



11-11-2022

## **Nordic appeal: tighten regulation on microwave radiation from wireless technologies - Stop further roll-out of 5G**

In recent years, people's exposure to pulsed microwave radiation from wireless technologies has exploded, mainly due to the roll-out of 5G. In addition to more base stations, millions of so-called smart water and electricity meters are being installed. This is being done despite a complete lack of research showing that 5G and wireless water and electricity meters, which are being forced on people in their own homes, are not harmful to human health and the environment. At the same time, the first two studies to date on the effects of 5G have shown that 5G base stations cause adverse health effects in humans and that 5G radiation damages neurons in the brain in animal experiments. The brain damage observed could eventually lead to Alzheimer's and other neurological diseases.

In parallel with this explosion in radiation exposure, guidelines for permissible radiation are still being applied, based on a seriously outdated approach. These guidelines only protect humans from harmful effects resulting from acute warming. This means that people are completely unprotected from the range of harmful effects, such as cancer, DNA damage, oxidative stress and neurological effects, that science has repeatedly shown occur at levels well below these guidelines. In addition current guidelines do not offer any protection against harmful effects on biodiversity.

We represent organizations that have worked for many years with research and/or on following research in the field. We constantly receive new testimonies from people who have suffered from ill health after 5G base stations or wireless water and electricity meters have been installed in their vicinity. Given what is known today about the risks of this technology, it must be considered a violation of human rights to impose this harmful radiation on people in their own homes without their informed consent.

### **We are deeply concerned and call for the following measures to be taken urgently:**

1. New guidelines for maximum permitted radiation must be developed to protect against all demonstrated health and environmental risks, at levels thousands of times below those applied today. This must be done with the help of experts who are free from ties to the industry concerned, and with representatives from the scientific community who have shown that the risks are considerable even at levels well below the thermal based guidelines.
2. 5G deployment must be halted until an independent commission has investigated the risks. Again, the risk assessment of 5G must be carried out by experts who are free from ties to the industry concerned, and with representatives from the side of the scientific community that has identified the risks as significant.
3. In order to prevent injuries, risk education must be organized at all levels of society. This applies, for example, to health care, schools, pre-schools and the general public.
4. Best available techniques shall be used to protect human health and the environment. Priority must be given to wired technologies that minimize harmful radiation.

## Background

### Measurements show sharp increase in radiation

Measurements carried out in spring 2021 as part of an international collaborative project showed that radiation in cities has increased significantly, with peak values (pulses) reaching between 200,000 and over 1 million microWatts per square metre ( $\mu\text{W}/\text{m}^2$ ).<sup>1</sup> A scientific study reports that levels over 2 million  $\mu\text{W}/\text{m}^2$  have been measured at the Skeppsbron in Stockholm.<sup>2</sup> These are values that far exceed the levels that have been known for 50 years to cause adverse effects on human health, early known as the microwave syndrome.<sup>3,4</sup> In the first case study to date of the health effects of 5G, it was observed that 5G caused an extreme increase in radiation in a dwelling directly under a 5G base station. Radiation increased from 9,000 to 1,690,000  $\mu\text{W}/\text{m}^2$  (maximum peak level).<sup>5</sup> There is a complete lack of research showing that these high levels do not cause ill health with prolonged whole-body exposure.

### Harmful effects showed in large scale

5G is being rolled out, forcibly exposing people to microwave radiation in their own homes without informed consent, despite a complete lack of research showing that 5G is safe for human health. This is totally unacceptable.

Only in 2022, when deployment has already been underway for two years, will the first two studies on the impact of 5G be published. Both show serious effects. The first, a case study, showed that a 5G base station caused an extreme increase in radiation in a home. Residents suffered typical symptoms of exposure to microwave radiation within a few days, including severe sleep disturbances, dizziness, skin complaints, concentration problems, tinnitus, impaired short-term memory, confusion, fatigue, tendency to depression, heart and lung symptoms (palpitations, heaviness across the chest).<sup>5</sup> These symptoms have been shown in research for 50 years as an effect of exposure to microwave radiation and have been referred to in the scientific literature as *microwave syndrome*.

