

Electro-Hypersensitivity Does Not Exist

Document 2 — Europe and Exposure Standards: A Framework Inherited from ICNIRP, Eroding Exceptions, and the Scientific Critique of Exposure Limits

Comment submitted in response to the U.S. Department of Health and Human Services (HHS) *Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure*, FR Doc. 2026-19252, Docket HHS-OASH-2026-0397.

Questions addressed: 5 (5n, 5o, 5p); 6; 12.

Authors: Independent researchers, Europe (Belgium, France, Luxembourg). October 2026.

The subjects addressed in this document are part of an open publication, intended to receive further testimonies and contributions.

Abstract

Question 5 of the Request for Information asks which national and international standards and regulatory frameworks federal health agencies should take into account. This document describes the European framework and the criticism to which its limits are subject.

Nearly all European countries apply the guidelines of ICNIRP, a private-law association; these guidelines take only thermal effects into account, and the Council of the European Union took them up in a 1999 recommendation. Among the exceptions, Switzerland, Luxembourg, the Brussels-Capital Region, Wallonia until 2022, and Poland until 2019 show that a mobile network can operate under much lower limits; several of them have nevertheless backtracked under the pressure of deployment, and the industry is now calling for harmonization on ICNIRP. A table brings together the precautionary values proposed in Europe since 2000, from 0.6 to 0.02 V/m.

At the same time, work published in peer-reviewed journals challenges the founding assumptions of these limits, their safety factor, and the bibliographic basis of the 2020 guidelines; two studies based in particular on the animal data of the National Toxicology Program (NTP) arrive at protective limits from eight to more than nine hundred times lower, depending on the effect considered and the duration of exposure.

This document also presents the opposing positions, then sets out four recommendations.

1. Purpose

The Request for Information asks which national and international standards, guidelines, or regulatory frameworks should be taken into account (Question 5), what changes would improve the assessment, communication, and regulation of exposure (5n), what research is needed (5o), and how a classification system should account for characteristics such as modulation, pulsing, duty cycle, beamforming, simultaneous exposure to multiple frequencies, and cumulative exposure (5p). It also asks what data exist on adverse effects at current limits (Question 6) and below these limits (Question 12).

We answer mainly on the basis of European experience. The biological effects observed in human beings, in animals, and in the environment are developed in Documents 4, 6, and 8; exposure measurement, in Document 3.

2. Methods and Sources

The sources are of three kinds: normative texts and court decisions—the European recommendation, the Swiss ordinance, the Polish regulation, decisions of the Conseil d’État (France’s highest administrative court) and of the Nice Administrative Court—consulted in their own text; peer-reviewed publications; and institutional, advocacy, and industry reports, whose position is stated. The [NTP \(2018\)](#) and [Ramazzini Institute \(2018\)](#) studies and the reviews commissioned by the World Health Organization (WHO) are cited from the publications that analyze them; the review by [Karipidis et al. \(2024\)](#), from its abstract and its critique; the [SCENIHR \(2015\)](#) opinion, from the summary published by the European Commission; the Japanese and Korean validation studies (2026), from the excerpts recorded in our files and from their abstracts.

The two quoted passages from the 2018 report of Anses (French Agency for Food, Environmental and Occupational Health & Safety) were checked against its text. The building biology standard was read in its 2008 version, in English translation, the only version consulted.

Quotations in English are reproduced as written. Quotations from French and German sources are our translations; the original wording appears in the French version of this document. Paragraph 8.2.1 of Council of Europe Resolution 1815 and the 2019 Swiss report were checked against their text on October 19, 2026. The Luxembourg operating conditions of 2002 and the Luxembourg government’s 2020 press release, the Walloon decree of 2009, the 2024 judgment of the Belgian Constitutional Court and the article of the Union of Cities and Municipalities of Wallonia on the 2022 decree, the two documents of the Government of Liechtenstein, and the 2004 presentation by a Salzburg State public health physician were consulted online on October 20, 2026, in excerpts. The author of this presentation, Gerd Oberfeld, is also one of the authors of the EUROPAEM guideline.

3. The European Framework of Exposure Limits (Question 5)

3.1 The ICNIRP Guidelines

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) is a private-law association based in Munich. Its 1998 guidelines, renewed in 2020 for whole-body exposure, rest on a single mechanism: tissue heating. Their starting point is a threshold of 4 W/kg of specific absorption rate (SAR), derived from behavioral experiments conducted in the 1980s on five monkeys and eight rats exposed for 40 to 60 minutes, divided by 10 for workers (0.4 W/kg) and by 50 for the public (0.08 W/kg) (ICBE-EMF, 2022). The same values underpin the limits of the Federal Communications Commission (FCC) adopted in 1996.

3.2 Their Adoption in Europe

Recommendation 1999/519/EC of the Council of the European Union took up these values and proposed them to the Member States (Council of the European Union, 1999). The opinions of the European Commission's scientific committee (SCENIHR, now SCHEER) then serve as a common reference for national health agencies; the opinion adopted on January 27, 2015, concludes that there is no scientific evidence of a link between the symptoms reported by those who describe themselves as electro-hypersensitive and exposure to electromagnetic fields (SCENIHR, 2015).

The convergence of national positions is therefore due not to one agency steering another, but to a common reference placed upstream of all of them.

