

National Research Programme for Environmental and Occupational Health "Radiofrequencies and Health" 2025 Call for Proposals

Deadline for submitting letters of intent: 17 December 2024

Deadline for submitting complete proposals: 15 May 2025

Please note that in the case of any discrepancy between the English and French versions of this document, the French version shall prevail

I. OVERVIEW OF THE PROGRAMME

The French National Research Programme for Environmental and Occupational Health (PNR EST) is financed by Anses with funds from the Ministries in charge of the environment, agriculture, health and labour, and also involves several co-funding partners, including ADEME and ITMO Cancer from the AVIESAN Alliance as part of the Cancer Plan.

The PNR EST promotes knowledge production in support of public policymaking for environmental and occupational health and safety, for the benefit of public health, and contributes to its dissemination to stakeholders. This programme has a leading role in fostering interactions within the scientific community, which helps Anses mobilise researchers for its collective expert appraisals of health risks.

Calls for research proposals are issued through this programme. Two calls will be funded in 2025: the present call, dedicated to the theme "Radiofrequencies and health", and the second, which covers a wide area (excluding radiofrequencies).

II. OVERVIEW OF THE CALL FOR PROPOSALS

This call for research proposals (CRP) on "Radiofrequencies and health" has been issued following the Anses expert appraisals on the same subject published since October 2013¹. The CRP is aiming to create new knowledge, especially to fill gaps or remove doubts that have been highlighted in Anses's expert appraisals and opinions. It also aims to expand the size of the research community involved in the field of radiofrequencies and health. During the selection process, a strong emphasis will be

¹ <https://www.anses.fr/en/content/radiofrequency-radiation-mobile-telephones-and-wireless-technologies>

placed on the quality of the projects' methodologies², insofar as they are intended to be used in future appraisals. Particular interest is paid to research topics whose results can be used rapidly by public policymakers.

III. SCOPE OF THE CALL FOR PROPOSALS

The call for proposals deals mainly with the assessment and analysis of risks of radiofrequencies to human health, in the general population or in the workplace, and to ecosystems. The topics covered by this CRP are provided in Annex 1 as a list of research questions.

The research questions focus on the effects of radiofrequencies, defined in this call for proposals as frequencies in the range from 8.3 kHz³ to 300 GHz. In the case of projects on electromagnetic hypersensitivity, considering a broader frequency range (extended to the lower frequencies) can be useful to understanding the phenomenon, and is thus authorised. The effects of electromagnetic fields can be studied for these fields alone or in combination with a cofactor.

IV. PROPOSAL CHARACTERISTICS

Proposals shall be designed as research projects with a clearly identified goal. This excludes projects that may only appear as contributions to larger research programmes and projects without specific deliverables identified on conclusion of the work.

These research projects may be conducted by a single team or a consortium involving several partners. Each team shall have a clearly identified scientific leader. The project shall be presented as a single proposal, with its coordinator being the scientist in charge of one of the teams. The funding is sought to complete the project. The rules are set out in Annex 2.

The partner teams undertake to comply with the principles of scientific integrity and ethics of the French Charter of Ethics for Research Professions.

² *In the October 2013 opinion and report, page 341 mentions "ensure the methodological quality of the experimental protocols and the rigour of the analysis and interpretation of data from in vitro and in vivo studies by research teams both on the RF exposure part (exposure characterisation, signal shape, justification for the choice of the exposure type, etc.) and on the part relating to biological experimentation (blind experiment, appropriate positive and negative controls, allowing the interpretation of the amplitude of changes related to RF exposure, identification of false positives, repetition of experiments, sufficient statistical power, etc.)."*

³ Lower limit of the "radiofrequency" range defined by the International Telecommunication Union.

Two types of research projects are expected:

Feasibility studies:

Their purpose is to explore an innovative approach whose feasibility has not yet been established.

- Funding shall not exceed **€50,000**.
- The maximum duration for such a study is two years.

Complete projects:

These rely on an established methodological approach so that there is a reasonable level of assurance that the objectives will be met.