The second study on the effects of 5G was published in October 2022. The study showed that experimental animals exposed to 5G had an increased incidence of damage to neurons and increased oxidative stress in the brain. These are effects that could eventually lead to degenerative diseases such as dementia, according to the researchers. In addition, hormones, which have a protective effect on the brain, were negatively affected.<sup>6</sup>

The scientific review of the available science commissioned by the European Parliament has found that radiation from 5G and other wireless technologies “probably” can cause cancer, and that there is clear evidence of damage to male fertility and possibly female reproductive capacity.<sup>7</sup> Research has also extensively shown that radiation from previous generations of wireless technology causes oxidative stress, DNA damage, cancer, harmful effects on the brain, altered behavior and an increased risk of brain tumours and thyroid cancer from mobile phone use.<sup>8,9</sup>

### Disastrous consequences for wildlife

The ongoing dramatic increase in human exposure to microwave radiation from wireless technologies is expected to lead to serious consequences in terms of deteriorating public health and harmful effects on plants, insects, birds and other animals. Research is increasingly showing that radiation is harmful to humans and other biological life at levels well below those approved by the responsible Nordic authorities. A research report with 1200 references concludes that the increasing radiation in our environment can have catastrophic consequences for wildlife, especially birds and insects.<sup>10</sup>

## **Outdated recommendations allow dangerous exposure**

Scientists, doctors and elected officials have been calling for years on governments to introduce rules allowing only much lower exposures, no more than 1-100  $\mu\text{W}/\text{m}^2$ <sup>12</sup> and to reconsider current reference values as seriously inadequate to protect against demonstrated health risks.

16 world-leading from the the new International Commission on Radiological Protection, ICBE-EMF, conclude that current guidelines developed by the controversial ICNIRP organization are based on outdated and erroneous assumptions that radiation can only harm health if it is so intense that it heats up tissue in a very short time. Many harmful effects have been shown at levels well below the guidelines.<sup>8</sup>

## **Doctors, scientists and elected officials have appealed for better protection**

In 2017, the 5G Appeal was launched ([www.5Gappeal.eu](http://www.5Gappeal.eu)). The appeal, which is currently signed by over 400 doctors and scientists from around the world, appeals to policymakers to halt 5G deployment because of the risk of serious human health consequences, until the risks have been investigated by scientists with no ties to industry.<sup>13</sup>

The EMF Scientist Appeal was launched in 2015 ([www.emfscientist.org](http://www.emfscientist.org)) and is currently signed by 256 EMF scientists. They call for people to be better protected from the risks of this form of radiation by revising the limits for permissible radiation and informing the public as well as the medical profession about the risks.

In 2011, the Parliamentary Assembly of the Council of Europe recommended that member states should strive to keep radiation levels in society as low as possible in general (ALARA-principle), and to reduce the permissible radiation limit to 100 from the current extremely high 10,000,000  $\mu\text{W}/\text{m}^2$ . Children and other vulnerable people should be given special protection. Governments were also urged to ensure that the public is widely informed about known risks.<sup>11</sup>

## **Authorities ignore the risks and the need for stronger protection**

Despite the research and repeated appeals from the scientific community, the medical profession and elected representatives, the responsible authorities continue to ignore the increasingly clear risk picture. They argue that the current seriously outdated limits, which allow people to be exposed to harmful radiation, would be sufficient to protect them. In support of their position, the authorities rely on a small group of experts, not representative of the scientific community at large, the majority of whom have ties to the telecom companies.<sup>14,15</sup>

