

Electro-Hypersensitivity Does Not Exist

Document 9 — Electro-Hypersensitivity in Brief, for Primary Care Physicians: Practical Pointers

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.

Question addressed: 9 (information for health professionals).

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.

Disclaimer: the authors are not physicians. The medical elements presented here—tests, biological markers, exposure-reduction measures—are reported from published sources and existing guidelines, which are cited. They constitute neither medical advice, nor a prescription, nor a care protocol, and they do not replace the judgment of a health professional.

Abstract

The primary care physician is the first point of contact for patients whose symptoms may be due to exposure to electromagnetic fields. In our experience, most of these patients know nothing about electro-hypersensitivity and consult for their symptoms; those who arrive describing themselves as electro-hypersensitive reached that conclusion on their own, often after several years (Document 8, Section 3.2). This document offers a model of the information that could be provided to that physician: a few pages, drawn from Documents 7 and 8 and their sources, that set out what is known and what is not known, how to recognize the clinical picture, which diseases are associated with it, which tests to perform, how to reduce exposure, how to receive the patient, how to document the patient's record, and where to refer the patient. The World Health Organization (WHO) regards the symptoms as real; no validated test can currently confirm or rule out the diagnosis. A public research team at Inserm has nevertheless found, in all 26 electro-hypersensitive volunteers it studied, without exception, the same feature of their cells, a delay in DNA repair, established without relying on their own statements; other biological markers are under study, without independent validation. Other syndromes are often associated with electro-hypersensitivity, and Lyme disease, whose persistent symptoms resemble it, can overlap with it. Two medical doctrines are opposed on exposure reduction. These pointers do not replace the physician's judgment. The document sets out four recommendations.

1. Purpose

Question 9 of the Request for Information asks what technical and exposure-related information should be disclosed to, among others, health care providers. Document 8 (Section 7) lists that information; this document provides a practical version of it, as it could be handed to a general practitioner. It is drafted from European experience and refers to its source at every point.

2. Methods and Sources

The pointers are drawn from Documents 7 and 8 and from the sources they cite, read as described in Document 8 (Section 2): the articles by the ARTAC team and the Inserm study on biological markers, the 2005 WHO fact sheet, the 2018 opinion of Anses (French Agency for Food, Environmental and Occupational Health & Safety), the 2023 document of the French Society of Occupational Health (SFST), the guidelines of the Austrian Medical Association (*Österreichische Ärztekammer*, 2012) and of the European Academy for Environmental Medicine, EUROPAEM (Belyaev et al., 2016), the guide for practitioners *Et si c'était les ondes ?* [What if it were the waves?] (2020), the fact sheet of the Swiss Federal Office of Public Health (FOPH) on cordless phones (2016), and the recommendations of the U.S. Access Board. The following were consulted: the WHO fact sheet, in English and in French; the EUROPAEM guideline, in its 2016 French translation, of which only the English version is authoritative (the one passage quoted directly in this English version is from the original English text, and the others are paraphrased from the French translation); the 2020 guide; the Swiss federal office's fact sheet; the judgment of the Riom Court of Appeal. The 2018 Anses opinion was reread; the SFST document was read by an automated reading tool, and the passages quoted were checked against the text of the PDF; the U.S. Access Board pages and the ministerial response published in the *Journal officiel du Sénat* [Official Journal of the French Senate] were consulted in their own text. For the associated diseases, the abstracts of the articles by Talkington and Nickell (1999), Adelson et al. (2004), Kugeler et al. (2021), and Frątczak et al. (2020) were read, as well as the pages of the diagnose:EHS website; the page of the Centers for Disease Control and Prevention and the 2022 report of the Tick-Borne Disease Working Group were read with a summarization tool, the latter in part, and the passages quoted from them were not checked against the original text. Where these sources diverge, the divergence is indicated. 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.

3. What Is Known, What Is Not Known

- **The symptoms are real.** WHO states it: “The symptoms are certainly real and can vary widely in their severity” (WHO, 2005). Anses adds that the suffering expressed “requires and justifies appropriate care by the health care system” (Anses, 2018).
- **No test is conclusive, but one result stands out.** No biological marker has been validated. A public research team at Inserm found, in 26 out of 26 electro-hypersensitive volunteers, a delay

in the repair of their cells' DNA, measured without relying on their own statements; this result, like the markers described by the ARTAC team, has yet to be replicated (Section 6; Document 8, Section 5).