3.3 France: Frozen Limits and Powerless Municipalities

In France, Decree No. 2002-775 of May 3, 2002, takes up the values of the European recommendation; the public exposure limit depends on frequency and reaches 61 V/m (French Republic, 2002). The law of February 9, 2015, introduced measures of sobriety and information, including a ban on Wi-Fi in facilities that receive children under three years of age (French Republic, 2015). The 6 V/m threshold that identified an “atypical point” was raised to 9 V/m on January 1, 2026 (see Document 1).

Asked to lower the limits, the Conseil d'État rejected the request on March 7, 2018 (No. 399727). It nevertheless noted that Anses had recommended, in an opinion of June 2016, reconsidering “the reference levels intended to limit environmental exposure to radiofrequency electromagnetic fields [...] in order to ensure sufficiently large safety margins to protect the health and safety of the general population, and most particularly those of children.” The rejection was pronounced “in view of the state of scientific knowledge and pending the results of the work undertaken” (Conseil d'État, 2018).

Mayors, for their part, cannot oppose an antenna on health grounds. On December 18, 2025, the interim relief judge of the Nice Administrative Court suspended a mayor's opposition to a base station antenna planned less than one hundred meters (about 330 feet) from a daycare center, on the grounds that the mayor does not hold the special police power regarding protection against waves (Nice Administrative Court, 2025).

3.4 Eroding Exceptions

Switzerland. The Ordinance on Protection against Non-Ionising Radiation (ONIR) distinguishes immission limit values, identical to those of ICNIRP, from installation limit values, applicable in places of sensitive use (homes, schools, kindergartens, hospitals, permanent workplaces): 4 V/m for installations transmitting around 900 MHz, 6 V/m from 1,800 MHz upward, and 5 V/m for mixed installations, that is, about ten times lower ([Swiss Federal Council, 1999](#)). In 2018, the Swiss Council of States rejected raising them by a single vote; the federal working group “Mobile Communications and Radiation,” in its report of November 18, 2019, presented five options without being able to agree on any one of them ([DETEC, 2019](#)). These values remain in force. The Swiss mobile network has therefore been operating for more than twenty years with limits about ten times lower in the places where individuals spend time.

Luxembourg. Since September 23, 2002, the operating conditions set by the Labor and Mines Inspectorate (ITM) have limited the field of mobile telephony antennas to 3 V/m per radiating element, in any place where human beings may stay ([ITM, 2002](#)). In 2020, the government announced that this threshold would be maintained for 5G ([Luxembourg Government, 2020](#)). The limit applies to each radiating element, not to total exposure.

The Brussels-Capital Region. The ordinance of March 1, 2007, set, at the reference frequency of 900 MHz, a limit of 3 V/m, which entered into force on March 14, 2009; this limit was raised to 6 V/m in 2014 for the deployment of 4G, then to 14.57 V/m outdoors and 9.19 V/m indoors in 2023 for the deployment of 5G ([Brussels Environment, 2026](#)).

Wallonia. The decree of April 3, 2009, limited to 3 V/m the field produced by each antenna in places where human beings stay ([Walloon Region, 2009](#)). The decree of December 8, 2022, adopted for the deployment of 5G, replaced this limit with a standard of 9.2 V/m per operator, at the reference frequency of 900 MHz, and 18.4 V/m per site; it does, however, prohibit mobile network antennas transmitting between 20 and 300 GHz ([Ransy, 2023](#)). In a case brought by two associations, the Constitutional Court dismissed the appeal on October 24, 2024, finding the reform reasonably justified by the deployment of 5G ([Belgian Constitutional Court, 2024](#)).

Poland. Its limits, among the strictest in Europe, were aligned with ICNIRP by a regulation of the Minister of Health of December 17, 2019, which entered into force on January 1, 2020, and which raises the permitted power density between 2 and 300 GHz from 0.1 to 10 W/m² ([Polish Minister of Health, 2019](#); [GSMA, 2026](#)).

Other rollbacks. Lithuania, whose limits inherited from the Soviet period represented about 1% of those of ICNIRP, raised them to 10% in 2015, then aligned them with ICNIRP in 2020 ([GSMA, 2026](#)). On April 29, 2024, Italy raised the value applicable to mobile telephone networks from 6 to 15 V/m ([Testa, 2024](#)). In Liechtenstein, the Environmental Protection Act of May 29, 2008, required the field of mobile telephony antennas to be reduced to 0.6 V/m from 2013; an initiative by business associations, which called for a return to the Swiss value, was put to a vote on December 4 and 6, 2009 ([Government of Liechtenstein, 2009](#)); in 2021, the law set installation limit values of 4 to 6 V/m, as in Switzerland ([Government of Liechtenstein, 2021](#)).

The industry’s call. In October 2026, the GSMA, the global association of mobile network operators, calls on countries to adopt the 2020 ICNIRP limits. It considers that stricter limits apply “arbitrary factors without scientific basis” to the ICNIRP values and that they can be understood as “a political response to societal risk perception”; it also quotes ICNIRP: “There is no evidence that additional precautionary measures will result in a benefit to the health of the population” (GSMA, 2026).

3.5 Precautionary Values Recommended in Europe

Since 2000, European bodies—a scientific conference, a regional administration, a parliamentary assembly, physicians, measurement practitioners—have proposed precautionary values far below the regulatory limits. The table brings them together; power densities are converted into electric field strength using the relation $S = E^2/377$.

