

National Research Program for Environmental and Occupational Health

“Radiofrequencies and Health”

2018 Call for Research Proposal

Deadline for submission of the letters of intent: December 19, 2017

Deadline for submission of the complete proposals: April 19, 2018

Note that in case of difference between English and French version, the latter is the correct one

I. OVERVIEW OF THE PROGRAM

The French National Research Program for Environmental and Occupational Health (PNR EST) is funded by Anses with funds from the ministries in charge of environment and of labour, and associates several co-founders: ADEME, TMOI Cancer of AVIESAN alliance under the “Cancer Plan”. It also benefits credits of the ECOPHYTO II plan of the ministries in charge of agriculture and environment (in relation with the French Agency for Biodiversity). In addition, funding from a tax on radio transmitters is added to other funds for projects on health effects of radio frequencies.

The French National Research Program for Environmental and Occupational Health (PNR EST) promotes the production of knowledge in support to public policies for environmental and occupational health and safety and disseminates this knowledge to stakeholders. This gives the program a leading role to promote interactions within the scientific community, which helps Anses to mobilise researchers for the collective expert assessment of health risks.

This program results in the launch of calls for research proposals. In this context, two calls are launched in late 2017: the present call, dedicated to the theme "radiofrequency and health", and the second which covers a wide area (excluding radiofrequencies).

II. OVERVIEW OF THE CALL FOR PROPOSALS

This call for Research Projects (APR) on "Radiofrequency and Health" was launched following the Anses reports on the same subject, published since October 2013¹. The CPR is aiming at creating new knowledge, especially to fill gaps or remove the doubts that have been highlighted in the reports. In addition, it aims to expand the size of the research community involved in the field of radio frequencies and health. During the selection process, a strong emphasis will be placed on the quality of the project methodology², insofar as they

¹<http://www.anses.fr/fr/documents/AP2011sa0150Ra.pdf>

²<https://www.anses.fr/fr/system/files/AP2012SA0091Ra.pdf>

² In the October 2013 report, it is mentioned on page 341 "ensure the methodological quality of the experimental protocols and the rigor of the analysis and interpretation of data from in vitro and in vivo studies by research teams both on the part

are intended to be used in future assessments.

III. SCOPE OF THE CALL FOR PROPOSALS

The call for proposals deals mainly with the assessment and analysis of risks related to radiofrequencies, to human health, in the general population and in the workplace. The themes covered by the 2013 CRP are listed in Annex 1 as a list of research items that have been identified as high-priority for potential users of this research.

IV. PROPOSAL CHARACTERISTICS

Proposals will be designed as research projects with a clearly identified goal. This excludes projects that look like contributions to larger projects.

These research projects will be conducted by a single team or a consortium involving several partners. Each team will have a well identified scientific leader. The project will be presented as a single proposal, the carrier being the scientist in charge of one of the teams. Funding is requested to complete the study or project. The rules are set out in Annex 2.

Two types of research proposals are expected in 2018:

Feasibility studies :

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

- Funding shall not exceed € 50,000
- The maximum implementation period shall be 2 years.

Complete projects :

These are research projects which rely on an established methodological approach so that there is a good level of assurance that the objectives will be achieved.

- Financial support will lie between € 40,000 and € 200,000. It can exceed € 200,000 if this is required by the project's nature and provided the request is strongly defended. This should be justified for instance for projects on radiofrequencies involving large consortia able to tackle all issues from engineering to biology. In any cases the budget request will be lower than a ceiling of € 400 000).
- The implementation period shall be 3 years maximum for a complete project.

V. SELECTION PROCEDURE

The selection procedure relies on two committees:

of RF exposure (exposure characterization, signal shape, justification for the choice of the type of exposure, etc..) that on the part relating to biological experimentation (blind experiment, appropriate positive and negative controls, allowing the interpretation of amplitude of changes related to RF exposure, identification of false positives, repeating experiments, sufficient statistical power, etc.)....”

- The research program's scientific committee (RPSC). It is made up of renowned researchers. The RPSC will assess the scientific value of the submitted proposals and of the progress reports from the funded projects.
- The program's steering committee (SC). It is made up of ministries involved in the scope covered by the call for proposals. The SC chooses the projects to be funded from the proposals selected by the RPSC.

The selection process 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, subsequent to shortlisted letters of intent.

The submission timetable and procedures are set forth in Section IX

Stage 1: Letter of intent shortlisting

Letters of intent that do not meet the eligibility criteria defined in Section VI will not be evaluated. The evaluation of the letters of intent will be made by the RPSC. This committee will take into account the selection criteria defined in Section VII. Members of the steering committee can be also consulted with respect with criterion 3 and the closeness of the letter of intent with their priorities. Special attention should be granted to the quality of the letters of intent, which need to contain enough information, in a small amount of space, to allow the RPSC to evaluate the relevance of the proposal. Only proposals whose letters of intent are shortlisted will be eligible to submit a complete application.