- Financial support will lie **between €40,000 and €200,000**. It can exceed these limits under exceptional circumstances if required by the project's nature and provided the request is justified. This should be justified, for instance, with projects on radiofrequencies involving large consortia set up to tackle all issues from engineering to biology. In all cases the budget request may not exceed **€300,000**.
- The duration for a complete project will be between two and three years.

V. SELECTION PROCEDURE

The selection procedure relies on two committees:

- **The research programme's scientific committee (CSPR)**. It is made up of renowned researchers. The CSPR is responsible for the scientific evaluation of the submitted projects.
- **The research programme's steering committee (COPR)**. It is made up of ministries involved in the scope covered by the call. The COPR ensures, in particular, the choice of projects to be funded from the list drawn up by the CSPR.

The selection process of the call for proposals will be divided into two stages as defined below:

- an initial selection on the basis of letters of intent,
- a second selection based on complete applications, from among the shortlisted letters of intent.

The submission timetable and terms are described in Section IX.

- Step 1: Selection from among the letters of intent

Letters of intent that do not meet the eligibility criteria defined in Section VI will not be evaluated. The CSPR will assess the letters of intent, taking into account the selection criteria defined in Section VII. Members of the COPR may also be consulted

regarding criterion 3 and the alignment of the project with their priorities. Special attention should be paid to the quality of the letters of intent, which need to contain enough information, in a limited amount of space, to allow the CSPR to evaluate the relevance of the proposal. Only selected letters of intent will be eligible to submit a complete application.

Step 2: Selection from among the complete applications

To be eligible, complete proposals must meet all of the eligibility criteria described in Section VI. Applications that do not meet all of these criteria will not be evaluated. The projects will then go through the following selection process:

1. Collective scientific assessment of the projects by the CSPR: on the basis of the opinions of at least two independent experts per project, according to the criteria described in Section VII. A list of projects will then be submitted to the COPR.
2. Collective opinion of the COPR on the projects shortlisted by the CSPR, according to the criteria described in Section VII. This collective opinion also takes into account the available funds and priorities of funding bodies. The COPR may also give an opinion on the appropriateness of the requested funds with regard to the planned tasks. Under exceptional circumstances, it may recommend changes to projects, or even groupings, if these allow the integration of several approaches or disciplines likely to improve the **project's overall quality and relevance in relation to the programme's objectives**.
3. The final decision to support a project is made by the funding bodies. The list **of selected projects and the funding bodies' identities is published on the Anses website at the end of the selection process.**

VI. ELIGIBILITY CRITERIA

A project's eligibility will be examined at both selection stages, firstly through the letter of intent and secondly through the complete application, on the basis of the information available at each stage. Research projects must meet the same conditions at each stage:

Proposal characteristics

1. The project must lie within the scope of the call for proposals as defined in Section III.
2. **The proposals' characteristics must be compatible with those listed in Section IV.**
3. The project must not contain actions that have already been funded under another call for proposals. If there is any ambiguity, project coordinators

should describe which parts of the project interact with other sources of funding.

Conditions regarding the participating teams

1. The partnership must be clearly identified at the letter of intent stage.
2. This call for proposals is open to all research teams, irrespective of the institution to which they belong⁴ (higher education and research establishments, research organisations, other public establishments with a research mission, technical centres, private establishments with R&D activity, etc.). Partners other than research teams are welcome insofar as their added value in the project is clearly established.
3. The project must involve one French academic partner (higher education and research establishments, research organisations, other public establishments with a research mission, private healthcare establishments of collective interest, foundations and associations participating in research of interest and recognised as being of public utility or acting within the framework of public policymaking).
4. The call for research proposals is open to foreign teams or to teams from international organisations. To facilitate foreign partnerships and appraisal of **projects, the CRP's text is available in English on the Anses website.**
5. A CSPR member cannot hold any responsibility in a project (scientific leader of any team involved in the research project).

Administrative conditions

1. Letters of intent and complete applications must be submitted in accordance with the terms listed in Section IX. They must contain all of the requested information and be submitted by the deadline.
2. The project must be authorised by the institutional leader of the coordinating research team and by the manager of each partner team.