Source	Nature of the source	Proposed value	Scope
Salzburg Resolution (2000)	International conference on the siting of base stations	0.6 V/m (1,000 $\mu\text{W}/\text{m}^2$)	Sum of emissions from GSM base stations (Salzburg Resolution, 2000; Oberfeld, 2004)
State of Salzburg (2002)	Public health department of the government of an Austrian state (<i>Land</i>)	0.06 V/m (10 $\mu\text{W}/\text{m}^2$) outdoors; 0.02 V/m (1 $\mu\text{W}/\text{m}^2$) indoors	Sum of GSM emissions, worst case (Oberfeld, 2004)
Council of Europe, Resolution 1815 (2011)	Parliamentary Assembly of an organization of 46 states	0.6 V/m (1,000 $\mu\text{W}/\text{m}^2$), then 0.2 V/m (100 $\mu\text{W}/\text{m}^2$) in the medium term	Indoors, long-term exposure (Council of Europe, 2011, § 8.2.1)
BioInitiative (2012)	International group of researchers	3 to 6 $\mu\text{W}/\text{m}^2$ (0.03 to 0.05 V/m)	Chronic exposure of sensitive populations and children (BioInitiative, 2012)
EUROPAEM (2016), mobile telephony and DECT	Association of physicians	Peak: 100 $\mu\text{W}/\text{m}^2$ (0.19 V/m) during the day; 10 $\mu\text{W}/\text{m}^2$ (0.06 V/m) at night; 1 $\mu\text{W}/\text{m}^2$ (0.02 V/m) for sensitive populations	Places occupied more than twenty hours per week (Belyaev et al., 2016)
EUROPAEM (2016), Wi-Fi	Same	Peak: 10 $\mu\text{W}/\text{m}^2$ (0.06 V/m) during the day; 1 $\mu\text{W}/\text{m}^2$ (0.02 V/m) at night; 0.1 $\mu\text{W}/\text{m}^2$ (0.006 V/m) for sensitive populations	Same
Building biology, SBM-2008 standard	Private German standard (Baubiologie Maes and IBN)	Peak: no concern below 0.1 $\mu\text{W}/\text{m}^2$ (0.006 V/m); slight concern up to 10 $\mu\text{W}/\text{m}^2$ (0.06 V/m); severe concern up to 1,000 $\mu\text{W}/\text{m}^2$ (0.6 V/m); extreme concern above	Sleeping areas, each source taken individually; values based on experience and the precautionary principle (IBN, 2008)
For comparison: ICNIRP (2020)	Private-law association	10 W/m ² , that is, 10,000,000 $\mu\text{W}/\text{m}^2$ (61 V/m), averaged over thirty minutes	Public, above 2 GHz

The EUROPAEM and building biology values are peak values, those of the State of Salzburg worst-case values, and those of ICNIRP averages. From 61 V/m to 0.02 V/m, the electric field is divided by three thousand, and the power density by ten million. Compliance with these values would still have to be verifiable: the power actually emitted by antennas is not measured continuously by any body independent of the operators (see Document 3, Section 4.7). Document 7 (Section 5.3) places these values among those currently in force.

4. The Scientific Critique of the Limits (Questions 6, 12)

4.1 The Founding Assumptions

The International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF) lists fourteen assumptions on which the FCC and ICNIRP limits rest, and argues that research over the past twenty-five years invalidates them (ICBE-EMF, 2022). The first is the existence of a 4 W/kg threshold below which no adverse effect occurs. According to the authors, it is contradicted by two studies: the NTP (2018) study, which found in rats an increase in cardiac schwannomas characterized as “clear evidence of carcinogenic activity”; and the Ramazzini Institute (2018) study, which observed the same type of tumor at a whole-body SAR of 0.1 W/kg—forty times below this threshold, and at a level close to the limit applicable to the public (0.08 W/kg). Among the other contested assumptions are the relevance of time-averaged SAR alone, without consideration of modulation or pulsing (Assumption 5, Question 5p), the absence of differences in absorption between adults and children (Assumption 7), and the absence of differences in individual sensitivity (Assumption 8).

4.2 The Safety Factor

According to ICBE-EMF (2022), applying the methods of the U.S. Environmental Protection Agency (EPA) for toxic substances—uncertainty factors for extrapolation from animals to human beings, human variability, the short duration of studies, and the inadequacy of data—would lead to a factor of 900 to 10,000, instead of 50.

Two studies applied the benchmark dose method to the NTP animal data and, in the case of the second, also to those of the Ramazzini Institute. Uche and Naidenko (2021), of the Environmental Working Group, a nongovernmental environmental health organization, arrive at a whole-body limit of 2 to 4 mW/kg, “an exposure level that is 20–40-fold lower than the legally permissible level of 0.08 W/kg”; adding a factor of 10 for children, they arrive at 0.2 to 0.4 mW/kg, that is, 200 to 400 times lower. Melnick and Moskowitz (2026) conclude that the FCC and ICNIRP limits for the public are 15 to more than 900 times higher, depending on the duration of daily exposure, than the exposure level corresponding to a cancer risk of 1 in 100,000, and 8 to 24 times higher than the level that protects male fertility. Ronald Melnick, a retired toxicologist from the National Institute of Environmental Health Sciences, led the design of the NTP studies on radiofrequency radiation. These authors rely on the systematic reviews commissioned by WHO, which conclude with a high level of certainty that cancer risk increases in exposed animals (Mevissen et al., 2025, cited in Melnick and Moskowitz, 2026).