- **Provocation studies test a perception.** They briefly expose the patient to a real or sham field and ask what the patient feels; they measure neither delayed effects nor the effects of prolonged exposure (Document 8, Section 4).
- **Two doctrines coexist.** [WHO \(2005\)](#) and the [SFST \(2023\)](#) focus management on the symptoms and the clinical picture, not on exposure reduction; the SFST sees no argument for proposing avoidance and suggests, where appropriate, very gradual exposure within the framework of cognitive behavioral therapy. The Austrian Medical Association, EUROPAEM, and the 2020 guide make exposure reduction the main treatment; the guide also regards it as the best diagnostic criterion (Document 8, Section 3.5).

4. Recognizing

The most frequent symptoms are nonspecific: sleep disorders, headaches, fatigue, concentration and memory problems (“brain fog”), tinnitus, dizziness, palpitations, muscle and joint pain, tingling or burning sensations, urinary disorders ([Belyaev et al., 2016](#); [Collective, 2020](#)). What is suggestive is their relationship to exposure. EUROPAEM proposes the assessment of “variation in health problems depending on time and location and individual susceptibility” ([Belyaev et al., 2016](#)). Useful questions:

- Do the symptoms change with the place (home, work, other accommodation, vacation) and the time (night, day, weekend)?
- What sources are present in the home, particularly near the bed: Wi-Fi router, cordless phone base, cell phone, connected devices, smart meter?
- Was an antenna installed or modified nearby, or new equipment put into service, before the onset or worsening of the symptoms?
- Do the symptoms subside away from the sources, and how quickly?

The connection is often made late, after years of successive symptoms seen by different specialists; the shifting presentation exposes the patient to the label of hypochondria (Document 8, Section 6). In our experience, the symptoms vary with the sources involved, their frequencies, and the duration and intensity of exposure; and the absence of symptoms in other members of the household does not rule out the link, since they are not exposed in the same way from day to day, nor are they receptive in the same way (Document 8, Sections 3.4 and 5.4).

5. Associated Diseases

Electro-hypersensitivity rarely occurs alone. Multiple chemical sensitivity is frequently associated with it, in 25% to 30% of cases in the ARTAC cohort (Document 8, Section 3.3); the authors see in this association “a common pathological mechanism” ([Belpomme et al., 2015](#)). EUROPAEM groups

electro-hypersensitivity, together with multiple chemical sensitivity, chronic fatigue syndrome, and fibromyalgia, among chronic multisystem illnesses (Belyaev et al., 2016). Their clinical pictures overlap widely—fatigue, unrefreshing sleep, widespread pain, brain fog, headaches—and none of them has a validated marker (Document 8, Sections 3.3 and 5.3).

Lyme disease. It calls for particular attention in the United States, where it is estimated to be diagnosed and treated in about 476,000 patients a year, according to commercial health insurance claims data (Kugeler et al., 2021). Its persistent symptoms resemble those of electro-hypersensitivity: the Centers for Disease Control and Prevention (CDC) note that, after treatment, some patients have “prolonged symptoms of fatigue, body aches, or difficulty thinking,” and that “The cause of these symptoms is currently unknown” (CDC, 2026). The patient’s course is similar as well. The federal Tick-Borne Disease Working Group, in its 2022 report to Congress, reports patients who describe having been “dismissed by providers, being accused of lying,” and cites a survey published in 2014 according to which 78% of patients with a persistent or chronic form of the disease waited six months or more for their diagnosis (Tick-Borne Disease Working Group, 2022); this is the diagnostic wandering described in Document 8, Section 6.