⁴ Regarding the eligibility of Anses teams, refer to the recommendation of its Ethics Committee <https://www.anses.fr/fr/system/files/DEON-Ft-2013003.pdf>

VII. CRITERIA FOR THE SCIENTIFIC ASSESSMENT OF PROJECTS

A project will be examined at both selection stages, through a letter of intent and then a complete application, on the basis of the information available at each stage.

The selection criteria are as follows:

Letter of intent stage

Letters of intent are reviewed according to the following criteria:

- 1) Scientific significance of the subject for the topic of radiofrequencies and health in the general population or at work. Impact on French public policies.
- 2) Scientific originality: proposals shall be justified with regard to research undertaken at French, European and international levels. When the aim of the project is to reproduce a study, originality will be assessed on the method used to maximise the quality of the results of this second study.
- 3) Connection to the research questions. The considerations mentioned in the "Research questions" annex will play an important role in the prioritisation of projects, particularly by the COPR.
- 4) Methodological quality and scientific feasibility: the approaches must be detailed and the methods described to enable the project's feasibility to be evaluated, particularly at the complete application stage.

Complete application stage

Projects are assessed based on the following criteria:

- 1) Scientific significance of the subject for the topic of radiofrequencies and health in the general population or at work. Impact on French public policies.
- 2) Scientific originality: proposals shall be justified with regard to research undertaken at French, European and international levels. When the aim of the project is to reproduce a study, originality will be assessed on the method used to maximise the quality of the results of this second study.
- 3) Connection to the research questions. The considerations mentioned in the "Research questions" annex will play an important role in the prioritisation of projects, particularly by the COPR.
- 4) Methodological quality and scientific feasibility, particularly the relevance of the choice of methods: the approaches must be detailed and the methods described to enable the project's feasibility to be evaluated, particularly at the complete application stage.
- 5) Organisational and partnership excellence (the project must include a provisional project timetable).

- 6) Consortium excellence. Scientific output of the applicants. Distribution of activities among teams: the skills necessary for the project must be clearly presented.
- 7) Appropriateness of the project duration and allocated resources (financial request, human investments). Quality of the supervision of non-permanent staff.
- 8) For projects that could be a subject of scientific controversy, measures adopted to ensure the quality of the results (e.g. traceability of data, provision of information that could be used to reproduce experiments or analyse data, inter-partner trials, multiple points of view held by partners, involvement of stakeholders in methodological design, participatory sciences, etc.).

The selection criterion "methodological quality and scientific feasibility" includes in particular characterisation of the exposure of target populations, exposure protocols implemented (exposure frequencies considered, duration, presence of control groups for a possible thermal effect, etc.) or exposure situations for observational studies, in particular the electromagnetic sources, applicators or antennas used, the exposure environment (open area, Faraday cage, etc.) and the means for measuring exposure (sensor type, bandwidth, frequency, etc.).

VIII. AGREEMENT

The funding terms for the selected projects will be specified in the agreement between Anses and a "coordinator" establishment. This will in most cases be the one to which the project coordinator's team belongs. The main rules are listed in Annex 2. In exchange for financial support, the research teams shall:

- commit to participate in actions to promote the results obtained during and/or at the end of the project (publications in peer-reviewed journals, presentations at conferences organised by Anses, contribution to summary reports, etc.);
- for complete projects, supply a mid-term report and, in all cases, at the end of the project, a final complete report and a public scientific summary that can be used by Anses in its missions;
- mention the support provided by the National Research Programme for Environmental and Occupational Health on appropriate occasions, in particular in publications.

As part of the implementation of the joint declaration by the network of French funding agencies to promote open science, the coordinator and partners undertake, if they receive funding, to:

- guarantee immediate free access to scientific peer-reviewed publications by depositing the scientific publications resulting from the project funded under

this call for proposals in HAL (full text), under the conditions of Article 30 of the Digital Republic Act (Article L533-4 of the French Research Code)⁵;

- facilitate the sharing and reuse of research data, especially for data relating to publications, by providing a Data Management Plan (DMP) within six months of the start of the project, according to the conditions set out in the research agreement, and then provide an updated version of the DMP at the end of the work period.

In addition, Anses recommends giving priority to publication in full open access journals or books⁶.