4.3 The Bibliographic Basis of the 2020 Guidelines

Nordhagen and Flydal (2023) analyzed the references on which ICNIRP bases its thermal paradigm: 91 of the 106 relevant references come from the ICNIRP network; seventeen authors, ten of them affiliated with ICNIRP, cover this entire base; the eleven independent articles, all of which report non-thermal effects, are set aside. Hardell et al. (2021) note that none of the five reviews presented as the basis for the 2020 guidelines—those of WHO in 2014, of SCENIHR in 2015, and of the Swedish Radiation Safety Authority in 2015, 2016, and 2018—was published in a peer-reviewed journal, and that current or former members of ICNIRP were among their authors: four of the six experts in the WHO core group, four of the ten external experts of SCENIHR, and about half of the Swedish scientific council. A report commissioned in 2020 by two Members of the European Parliament, Michèle Rivasi and Klaus Buchner, and funded by the Greens/European Free Alliance group, documents the self-perpetuating, co-optation-based membership of ICNIRP and the links of some of its members with industry (Van Scharen et al., 2020).

4.4 Opposing Positions

ICNIRP and the GSMA maintain that current limits protect the entire population against established effects, and that additional precautionary measures would bring no demonstrated benefit (GSMA, 2026).

A systematic review commissioned by WHO concludes, with moderate certainty, that exposure of the head from mobile phone use probably does not increase the risk of glioma, meningioma, acoustic neuroma, or pituitary and salivary gland tumors in adults, or of brain tumors in children (Karipidis et al., 2024). A critique published in the same journal identifies five methodological weaknesses in this review, including the inclusion of studies of deficient design and overly coarse exposure categories, and points out that some of its authors were members of ICNIRP or linked to the telecommunications industry (Frank et al., 2025); the first author of the review, Ken Karipidis, sits on the main commission of ICNIRP.

Two validation studies of the NTP study, conducted in Japan and Korea on 70 rats per group at a single dose of 4 W/kg, find no statistically significant increase in tumors (Imaida et al., 2026; Kim et al., 2026). Three members of ICBE-EMF counter that their statistical power was insufficient—258 rats per group would have been needed for a power of 80%—and that the choice of a single dose ran counter to the requirements of the Food and Drug Administration and the OECD for carcinogenicity studies (Melnick et al., 2026).

In France, the 2018 Anses report on electro-hypersensitivity concludes that “no solid experimental evidence currently makes it possible to establish a causal link,” while acknowledging that the pain and suffering expressed by those most directly affected “correspond to a lived reality” (Anses, 2018). On April 29, 2025, a court of appeal relied on this report to overturn a judgment that had recognized the right of an electro-hypersensitive individual to remain in a white zone (see Document 1).

5. Discussion

The European framework and the U.S. framework share the same origin: a thermal threshold established in the 1980s and a safety factor of 50. The European exceptions offer two lessons. On the one hand, Switzerland shows that a mobile network can operate durably with limits about ten times lower in the places where individuals spend time, and Luxembourg has maintained its limit of 3 V/m per radiating element for 5G. On the other hand, the evolution of Brussels, Wallonia, Poland, Lithuania, Italy, and Liechtenstein shows that these exceptions give way as deployment intensifies: the limits then follow the needs of the networks, and not the state of health knowledge. In 2018, the Conseil d'État maintained the limits “pending the results of the work undertaken”; eight years later, the studies based on NTP data argue for markedly lower limits: twenty to forty times lower for [Uche and Naidenko \(2021\)](#), with regard to the cardiomyopathy observed in rats, and fifteen to more than nine hundred times lower with regard to cancer risk for [Melnick and Moskowitz \(2026\)](#).

6. Limitations

Several pieces of data are reported from secondary sources: the NTP and Ramazzini Institute studies from ICBE-EMF, the review by Karipidis et al. from its abstract and its critique, the SCENIHR opinion from the European Commission's summary, and the cases of Lithuania and Italy from the GSMA report and the press, checked where possible; that of Liechtenstein from its government's documents, without the numerical result of the 2009 vote. The authors of ICBE-EMF and of several of the critical works are engaged in the public debate on waves, as are ICNIRP and the GSMA on the opposite side; the position of each is stated.

7. Recommendations (Questions 5n, 5o, 5p)

1. Base exposure limits on the available toxicological data, using the benchmark dose method, with the uncertainty factors applied to other toxic agents, including for children, as [Uche and Naidenko \(2021\)](#) and [Melnick and Moskowitz \(2026\)](#) have done.
 2. Establish, in places of prolonged stay—homes, schools, daycare centers, hospitals—precautionary values modeled on the Swiss ordinance and on paragraph 8.2.1 of Council of Europe Resolution 1815, and reduce exposure at the source accordingly throughout the territory.
 3. Adopt a classification system that takes into account modulation, pulsing, duty cycle, beamforming, and cumulative exposure to multiple sources, and not time-averaged SAR alone.
 4. Entrust expert assessment to scientists with no ties to ICNIRP or to industry, under public and verifiable rules for declaring conflicts of interest.
-