In our experience, the two can overlap: in a patient with Lyme disease, with or without erythema migrans, exposure to waves further complicates the situation. The website of the German association diagnose:funk, moreover, lists borreliosis among the infections that, in its view, increase vulnerability to fields, and testing for it, together with testing for coinfections, among the laboratory analyses it presents; it cites no study in support (Gutbier, 2021; Gutbier, 2026). To our knowledge, no study published in a peer-reviewed journal has established a direct link between Lyme disease and electro-hypersensitivity, measured how often they occur together, or examined the effect of radiofrequency radiation on *Borrelia burgdorferi*, the bacterium responsible. A common pathway is conceivable, though not demonstrated: in culture, *Borrelia burgdorferi* spirochetes induce, in rat and mouse mast cells, weak but detectable degranulation and the secretion of TNF-alpha, a molecule of inflammation (Talkington and Nickell, 1999); and histamine, which mast cells release, is the marker most often elevated in the ARTAC cohort (Section 6.2).

Coinfections. The ticks that transmit Lyme disease also transmit other agents. In northern New Jersey, PCR analysis of *Ixodes scapularis* ticks detected *Borrelia burgdorferi* in 33.6% of them, *Babesia microti* in 8.4%, *Anaplasma phagocytophilum* in 1.9%, and *Bartonella* in 34.5%; the authors see in this a possible source of coinfections and of the variety of clinical pictures observed in some patients (Adelson et al., 2004). Babesiosis is caused by a parasite, not a bacterium, and calls for a different treatment. Ticks themselves react to radiofrequency radiation: in the laboratory, *Ixodes ricinus* ticks, the main vector of Lyme disease in Europe, move toward an area exposed to 900 MHz, and do so even more when they are infected with *Rickettsia* (Frątczak et al., 2020; Document 6, Section 4.5).

In practice. Depending on the patient’s history—tick bite, stay in an endemic area, erythema migrans—the exclusion workup (Section 6) includes testing for Lyme disease and its coinfections. For the same reason, in a patient whose symptoms persist after treated borreliosis, the question of exposure to waves deserves to be asked. Multiple sclerosis poses the reverse problem: its symptoms

resemble those of electro-hypersensitivity, and a patient whose disorders depend on exposure may wrongly receive this diagnosis, on the strength of nonspecific MRI abnormalities, as long as the question of exposure is not raised (Document 8, Section 6).

6. Examining

All the doctrines agree on one point: look for and treat any other condition that could explain the symptoms. WHO recommends “a medical evaluation to identify and treat any specific conditions” (WHO, 2005). A normal routine workup is to be expected and rules nothing out: “Normal results on these tests must not lead to ruling out harm from electromagnetic fields” (Collective, 2020, p. 11).

6.1 A Measured Biological Feature: The DEMETER Study

One result stands out, because it comes from a public research team and does not rest on what patients declare. In Lyon, in a study funded by Anses and by the Investments for the Future program, Inserm joint research unit 1296 took a skin sample from 26 adult volunteers who described themselves as electro-hypersensitive, cultured its fibroblasts, and applied its clinical radiobiology protocol to them. All the cell lines show the same delay: after irradiation, the ATM protein, which triggers the recognition and repair of DNA breaks, reaches the nucleus more slowly than in radioresistant individuals. The authors write: “By applying X-rays, all the DEMETER cell lines (26/26) appeared characterized by delayed radiation-induced ATM nucleoshuttling (RIANS)” (Sonzogni et al., 2025). According to the laboratory’s earlier literature, radioresistant individuals, by contrast, represent about 75% to 85% of the population (Document 8, Section 5.2).

The biological data were acquired before the sealed questionnaires were opened, and the two sets of data were analyzed separately. Each distinguishes two groups of donors, and these groups coincide for 64% of donors. The cells also show spontaneous DNA breaks, a sign, according to the authors, of internal oxidative stress; in the laboratory, an antioxidant treatment applied after an oxidative insult reduces their traces. In the questionnaires, symptom intensity rises sharply from 300 MHz and peaks between 300 MHz and 3 GHz, a band that includes mobile telephony and 2.4 GHz Wi-Fi; one of the two groups reacts more to lower frequencies and to other agents, such as certain household products (Sonzogni et al., 2025).