Lastly, in accordance with the Second National Open Science Plan, Anses recommends that the software developed during the project be made available under an open source licence⁷ and that the source codes be stored in the Software Heritage archive⁸ with a reference made to Anses funding.

Considerable importance is attached to the rigour with which the project coordinator leads the project, which means that the contractual commitments for the timing of deliverables should be fully respected.

IX. PROJECT SUBMISSION TERMS

- Submission of letters of intent

Letters of intent must be submitted online by the project coordinators no later than **17 December 2024 at noon (12:00)**, French time. Projects shall be submitted using the [Iris](#) platform available via the Anses website. The platform will be operational in **mid-October 2024**.

It is important to carefully read the eligibility rules listed in this call for proposals, including at the letters of intent stage. All compulsory sections must be completed before the deadline, as incomplete applications will not be considered. Applicants are therefore advised to prepare in advance.

⁵ In accordance with Article 30 of the Digital Republic Act (Article L533-4 of the French Research Code), by submitting to Anses the final version of their manuscript accepted for publication, the authors have exercised their right to make it available free of charge in an open format, by digital means.

⁶ The DOAJ website (<https://doaj.org/>) lists scientific journals whose articles are peer-reviewed and open access. The DOAB site (<https://www.doabooks.org/>) does the same for monographs.

⁷ <https://opensource.org/licenses>

⁸ <https://www.softwareheritage.org>

The letters of intent will then be evaluated and the project coordinators will be informed of the result (authorised to submit a complete project or not) by email.

- Submission of complete application

For those whose letters of intent are shortlisted, complete applications must be submitted online on the same platform by the project coordinators no later than **15 May 2025 at noon (12:00)**, French time.

All compulsory sections must be completed before the deadline, as incomplete applications will not be considered. Applicants are therefore advised to prepare in advance.

Provisional key dates

Early October 2024	Opening of the call
Mid-October 2024	Opening of the platform for letters of intent
17 December 2024 at noon	Deadline for submitting letters of intent
End of March 2025	Project coordinators informed of the first selection results, based on the letters of intent
15 May 2025 at noon	Deadline for submitting complete applications
September 2025	Project coordinators informed of the COPR's results on final selection

X. CONFIDENTIALITY

Members of the research programme's CSPR, as well as experts consulted for the scientific evaluation of projects, are subject to strict confidentiality regarding the content of the projects submitted to the call.

Funding bodies and state agencies serving on the COPR are also bound to strict confidentiality on the content of submitted projects. For mapping purposes or to manage multiple funding requests, however, they may share information on the laboratories or organisations active in the research topics covered by this call for proposals.

For projects not selected for funding, the files will remain confidential.

For projects selected for funding, the research content will be kept confidential. However, Anses will publish the summary of each project as submitted to this call for

proposals, along with the names of the partners. In addition, each funding organisation may use this work for its internal needs according to the terms defined in the agreement signed with the project coordinator. Finally, the scientific reports issued on completion of the work will be submitted to the reviewers, who will therefore have access to their content.

For further information, please contact recherche@anses.fr.

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ANNEX 1: Research questions

Besides the signals corresponding to current exposure, project coordinators are invited to address new sources of exposure and the associated signals (such as connected objects, 5G technologies, wireless energy transfer, etc.), and the effects of various modulations used for mobile communication.

Research on mechanisms of action of radiofrequencies at the molecular and cellular levels

RFES 1.1. *In vitro*, *in vivo* or clinical studies on the mechanisms of action of exposure (acute and chronic) of living organisms to radiofrequencies at the molecular and cellular levels, taking into account changes in frequency use linked to new uses and new communication technologies. Studies on newly identified (e.g. for 5G) and little-studied (especially 3.5 GHz, 26 GHz and beyond) frequency bands are a priority.

RFES 1.2. Studies carried out under the same experimental conditions, at several frequencies, to assess the possibility of frequency-band-dependent effects.

RFES 1.3. Studies carried out under the same experimental conditions, using different types of temporal signal modulation.

RFES 1.4. In-depth studies with the aim of linking the mechanisms observed on artificial membranes to the observations made on cells.