Glossary

Term	Meaning
4G, 5G	Fourth and fifth generations of mobile telephone networks.
Administrative court (<i>tribunal administratif</i>)	French first-instance administrative court.
Anses	Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail (French Agency for Food, Environmental and Occupational Health & Safety): French public body, under the supervision of five ministries, responsible for health risk assessment.
Atypical point	In France, a location where the exposure level exceeds the threshold set by the French National Frequency Agency (ANFR)—6 V/m until 2025, 9 V/m since January 1, 2026—and requires action by the operators.
Benchmark dose	Risk assessment method that determines, from experimental data, the dose associated with a given increase in the frequency of an effect, before uncertainty factors are applied.
BioInitiative	Report written by an international group of researchers, published in 2007 and updated in 2012, which reviews the biological effects of electromagnetic fields and proposes precautionary values.
Building biology (<i>Baubiologie</i>)	Discipline born in Germany, devoted to the effects of housing on health; its guideline values are published by the Baubiologie Maes office and the Institut für Baubiologie + Ökologie (now Institut für Baubiologie + Nachhaltigkeit), which are private bodies.
Conseil d'État	France's highest administrative court; among other things, it rules in last resort on appeals against the interim relief orders of administrative courts.
Constitutional Court (Belgium)	Belgian court that reviews the conformity of laws, decrees, and ordinances with the Constitution.
Council of Europe	Intergovernmental organization of 46 European states, distinct from the European Union; its Parliamentary Assembly adopted Resolution 1815.
DECT	Standard for household cordless phones, around 1.9 GHz; the base transmits even when idle, except in ECO mode.
Electro-hypersensitivity, electrosensitivity	Electrosensitivity refers to a sensitivity to electromagnetic fields shared, to varying degrees, by all human beings; electro-hypersensitivity, to its highest degrees. We regard it as a syndrome, not as a disease (see Document 4, Section 3.1).
Environmental Working Group	U.S. nongovernmental environmental health organization.
EPA	Environmental Protection Agency: U.S. federal agency for environmental protection.
EUROPAEM	European Academy for Environmental Medicine, which in 2016 published a guideline on the prevention, diagnosis, and treatment of disorders related to electromagnetic fields.
FCC	Federal Communications Commission: U.S. federal agency that regulates telecommunications and sets the limits for exposure to radiofrequency radiation.

Term	Meaning
FDA	Food and Drug Administration: U.S. federal agency responsible, among other things, for radiation-emitting products.
Glioma, meningioma, acoustic neuroma	Tumors, respectively, of the glial cells of the brain, of the meninges, and of the sheath of the auditory nerve.
Greens/European Free Alliance	Political group of the European Parliament bringing together green and regionalist parties.
GSMA	Global association of mobile network operators.
Hertz (Hz, kHz, MHz, GHz)	Unit of frequency: one kilohertz equals one thousand hertz, one megahertz one million, one gigahertz one billion.
IBN	Institut für Baubiologie + Ökologie, now Institut für Baubiologie + Nachhaltigkeit: private German building biology institute, on whose behalf the Baubiologie Maes office established the discipline's testing standard and guideline values.
ICBE-EMF	International Commission on the Biological Effects of Electromagnetic Fields: international group of scientists that challenges the foundations of the FCC and ICNIRP exposure limits.
ICNIRP	International Commission on Non-Ionizing Radiation Protection: a private-law association registered in Germany, whose guidelines underpin European exposure limits.
ITM	Inspection du travail et des mines (Labor and Mines Inspectorate): Luxembourg administration that sets, among other things, the operating conditions of radiofrequency transmitters.
Land	Federal state of Austria or Germany, with its own government.
NTP, NIEHS	National Institute of Environmental Health Sciences, an institute of the U.S. National Institutes of Health; it houses the National Toxicology Program, which conducted the animal studies on radiofrequency radiation published in 2018.
OECD	Organisation for Economic Co-operation and Development, which publishes, among other things, guidelines for toxicity testing.
ONIR	Swiss Ordinance on Protection against Non-Ionising Radiation (ORNI in French): it sets immission limit values, identical to those of ICNIRP, and, in places of sensitive use, installation limit values about ten times lower, as a precaution.
Peak value	Maximum value of a signal over the duration of the measurement, as opposed to its average value.
Places of sensitive use	Under Swiss law, premises where human beings regularly stay for prolonged periods – homes, schools, hospitals, permanent workplaces – and playgrounds, where the installation limit values apply.
Radiating element	Part of an antenna that transmits the signal; a single installation may have several.
Ramazzini Institute	Italian cancer research institute, in Bologna, which published in 2018 a carcinogenicity study on rats exposed to radiofrequency radiation throughout their lives.