The authors derive from this a preliminary molecular model, which links electro-hypersensitivity to the management of DNA breaks, and they themselves set out its limitations: a patient who shows this delay is not necessarily electro-hypersensitive; the cohort is small, which they attribute to the difficulty these patients have in traveling, while considering that a larger cohort would not have radically changed the conclusion; the volunteers belong to the same association; the controls come from an earlier collection of the laboratory; the test uses X-rays, not radiofrequency; and these results, obtained on cultured cells, call for further studies (Sonzogni et al., 2025). The study therefore does not demonstrate that radiofrequency acts through this mechanism; it shows that these volunteers share a measurable biological feature.

6.2 The ARTAC Markers

The ARTAC team, which follows more than 2,000 cases in Paris, reports the following proportions of out-of-range values in the electro-hypersensitive (Belpomme and Irigaray, 2020):

Marker, in blood	Normal value	Out-of-range cases
Histamine	≤ 10 nmol/L	37%
High-sensitivity C-reactive protein	≤ 3 mg/L	15%
Total IgE	≤ 100 IU/mL	22%
Heat shock protein Hsp27	≤ 5 ng/mL	25.8%
Heat shock protein Hsp70	≤ 5 ng/mL	18.7%
S100B protein	≤ 0.105 μ g/L	14.7%
Nitrotyrosine	≤ 0.9 μ g/mL	29.7%
Anti-O-myelin antibodies	absent	22.8%

The authors regard histamine as the most useful marker in practice: “Among biological markers, histamine in the blood is presently the best available marker in the case of no associated allergy and the easiest to measure routinely in medical practice” (Belpomme and Irigaray, 2020). They add, in 24-hour urine, the ratio of 6-hydroxymelatonin sulfate, a breakdown product of melatonin, to creatinine, which the 2020 guide also adopts (Collective, 2020, p. 11). In their 2024 article, which covers 2,018 cases, urinary 6-hydroxymelatonin sulfate is decreased in 86% to 92% of patients and histamine increased in about 30%; with seven markers, 76% to 86% of cases could be objectively characterized, and repeated measurement of S100B protein would serve to monitor relapses (Irigaray et al., 2024). The proportions therefore vary from one publication to another. The authors note that not all the assays were performed in all patients, several of them not being reimbursed in France (Irigaray et al., 2024).

These markers have limitations, which their authors themselves set down: “none of our biomarkers are per se specific” (Belpomme et al., 2015), and “these biochemical tests remain to be reproduced by other laboratories” (Irigaray et al., 2024). In 2018, Anses judged these results “to be considered as preliminary results, to be interpreted with the greatest caution” (Anses, 2018). They do not identify the cause of the disorders; they document, in a given patient, an inflammatory, oxidative, or nitrosative state, and its course as exposure decreases (Document 8, Section 5.1).

6.3 The Guideline Workups

The Austrian and European guidelines propose a broader workup, without thresholds of their own, to be interpreted as a whole: in morning urine, adrenaline, noradrenaline, dopamine, and serotonin; in morning or 24-hour urine, 6-hydroxymelatonin sulfate; in saliva, cortisol at 8 a.m., noon, and 8 p.m.; in blood, a complete blood count, blood glucose, glycated hemoglobin, and TSH, then, depending on the case, markers of oxidative and nitrosative stress—nitrotyrosine, malondialdehyde, glutathione—and of inflammation—high-sensitivity C-reactive protein, interleukins, TNF-alpha—as

well as histamine and vitamin D (Österreichische Ärztekammer, 2012; Belyaev et al., 2016). EUROPAEM does not set thresholds: in its view, several values close to the limits of the normal range can be significant together (Belyaev et al., 2016).

6.4 In Practice

The exclusion workup remains the priority. The markers, if prescribed, document a state and its course; normal results rule nothing out, and the criterion adopted by the 2020 guide remains the improvement of symptoms when exposure ceases (Section 7).