RFES 1.5. Studies on *in vitro* models (skin, cornea, conjunctiva, etc.) of exposure to frequencies above 10 GHz in order to measure parameters such as cell viability and genotoxicity, for example.

Research on the physiological or health effects of radiofrequencies

This research will have to take into account the evolution of the electromagnetic environment: deployment of connected objects, deployment of wireless energy transfer (frequencies below 30 MHz), 5G deployment (especially for the 3.5 GHz and 26 GHz frequency bands and beyond) and the associated technologies, changes in uses and therefore in exposure situations, etc.

RFES 2.1. *In vivo* or clinical studies on possible effects of exposure (acute and chronic) to radiofrequencies, in particular:

2.1.1. on circadian rhythms and sleep (relying for humans on objective criteria such as the ones defined by the American Academy of Sleep Medicine);

2.1.2. on the immune system;

2.1.3. on metabolism (metabolomics analysis);

2.1.4. on fertility, reproduction and development over several generations of animals;

2.1.5. on the autonomic nervous system;

2.1.6. on functional and brain development, according to age (*in utero*, juvenile, adult and elderly), by undertaking longitudinal studies in animals to identify possible sensitivity/vulnerability time windows;

2.1.7. on cognitive function (memory, reasoning, executive functions and attention) in animals and humans: by conducting challenge studies with adults and children at different ages of development, in situations with or without exposure to radiofrequencies, using properly calibrated psychometric instruments, brain imaging techniques and/or records of brain electrical activity (EEG) (including evoked potentials) in basal conditions or during stimulation (cognitive tasks);

2.1.8. on skin flora, for frequencies above 10 GHz.

RFES 2.2. Epidemiological studies⁹ on possible effects of RF energy on health, including cancer, fertility disorders, neurodegenerative diseases, circadian rhythm disorders and long-term effects of physiological changes in sleep. In particular, studies involving populations that are potentially the most vulnerable to radiofrequencies (epileptic patients, children, etc.) or less well documented (pregnant women, the elderly) or particularly subject to exposure (workers).

RFES 2.3. Study of the effects of co-exposure to radiofrequencies, approximating actual exposure situations and enabling analysis of the combined effects of RF and other environmental factors (physical or chemical) on the body.

⁹ Particular care will be taken to consider confounding factors in particular connected with the use of radio equipment.

RFES 2.4. Study of the effects on living organisms of electromagnetic fields in frequency bands that have not yet been widely studied, especially below 30 MHz (wireless energy transfer), for connected objects and above 2.5 GHz (deployment of 5G technology and emerging uses).

RFES 2.5. Additional studies to assess the health and psychosocial impact of the use of mobile communication technologies by children, in particular addictive phenomena, sleep and learning disorders, etc.

RFES 2.6. Study of the effects of radiofrequencies on the environment (fauna), including animal behaviour.

Electromagnetic hypersensitivity¹⁰

RFES 3.1. Investigation of tools to characterise subjects declaring themselves electrohypersensitive (EHS), physiological markers, biological markers, specific genetic markers.

RFES 3.2. Investigation of mechanisms that could explain electromagnetic hypersensitivity (for instance production of neurotransmitters, study of cryptochromes, etc.).

RFES 3.3. Investigation of links between the characteristics of electromagnetic fields (frequency, strength, modulation, temporal shape of signals, etc.) and the symptoms experienced by persons declaring themselves EHS (mainly through innovative protocols, etc.).

RFES 3.4. Investigations to explain the relationship between EHS and MCS¹¹, migraine, tinnitus, fibromyalgia, and medically unexplained syndromes more generally.

RFES 3.5. Investigation of vulnerability factors (for example comparative studies using control populations and populations with medically unexplained syndromes).

RFES 3.6. Research on the dynamics of the autonomic nervous system in individuals declaring themselves EHS (analysis of ortho/parasympathetic balance from heart-rate variability and other exploration techniques).

RFES 3.7. Research on the use, effectiveness and possible side effects of therapeutic measures (management of symptoms such as tinnitus, migraine) for subjects declaring themselves EHS; treatments used.