Mona Nilsson, Radiation Protection Foundation, Sweden

Lennart Hardell, Research Foundation Environment and Cancer, Sweden

Marianne Ketti, National Association for Sensitivity to Electricity, Sweden

Nigel Wells, Environmental Association The Wave Breaker, Sweden

Rainer Nyberg, Finnish Radiation Protection, Finland

Jussi Hirvi, Electricity Sensitive People of Finland, Finland

Sissel Halmøy and Thomas J. Middelthon, Folkets Strålevern, Norway

Solveig Glomsrød, FELO, Norway

Pernille Schriver, Council for Safe Telecommunications, Denmark

## References

- <sup>1</sup> <https://www.stralskyddsstiftelsen.se/2021/05/11/matningar-av-mikrovagsstralning-fran-basstationer-i-fem-svenska-stader/>
- <sup>2</sup> Koppel T, Ahonen M, Carlberg M, Hardell L. Very high radiofrequency radiation at Skeppsbron in Stockholm, Sweden from mobile phone base station antennas positioned close to pedestrians' heads. *Environ Res.* 2022;208:112627. doi: 10.1016/j.envres.2021.112627
- <sup>3</sup> Marha K, Musil J, Tuhá H. *Electromagnetic Fields and the Life Environment.* San Francisco Press Inc. 1971.
- <sup>4</sup> Carpenter D. The microwave syndrome or electro-hypersensitivity: historical background. *Rev Environ Health* 2015;30:217-222. <https://doi.org/10.1515/reveh-2015-0016>
- <sup>5</sup> Hardell L., Nilsson M. Microwave radiation from base stations on rooftops caused medical symptoms consistent with microwave syndrome. *Medical Access* 1:2022  
[https://www.stralskyddsstiftelsen.se/wp-content/uploads/2022/02/5g\\_mikrovagssyndromet\\_ma\\_2022.pdf](https://www.stralskyddsstiftelsen.se/wp-content/uploads/2022/02/5g_mikrovagssyndromet_ma_2022.pdf)
- <sup>6</sup> Bektas H, Algul S, Altindag F, Yegin K, Akdag MZ, Dasdag S. Effects of 3.5 GHz radiofrequency radiation on ghrelin, nesfatin-1, and irisin level in diabetic and healthy brains; *J Chemical Neuroanatomy* Vol 126, December 2022, 102168. <https://doi.org/10.1016/j.jchemneu.2022.102168>
- <sup>7</sup> EPRS | European Parliamentary Research Service; Health Impact of 5G;  
[https://www.europarl.europa.eu/RegData/etudes/STUD/2021/690012/EPRS\\_STU\(2021\)690012\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2021/690012/EPRS_STU(2021)690012_EN.pdf)
- <sup>8</sup> International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF). *Environ Health* 2022; 21:92. <https://doi.org/10.1186/s12940-022-00900-9>
- <sup>9</sup> <https://www.stralskyddsstiftelsen.se/2022/10/18/ny-stralskyddskommission-stoppa-5g-utbyggnaden-och-skyddamanniskor-och-miljo-battre-mot-stralningsrisker/>
- <sup>10</sup> Levitt BB, Lai HC, Manville AM. Effects of non-ionizing electromagnetic fields on flora and fauna, part 1. Rising ambient EMF levels in the environment. *Rev Environ Health.* 2021 May 27;37(1):81-122. doi: 10.1515/reveh-2021-0026. PMID: 34047144. <https://pubmed.ncbi.nlm.nih.gov/34047144/>
- <sup>11</sup> Council of Europe, PACE: The potential effects of electromagnetic fields and their effect on the environment; <https://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=17994>
- <sup>12</sup> Belyaev I, Dean A, Eger H, Hubmann G, Jandrisovits R, Kern M, et al. EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses. *Rev Env Health* 2016; 31:363-397. DOI 10.1515/reveh-2016-0011
- <sup>13</sup> Hardell L, Nyberg R. Appeals that matter or not on a moratorium on the deployment of the fifth generation, 5G, for microwave radiation. *Mol Clin Oncol.* 2020 Mar;12(3):247-257. doi: 10.3892/mco.2020.1984. PMID: 32064102; PMCID: PMC7016513;
- <sup>14</sup> Hardell L, Nilsson M, Koppel T, Carlberg M. Aspects on the International Commission on Non-Ionizing Radiation Protection (ICNIRP) 2020 Guidelines on radiofrequency radiation. *J Cancer Sci Clin Ther* 2021; 5: 250-285. <https://www.fortunejournals.com/articles/aspects-on-the-international-commission-on-nonionizing-radiation-protection-icnirp-2020-guidelines-on-radiofrequency-radiation.pdf>
- <sup>15</sup> Buchner K, Rivasi M. The International Commission on Non-Ionizing Radiation Protection: Conflicts of interest, corporate capture and the push for 5G. Brussels June 2020. [https://www.stralskyddsstiftelsen.se/wp-content/uploads/2020/07/icnirp-report-june\\_2020\\_buchner\\_rivasi.pdf](https://www.stralskyddsstiftelsen.se/wp-content/uploads/2020/07/icnirp-report-june_2020_buchner_rivasi.pdf)