7. Reducing Exposure

For the second doctrine (Section 3), this is the first measure; the 2020 guide also makes it the best diagnostic criterion: “the improvement, or even the disappearance, of symptoms after a prolonged cessation of exposure” (Collective, 2020, p. 11). EUROPAEM states that simple measures can help to alleviate health problems within a few days or weeks (Belyaev et al., 2016). To our knowledge, these measures pose no physical risk; the SFST nevertheless considers that avoidance risks locking the patient into a vicious circle of isolation (SFST, 2023). The simplest measures concern household sources, which are also the closest to the body, particularly at night. In our experience, they are of value above all as prevention, for all the occupants of the home and before sensitivity sets in: at an advanced stage, they are no longer enough, because the antennas remain (see the end of this section):

- connect computers and printers by cable, which the 2020 guide calls “reconnecting in wired mode” (Collective, 2020, p. 12), and unplug Wi-Fi access points or have the router’s Wi-Fi deactivated (Belyaev et al., 2016)—failing that, turn it off at least at night;
- reserve the cell phone for short calls, using the speakerphone or a hands-free kit, avoid keeping it close to the body, and leave it in airplane mode as much as possible (Belyaev et al., 2016), particularly at night;
- prefer a corded landline phone, as recommended by EUROPAEM (Belyaev et al., 2016); failing that, a cordless phone in ECO mode, whose base, without this mode, transmits even when idle, and keep the base at least 50 cm from places of rest (FOPH, 2016);
- avoid wireless devices—headsets, baby monitors, game consoles, keyboards, mice—and, if the exposure comes from outside, choose the room farthest from the source for sleeping (Belyaev et al., 2016).

Measuring exposure is not within the physician’s competence, as the SFST points out; EUROPAEM entrusts it to trained specialists (Belyaev et al., 2016). In our experience, it is nevertheless in the patient’s interest to have a reliable measuring device of his or her own, to locate the sources in the home; a basic model costs about €250. EUROPAEM also calls for products claimed to neutralize electrosmog to be assessed with great restraint. Finally, the patient can do nothing about outside sources—a nearby antenna, the small cell on the street, the neighbors’ Wi-Fi, the building’s meter—and it is these sources that, at an advanced stage, make household measures insufficient. For severe

forms, the 2020 guide considers protecting oneself from them “or moving” ([Collective, 2020](#), p. 12): this is why reducing exposure at the source and preserving white zones are matters of public policy, not of the medical office alone (Documents 5, 7, and 8).

8. Receiving Patients in the Medical Office and the Hospital

The 2020 guide recommends, in a waiting room, a medical office, or a hospital, to “reduce all exposure to electromagnetic waves to a minimum” and to limit the duration of exposure: turn off Wi-Fi, Wi-Fi scanning, and Bluetooth on computers and tablets; turn off cell phones, which keep transmitting in standby mode, and ask the patients present to do the same; keep the patient away from electrical sources; allow the patient to wait in a less exposed area ([Collective, 2020](#), p. 13). In the United States, the U.S. Access Board states that, under the Americans with Disabilities Act and other disability laws, public and commercial buildings must provide reasonable accommodations for individuals with chemical or electromagnetic sensitivities, and, among the accommodations it lists as possible at the patient’s request, includes requiring that cell phones and computers be turned off; the page, which is undated, is part of the research section of the agency’s website and does not state its regulatory status ([U.S. Access Board, 2026](#)). Scheduling the appointment at an off-peak time, or seeing the patient without a wait, further reduces the duration of exposure; this is our own suggestion, not a published recommendation.

9. Documenting

- **Record, visit after visit**, the relationship between the symptoms, time, and place, their course away from the sources, and the diagnoses ruled out. This is the best clinical documentation available.
- **Code**. In the absence of a dedicated code, EUROPAEM proposes coding the symptoms, then R68.8 (“Other specified general symptoms and signs”) with Z58.4 (exposure to radiation) in ICD-10 ([Belyaev et al., 2016](#)), which correspond to MG4Y and QD70.4 in ICD-11 (Document 4, Section 3.2).
- **Certify**. Positions diverge. In France, a note from the Directorate General for Health dated May 26, 2014, leaves the issuance and content of certificates “to the physician’s discretion, case by case” (cited by [Collective, 2020](#), p. 12); the SFST considers that “under no circumstances should a physician write on a certificate that he or she observes, or even confirms, a situation of EHS,” the physician being able to certify that he or she follows the patient and to report what the patient describes ([SFST, 2023](#)). A court of appeal based its decision on certificates spanning several years, which described the symptoms, their relationship to exposure, and the other diagnoses ruled out; the general objections concerning the absence of harmfulness and compliance with the thresholds “have no bearing on this finding of an individual impact on health” ([Riom Court of Appeal, 2025](#)).