Term	Meaning
Recommendation 1999/519/EC	Recommendation of the Council of the European Union of July 12, 1999, which proposes to the Member States limits on public exposure taken from the 1998 ICNIRP guidelines.
Référé (interim relief)	Emergency procedure by which a judge orders provisional measures.
Resolution 1815	Resolution adopted on May 27, 2011, by the Parliamentary Assembly of the Council of Europe on the potential dangers of electromagnetic fields and their effect on the environment.
Safety factor, uncertainty factor	Divisor applied to an effect threshold to set an exposure limit, in order to account for uncertainties: extrapolation from animals to human beings, individual variability, duration of studies.
Salzburg Resolution	Resolution adopted in June 2000 at an international conference held in Salzburg on the siting of mobile telephony base stations, which proposed a precautionary value of 1,000 $\mu\text{W}/\text{m}^2$.
SAR (specific absorption rate)	Power absorbed per unit mass of tissue, in watts per kilogram; it is used to verify the compliance of devices worn close to the body.
SCENIHR, SCHEER	Scientific Committee on Emerging and Newly Identified Health Risks of the European Commission, which became the Scientific Committee on Health, Environmental and Emerging Risks (SCHEER).
Schwannoma	Tumor of the Schwann cells, which surround nerve fibers; cardiac schwannomas were observed in rats in the NTP and Ramazzini Institute studies.
Statistical power	Probability that a study will detect a real effect of a given size; it depends in particular on the number of animals or subjects per group.
Systematic review	Synthesis of the literature according to an explicit and reproducible method for searching, selecting, and assessing studies.
UVCW	Union des villes et communes de Wallonie (Union of Cities and Municipalities of Wallonia): association of Walloon local authorities.
V/m, $\mu\text{W}/\text{m}^2$, W/m^2	Units of field intensity: the volt per meter measures the electric field, the microwatt and the watt per square meter measure power density; $S = E^2/377$ converts one into the other.
WHO	World Health Organization.
Wi-Fi	Wireless local area network, around 2.4, 5, and 6 GHz.

References

- Baubiologie Maes & Institut für Baubiologie + Ökologie (IBN). (2008). *Building Biology Evaluation Guidelines for Sleeping Areas*, supplement to the *Standard of Building Biology Testing Methods SBM-2008* (K. Gustavs, Trans.). <http://www.baubiologie.de/downloads/building-biology-guidelines-english.pdf> [back to text](#)
- Belgian Constitutional Court. (2024, October 24). Judgment No. 110/2024 [appeal against the Walloon decree of December 8, 2022]. <https://www.const-court.be/public/f/2024/2024-110f.pdf> [back to text](#)
- Belyaev, I., Dean, A., Eger, H., Hubmann, G., Jandrisovits, R., Kern, M., Kundi, M., Moshhammer, H., Lercher, P., Müller, K., Oberfeld, G., Ohnsorge, P., Pelzmann, P., Scheingraber, C., & Thill, R. (2016). EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses. *Reviews on Environmental Health*, 31(3), 363–397. <https://doi.org/10.1515/reveh-2016-0011> [back to text](#)

- BioInitiative. (2012). *BioInitiative Report 2012*, cited in Hardell et al. (2021). [back to text](#) : 1, 2
- Brussels Environment. (2026). *Quelles sont les normes légales d'exposition aux ondes ?* [What are the legal standards for exposure to waves?] [accessed October 20, 2026]. <https://environnement.brussels/reglementation/textes-de-loi/quelles-sont-les-normes-legales-dexposition-aux-ondes> [back to text](#)
- Conseil d'État. (2018, March 7). Decision No. 399727, Robin des Toits association. <https://www.conseil-etat.fr/fr/arianeweb/CE/decision/2018-03-07/399727> [back to text](#)
- Council of Europe, Parliamentary Assembly. (2011). Resolution 1815 (2011), *The potential dangers of electromagnetic fields and their effect on the environment*, text adopted May 27, 2011. <https://pace.coe.int/en/files/17994/html> [back to text](#)
- Council of the European Union. (1999, July 12). Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). <https://eur-lex.europa.eu/eli/reco/1999/519/oj> [back to text](#)
- DETEC, Mobile Communications and Radiation Working Group. (2019, November 18). *Téléphonie mobile et rayonnement* [Mobile communications and radiation]. Report, Bern. <https://www.newsd.admin.ch/newsd/message/attachments/59385.pdf> [back to text](#)
- Frank, J. W., Moskowitz, J. M., Melnick, R. L., Hardell, L., Philips, A., Héroux, P., & Kelley, E. (2025). The systematic review on RF-EMF exposure and cancer by Karipidis et al. (2024) has serious flaws that undermine the validity of the study's conclusions. *Environment International*, 195, 109200. <https://doi.org/10.1016/j.envint.2024.109200> [back to text](#)
- French Agency for Food, Environmental and Occupational Health & Safety (Anses). (2018). *Hypersensibilité électromagnétique ou intolérance environnementale idiopathique attribuée aux champs électromagnétiques* [Electromagnetic hypersensitivity or idiopathic environmental intolerance attributed to electromagnetic fields]. Anses opinion and collective expert appraisal report, Request No. 2011-SA-0150. <https://www.anses.fr/fr/system/files/AP2011SA0150Ra.pdf> [back to text](#)
- French Republic. (2002, May 3). Décret n° 2002-775 du 3 mai 2002 pris en application du 12° de l'article L. 32 du code des postes et télécommunications et relatif aux valeurs limites d'exposition du public aux champs électromagnétiques émis par les équipements utilisés dans les réseaux de télécommunication ou par les installations radioélectriques [Decree No. 2002-775 of May 3, 2002, issued pursuant to Article L. 32, 12°, of the Postal and Telecommunications Code, on the limit values for public exposure to electromagnetic fields emitted by equipment used in telecommunications networks or by radio installations]. <https://www.legifrance.gouv.fr/eli/decret/2002/5/3/2002-775/jo/texte> [back to text](#)
- French Republic. (2015, February 9). Loi n° 2015-136 du 9 février 2015 relative à la sobriété, à la transparence, à l'information et à la concertation en matière d'exposition aux ondes électromagnétiques [Law No. 2015-136 of February 9, 2015, on sobriety, transparency, information, and consultation regarding exposure to electromagnetic waves]. <https://www.legifrance.gouv.fr/eli/loi/2015/2/9/2015-136/jo/texte> [back to text](#)
- Government of Liechtenstein. (2009). *Information zur Volksabstimmung vom 4. und 6. Dezember 2009 über das Initiativbegehren zur Abänderung des Umweltschutzgesetzes (Festlegung der Grenzwerte für Mobilfunkanlagen)* [Information on the popular vote of December 4 and 6, 2009, on the initiative to amend the Environmental Protection Act (setting limit values for mobile telephony installations); brochure of the Regierung des Fürstentums Liechtenstein]. https://www.abstimmungen.li/files/attachments/11/Infobroschuere_mobilfunk_633935556649511250.pdf [back to text](#)
- Government of Liechtenstein. (2021, May 4). *Bericht und Antrag der Regierung an den Landtag des Fürstentums Liechtenstein betreffend die Abänderung des Umweltschutzgesetzes (USG)* [Report and motion of the Government to the Parliament of the Principality of Liechtenstein concerning the amendment of the Environmental Protection Act], No. 45/2021. https://www.llv.li/files/srk/bua_045_2021_abanderung-des-umweltschutzgesetzes-usg.pdf [back to text](#)
- GSMA. (2026, October). *International Harmonization of RF-EMF Policy* (J. Rowley). https://www.gsma.com/solutions-and-impact/connectivity-for-good/public-policy/wp-content/uploads/2026/10/GSMA_International-EMF-policy-harmonization-report.pdf [back to text](#) : 1, 2, 3, 4
- Hardell, L., Nilsson, M., Koppel, T., & Carlberg, M. (2021). Aspects on the International Commission on Non-Ionizing Radiation Protection (ICNIRP) 2020 guidelines on radiofrequency radiation. *Journal of Cancer Science and Clinical Therapeutics*, 5(2), 250–285. <https://doi.org/10.26502/jcsct.5079117> [back to text](#)

