysregulating effects from *artificial* electromagnetic fields.

Also always remember that lack of accessibility to workplaces, homes, places of leisure, public facilities, and many more areas, where wired, shielded options exist, resulting in discrimination and blocked access to persons with the functional impairment electrohypersensitivity, is a serious and unacceptable violation and contradiction of the UN Convention on the Rights of Persons with Disabilities to

which the USA, Canada, Sweden, England, France, Australia, and many other nations are signatories.

Thank you so much for your time and consideration, dear Madam or Sir. Please, do not hesitate to contact me if I can provide additional information, more complete scientific references (some few are given below), or be interviewed about the risks from wireless radiation. I'd be very happy to support your further due diligence work on this matter, especially when it comes to the inclusion of persons with the functional impairment electrohypersensitivity under the American Constitution to protect the rights and dignity of people with functional variations, and to promote and support the full equalization of opportunities of people with such functional variations.

Respectfully, Stockholm, September 30, 2026



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