10. Referring

- **To a specialized consultation** in occupational and environmental medicine: in France, the regional centers for occupational and environmental diseases see these patients, at their own request or at the request of their attending physician or occupational physician (Sénat, 2025).
- **To disability services**, which can take into account the consequences of the health condition “regardless of the diagnostic label” (Sénat, 2025); in the United States, to the accommodations provided for by the Americans with Disabilities Act (U.S. Access Board, 2026).
- **At work**: the 2020 guide mentions sick leave, contact with the occupational physician, workstation adjustment, and part-time return to work (Collective, 2020, p. 12).
- **Preserve the relationship**. The SFST itself describes “The breakdown of the therapeutic relationship with the medical profession” as “a major danger” (SFST, 2023); Anses considered it “above all essential to establish and preserve a climate of trust” (Anses, 2018).

11. Discussion

The primary care physician can neither settle the scientific question nor reduce exposure outside the patient’s home. The physician can, however, listen, rule out other causes, document the relationship between the symptoms and exposure, advise the simple measures that pose no known physical risk, and adapt his or her own office. Federal information that gave the physician only the WHO conclusion—the absence of a scientific basis for a link—would leave the physician without tools when facing a patient whose symptoms, according to WHO itself, are real. The pointers above show that care is possible before science has settled the question.

12. Limitations

These pointers are not a validated clinical practice guideline: they report published positions that diverge, and most of the sources are European. The biological markers cited have not been validated: those of ARTAC come from a single team and a single laboratory, and their proportions vary from one publication to another; the Inserm study covers 26 volunteers from the same association and a test using X-rays, not radiofrequency. The connection with Lyme disease rests on the resemblance of the clinical pictures, on a hypothetical mechanism, and on our experience: to our knowledge, no study has examined it. Exposure-reduction measures are recommended by some guidelines, without, to our knowledge, any controlled trial of their effectiveness (Document 8, Section 9).

13. Recommendations (Question 9)

1. Provide primary care physicians with brief information, prepared by a group independent of industry that includes clinicians who follow electro-hypersensitive patients, covering the points of this document: what is known and what is not known, the relationship between the symptoms, time, and place, the associated diseases, including Lyme disease and its coinfections,

the exclusion of other causes, simple exposure-reduction measures, receiving patients, documentation, and referral.

2. Give physicians, for their patients, access to exposure data: a public map of transmitters and their measurements (Document 3), and home measurements carried out by trained specialists, at no cost to the patient.
3. Inform health professionals and the public about the behavior of household devices—a phone that transmits when no call is in progress, a DECT base that transmits when idle, Wi-Fi that is always on—and about the measures that reduce exposure, particularly at night.
4. Make medical offices and health care facilities accessible to the electro-hypersensitive, and accompany the information given to physicians with a reduction of exposure at the source throughout the entire territory, the preservation of the white zones that remain, and the recreation of others—measures without which the advice given in the medical office would remain without effect.

Glossary

Term	Meaning
6-hydroxymelatonin sulfate	Breakdown product of melatonin, the sleep hormone, excreted in urine; its measurement reflects melatonin production.
ADA	Americans with Disabilities Act: U.S. federal law of 1990 on the rights of individuals with disabilities.
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.
ARTAC	Association pour la recherche thérapeutique anti-cancéreuse (Association for Research and Treatments Against Cancer): French association, founded by the oncologist Dominique Belpomme, which has followed a cohort of electro-hypersensitive patients since 2009.
Babesiosis	Infection caused by a blood parasite, <i>Babesia</i> , transmitted by ticks; in the United States, mainly <i>Babesia microti</i> .
Biomarker	Measurable biological parameter, in blood, urine, or a tissue, that provides information on a state or a process of the body.
Bluetooth	Short-range radio link between devices, around 2.4 GHz.
Chronic fatigue syndrome	Illness marked by intense and lasting fatigue that rest does not relieve and that exertion worsens; also called myalgic encephalomyelitis.
Cognitive behavioral therapy	Psychotherapy that aims to modify the thoughts and behaviors associated with a disorder.
Coinfection	Simultaneous infection by several pathogens, for example transmitted by the same tick.