- Imaida, K., Kawabe, M., Wang, J., Yokohira, M., Imai, N., Han, K. H., Kim, Y. B., Jeon, S. B., Kim, H. S., & Ahn, Y. H. (2026). The International Collaborative Animal Study of mobile phone radiofrequency radiation carcinogenicity and genotoxicity: The Japanese study. *Toxicological Sciences*, 209(3), kfag002. <https://doi.org/10.1093/toxsci/kfag002> [back to text](#)
- International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF). (2022). Scientific evidence invalidates health assumptions underlying the FCC and ICNIRP exposure limit determinations for radiofrequency radiation: Implications for 5G. *Environmental Health*, 21, 92. <https://doi.org/10.1186/s12940-022-00900-9> [back to text](#) : 1, 2, 3
- Karipidis, K., Baaken, D., Loney, T., Blettner, M., Brzozek, C., Elwood, M., Narh, C., Orsini, N., Rösli, M., Paulo, M. S., & Lagorio, S. (2024). The effect of exposure to radiofrequency fields on cancer risk in the general and working population: A systematic review of human observational studies – Part I: Most researched outcomes. *Environment International*, 191, 108983. <https://doi.org/10.1016/j.envint.2024.108983> [back to text](#) : 1, 2
- Kim, H. S., Han, K. H., Kim, Y. B., Jeon, S. B., Lee, A. K., Moon, J. I., Choi, H. D., Imaida, K., Yokohira, M., Kawabe, M., Imai, N., Wang, J., & Ahn, Y. H. (2026). The International Collaborative Animal Study of the carcinogenicity and genotoxicity of mobile phone radiofrequency radiation: The Korean study. *Toxicological Sciences*, 209(3), kfag001. <https://doi.org/10.1093/toxsci/kfag001> [back to text](#)
- Labor and Mines Inspectorate (ITM). (2002, September 23). ITM-CL 179.3 [operating conditions for high-frequency electromagnetic wave transmitters, Luxembourg]. <https://itm.public.lu/dam-assets/fr/securite-sante/conditions-types/itm-cl-101-200/ITM-CL-179-3.pdf> [back to text](#)
- Luxembourg Government. (2020, October 6). *Le gouvernement salue l'organisation d'un échange constructif au sujet du déploiement de la 5G* [The government welcomes the organization of a constructive exchange on the deployment of 5G] [press release]. https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/10-octobre/06-gouvernement-deploiement-5g.html [back to text](#)
- Melnick, R. L., Moskowitz, J. M., & Héroux, P. (2026). Conflicting views in experimental carcinogenesis: A commentary on design and methodological deficiencies in the follow-up validation studies on radiofrequency radiation. *Environmental Health*, 25, 66. <https://doi.org/10.1186/s12940-026-01324-5> [back to text](#)
- Melnick, R. L., & Moskowitz, J. M., on behalf of ICBE-EMF. (2026). Exposure limits to radiofrequency EMF do not account for cancer risk or reproductive toxicity assessed from data in experimental animals. *Environmental Health*, 25, 42. <https://doi.org/10.1186/s12940-026-01288-6> [back to text](#) : 1, 2, 3, 4
- Mevissen, M., Ducray, A., Ward, J. M., Kopp-Schneider, A., McNamee, J. P., Wood, A. W., Rivero, T. M., & Straif, K. (2025). Effects of radiofrequency electromagnetic field exposure on cancer in laboratory animal studies, a systematic review. *Environment International*, 199, 109482. <https://doi.org/10.1016/j.envint.2025.109482> [back to text](#)
- National Toxicology Program (NTP). (2018). Technical Reports No. 595 and 596, cited in ICBE-EMF (2022). [back to text](#) : 1, 2
- Nice Administrative Court. (2025, December 18). Interim relief order No. 2506751, SAS Free Mobile v. Municipality of Roquefort-les-Pins. <https://justice.pappers.fr/decision/2032c6cb1fa76542f10d0e5a6bda0348fac3f840> [back to text](#)
- Nordhagen, E. K., & Flydal, E. (2023). Self-referencing authorships behind the ICNIRP 2020 radiation protection guidelines. *Reviews on Environmental Health*, 38(3), 531–546. <https://doi.org/10.1515/reveh-2022-0037> [back to text](#)
- Oberfeld, G. (2004, December 6). *Grenzwerte in Salzburg. Hintergründe und Erfahrungen aus medizinischer Sicht* [Limit values in Salzburg: Background and experience from a medical perspective] [presentation, Vaduz; Office of the Salzburg State Government, Public Health Directorate, Environmental Medicine Unit]. <https://www.llv.li/serviceportal2/amtstellen/amt-fuer-kommunikation/vortrag-oberfeld-2004.pdf> [back to text](#) : 1, 2
- Polish Minister of Health. (2019, December 17). *Rozporządzenie Ministra Zdrowia z dnia 17 grudnia 2019 r. w sprawie dopuszczalnych poziomów pól elektromagnetycznych w środowisku* [Regulation on the permissible levels of electromagnetic fields in the environment]. *Dziennik Ustaw*, 2019, item 2448. <https://eli.gov.pl/eli/DU/2019/2448/ogl/pol/pdf> [back to text](#)
- Ramazzini Institute. (2018). Study by Falcioni, L., et al., cited in ICBE-EMF (2022). [back to text](#) : 1, 2
- Ransy, A. (2023, January 25). 5G : révision du décret relatif à la protection contre les éventuels effets nocifs et nuisances provoqués par les rayonnements non ionisants générés par des antennes émettrices stationnaires [5G: Revision of the decree on protection against the possible harmful effects and nuisances caused by non-ionizing radiation generated by stationary transmitting antennas]. *Union des villes et communes de Wallonie*. <https://www.uvcw.be/environnement/actus/art-7983> [back to text](#)