¹⁰ Or idiopathic environmental intolerance to electromagnetic fields.

¹¹ Multiple chemical sensitivity.

RFES 3.8. Investigation on metabolism and cerebral blood flow, the blood-brain barrier (using high-resolution imaging techniques) for people declaring themselves EHS.

RFES 3.9. Research on the effects of an MRI test (tolerance) on individuals declaring themselves EHS, compared with control subjects.

RFES 3.10. Sociological studies to understand the caregiver-patient relationship for people declaring themselves EHS.

RFES 3.11. Sociological comparison of subjects declaring themselves EHS in different countries.

Characterisation of exposure

RFES 4.1. Research on exposure measurement protocols for the 3.5 GHz and 26 GHz frequency bands in particular, for related technologies (5G, active antennas, small cells, etc.) and in realistic use situations.

RFES 4.2. Research on the specific nature of actual exposure of children and pregnant women to radiofrequencies when using radio devices (tablets, telephones, etc.).

RFES 4.3. Research on the characterisation of human exposure in the context of cumulative exposure or maximising exposure situations: power-line communication, new communication technologies, connected objects, autonomous and connected transport, etc.

ANNEX 2: Chargeable expenses

I. ELIGIBLE EXPENSES

Chargeable expenses should correspond to actual expenditure and be strictly linked to the project's execution, exclusive of any profit margin. In particular, only expenses incurred between the start and the end of the project, as stipulated in the agreement, will be taken into account. It should be possible at any time to prove the genuine nature of the expenses incurred. Receipts and all documents justifying the expenditure incurred under the project shall be kept by the recipients (coordinator team or participating team) for four years and submitted to Anses if requested.

Personnel expenses:

With the exception of public industrial and commercial entities, the personnel expenses taken into account in the amount of the financial contribution made by Anses cannot, under any circumstances, concern the permanent staff of public entities.

For these entities, the only expenses accepted are wages of fixed-term contract staff and professional fees, including social contributions and taxes on wages.

Operating expenditure:

- assignments,
- promotion,
- internal invoicing,
- internship bonus,
- maintenance,
- non-recoverable VAT,
- consumables,
- other expenses (educational, etc.).

Equipment expenses:

- scientific equipment: expenses incurred for equipment whose unit value is **greater than €1,600 excl. tax**. Anses will take into account:
 - all or part of the cost of purchasing this equipment, if it is not reusable after the project's completion (which should generally be the case);
 - the share of depreciation calculated pro rata to the period of use if the **equipment is reusable after the project's completion**, unless an exception is made by Anses;

- licences and patents.

General management fees:

Part of the general administrative fees linked to the project can count as expenses. These fees are limited to 4% of total expenses, unless an exception is made by Anses on the express request of the recipient (coordinator or participating team), with justification.

Service provision:

Regardless of their legal status, recipients (coordinator or participating team) can contract work to or lease equipment from entities outside of the project. The cost of this work shall remain marginal in relation to the programme's total cost (less than 30% of this total cost), unless an exception is made by Anses on the express request of the recipient, with justification. The costs of these services shall appear individually as overhead expenses.

Anses does not enter into commitments with service providers, who therefore have no grounds upon which to make any claim to Anses if the recipient (coordinator team or participating team) of a grant fails to comply with its obligations. Services are **provided exclusively for and under the supervision of the grant's recipient** (coordinator team or participating team). In accordance with the rules in force, the recipient (coordinator team or participating team) must pay for services as they are delivered, irrespective of the date of the payment expected from Anses.

Internal invoicing case:

These expenses must be related to services traceable in accounting, carried out by another entity (department) of the grant recipient (coordinator team or participating team). The costs of these services must be identified analytically.

In addition, these services must be proportionate to their actual use for the purposes of the project and must not have been taken into account in the structural costs and/or management fees. They must be invoiced exclusive of any profit margin.

These expenses must comply with the eligibility rules described in this Annex.

II. NON-ELIGIBLE EXPENSES

The following expenses cannot be paid by Anses:

- financial fixed assets and routine expenses to replace equipment;
- expenses related to marketing, sales and distribution fees;
- expenses related to land and buildings.