Term	Meaning
DECT	Standard for household cordless phones, around 1.9 GHz; the base transmits even when idle, except in ECO mode.
ECO mode	Mode of DECT cordless phones in which the base stops transmitting, or transmits only very weakly, when no call is in progress.
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).
Electrosmog	All the artificial electromagnetic fields to which a human being is exposed at a given moment.
Erythema migrans	Red patch that spreads around the site of the tick bite, a characteristic sign of the early stage of Lyme disease; it may be absent.
EUROPAEM	European Academy for Environmental Medicine, which in 2016 published a guideline on the prevention, diagnosis, and treatment of disorders related to electromagnetic fields.
Fibroblast	Connective tissue cell; skin fibroblasts are easy to culture and are used for radiosensitivity tests.
Fibromyalgia	Syndrome of chronic widespread pain, accompanied by fatigue, sleep disorders, and cognitive disorders.
Heat shock proteins (Hsp27, Hsp70)	Proteins produced by cells in response to stress.
High-sensitivity C-reactive protein	Sensitive assay of a protein produced by the liver during inflammation.
Histamine	Molecule released in particular by mast cells, involved in inflammation and allergy.
ICD-10, ICD-11	WHO International Classification of Diseases, tenth and eleventh revisions.
IgE	Immunoglobulin E: antibodies involved in allergic reactions.
Inserm	Institut national de la santé et de la recherche médicale (French National Institute of Health and Medical Research); French public body for biomedical research.
Lyme disease	Infection caused by bacteria of the <i>Borrelia burgdorferi</i> group, transmitted by ticks of the genus <i>Ixodes</i> ; also called Lyme borreliosis.
Mast cell	Immune system cell, present in the skin and mucous membranes, that releases histamine and other mediators of inflammation.
MRI	Magnetic resonance imaging: imaging technique that shows, among other things, lesions of the brain and spinal cord.
Multiple chemical sensitivity	Syndrome of symptoms affecting several organs upon exposure to various chemical substances at concentrations well below those that affect the general population.
Myelin	Sheath that surrounds nerve fibers and speeds up the conduction of nerve impulses.

Term	Meaning
Nitrotyrosine	Marker of nitrosative stress, produced by the action of peroxynitrite on proteins.
Provocation study	Experiment in which a subject is exposed, blind, to a real or sham field, and what the subject perceives or feels is recorded.
Radiosensitivity	Increased sensitivity of an individual or of their cells to ionizing radiation.
Regional centers for occupational and environmental diseases	Centres régionaux de pathologies professionnelles et environnementales: French hospital consultations specializing in work-related and environment-related diseases; they feed the national vigilance network coordinated by Anses.
Rickettsia	A bacterium of the genus <i>Rickettsia</i> , transmitted notably by ticks, which causes spotted fevers.
S100B	Protein produced mainly by the glial cells of the nervous system, used as a marker of brain damage.
SFST	Société française de santé au travail (French Society of Occupational Health): learned society of occupational medicine and occupational health.
Small cell	Low-power, short-range antenna installed close to the ground, on street furniture or building facades, and connected to the operator's network like a base station; "small-area wireless access point" in European Union law (see Document 5, Section 4.1).
Tick	Parasitic acarid that feeds on the blood of vertebrates and transmits many pathogens; <i>Ixodes ricinus</i> in Europe and <i>Ixodes scapularis</i> in the eastern United States transmit Lyme disease.
TNF-alpha	Tumor necrosis factor alpha: a cytokine, that is, a signaling molecule, involved in inflammation.
U.S. Access Board	U.S. federal agency responsible for accessibility rules for individuals with disabilities.
White zone	In territorial planning, an area without mobile coverage, which public policy aims to eliminate; for the electro-hypersensitive, a place almost free of artificial radiation, which must be preserved (see Document 1).
WHO	World Health Organization.
Wi-Fi	Wireless local area network, around 2.4, 5, and 6 GHz.

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