- Salzburg Resolution. (2000). Resolution adopted at the International Conference on Cell Tower Siting (Salzburg, June 2000), cited in Hardell et al. (2021), *back to text* : 1, 2
- Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR). (2015). *Opinion on potential health effects of exposure to electromagnetic fields (EMF)* [opinion adopted January 27, 2015]. European Commission. https://health.ec.europa.eu/publications/potential-health-effects-exposure-electromagnetic-fields-emf_en *back to text* : 1, 2
- Swiss Federal Council. (1999, December 23). *Ordonnance sur la protection contre le rayonnement non ionisant* (ORNI) [Ordinance on Protection against Non-Ionising Radiation (ONIR)], SR 814.710. <https://www.fedlex.admin.ch/eli/cc/2000/38/fr> *back to text*
- Testa, M. (2024). Telefonia mobile: nuovi limiti elettromagnetici in Italia dal 29 aprile 2024 [updated May 1, 2024]. SOStariffe.it. <https://www.sostariffe.it/news/telefonica-mobile-nuovi-limiti-elettromagnetici-in-italia-dal-29-aprile-2024-388387/> *back to text*
- Uche, U. I., & Naidenko, O. V. (2021). Development of health-based exposure limits for radiofrequency radiation from wireless devices using a benchmark dose approach. *Environmental Health*, 20, 84. <https://doi.org/10.1186/s12940-021-00768-1> *back to text* : 1, 2, 3
- Van Scharen, H., Vanheste, T., & Lambert, E. (2020, June). *The International Commission on Non-Ionizing Radiation Protection: Conflicts of interest, corporate capture and the push for 5G*. Report commissioned by Michèle Rivasi and Klaus Buchner, Members of the European Parliament, and funded by the Greens/EFA group, Brussels. <https://klaus-buchner.eu/wp-content/uploads/2020/06/ICNIRP-report-FINAL-JUNE-2020.pdf> *back to text*
- Walloon Region. (2009, April 3). Décret relatif à la protection contre les éventuels effets nocifs et nuisances provoqués par les rayonnements non ionisants générés par des antennes émettrices stationnaires [Decree on protection against the possible harmful effects and nuisances caused by non-ionizing radiation generated by stationary transmitting antennas]. *Moniteur belge*, May 6, 2009. <https://wallex.wallonie.be/eli/loi-decret/2009/04/03/2009201985/2009/05/16> *back to text*

Non-binding document, drafted and transmitted with all reservations whatsoever.