Stage 2: Complete application selection

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 proposals will then go through the following selection processes:

1. Collective scientific assessment of the proposals by the RPSC: Each proposal will be evaluated by two independent experts according to the criteria described in Section VII, and their conclusions submitted to the RPSC.
2. Collective opinion of the SC on projects selected by the RPSC, according to the criteria described in Section VII. This collective opinion takes also into account the available funds and priorities of funders. The SC can also give advice on appropriateness of requested funds with regards to planned tasks. Exceptionally it may recommend project modifications or even projects gathering to incorporate 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 proposal falls upon the funding entities. The list of selected proposals and the sponsor identity is published at the end of the selection process on the sponsors' websites.

VI. ELIGIBILITY CRITERIA

A proposal's eligibility will be examined at both selection stages, first through a letter of intent and second through a complete application, on the basis of the information that is available at each stage. Research proposals must meet the same conditions at both stages:

Proposal characteristics

1. The projects must lie within the research domain covered by the call for proposal as defined in section III.
2. The proposals' characteristics must be compatible with those listed in Section III.
3. The project must not contain actions that have already been funded under another call for projects. If there is any ambiguity, holders should describe the interactions of the project with other sources of funding.

Conditions regarding the participating teams .

1. The partnership must be clearly identified at the early stage
2. This call for proposals is open to all research teams³, irrespective of the institution they belong to (higher education and research establishments, research organisations, other public establishments with a research mission, technical centres and private establishments with R&D activity, etc.). Due to the particularities of the research domain addressed by the present call, partners other than research teams are welcome insofar as their added value in the project has clearly been established.
3. The proposal must involve one French academic establishment (higher education and research establishments, research organisations, other public establishments with a research mission).
4. The call for research proposals is open to foreign teams or to teams from international organizations. To facilitate foreign partnerships and project review, the CRP's text is available in English on the Anses website (same address as the French version).
5. A RPSC member cannot be the scientific leader of any team involved in the research proposal.

Administrative conditions

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

VII. CRITERIA FOR THE SCIENTIFIC ASSESSMENT OF PROPOSALS

A proposal will be examined at both selection stages, through a letter of intent and then a complete application, on the basis of the information that is available at each stage. The selection criteria are as follows:

³ About the eligibility of Anses teams, see the recommendation of its deontology committee <https://www.anses.fr/fr/system/files/DEON-Ft-2013003.pdf>

Letter of intent stage

Letters of intent are examined based on Criteria 1 to 4 on the list under the 'Complete application stage' heading.

Complete application stage

Proposals are assessed based on the following criteria :

- 1) The subject's scientific significance for the research area in environmental health and/or occupational health and/or risks for ecosystems, impact on French public policies.
- 2) Scientific novelty: proposals shall be justified with regard to research undertaken at French, European and international levels. When the aim of the project is to repeat a study, originality will be assessed on the method used to maximize the quality of the results of this second study,
- 3) Connection to research items. The considerations mentioned in the "Research items" Annex I will play an important role in the prioritisation of proposals, particularly by the steering committee,
- 4) Methodological quality and scientific feasibility. The approaches and the methodology must be sufficiently detailed so that the application can be evaluated, particularly at the full application stage.
- 5) Organisational and partnership excellence (the proposal must include a provisional project timetable),
- 6) Consortium excellence. Scientific output of the requesting parties, distribution of activities among teams. The skills necessary for the project achievement must be clearly presented.
- 7) Appropriateness of the project length and allocated resources (financial request, human investments). Quality of the supervision of non-permanent staff.
- 8) Confidence with respect to project results. For projects that may be the subject of controversy, any measures taken to ensure confidence in the quality of results⁴. When the aim of the project is to reproduce the result of a precedent study, the authors of the first study can join the consortium but may not be the project leader.

VIII. AGREEMENTS

The funding terms for the selected proposals shall be specified in the agreement between the sponsor and a "coordinator's" establishment⁵. This establishment will be in most of the case the one to which partner 1 is associated. The main rules are listed in annex 2. For all funders, in exchange for financial support, the research teams shall:

- Commit themselves to participate in actions to promote the results obtained during and/or at the end of the project (publications in peer-reviewed journals, presentations in conferences organised by the sponsor, contribution to summary reports, etc.),
- Supply, for complete projects a mid tem report, and in all cases at the end of the work, a complete final report and a popular scientific report which can be used by Anses in its missions,

⁴ For example, any information that could be used to reproduce experiments or reanalyse data, inter-partner trials, multiple points of view held by partners, etc.

⁵ Note that this agreement will be written in French

- Mention the National Research Program for Environmental and Occupational Health implemented by Anses, in particular in publications.

Considerable importance is granted to the rigour with which the scientific project manager leads the project, which means that the contractual commitments for the timing of deliverables should be fully respected, as these determine the grant's staged payments which in turn affect the sponsors' budgetary management.

IX. PROPOSAL SUBMISSION TERMS

Letters of intent must be submitted online by the scientific project managers no later than Thursday, the **19^h of December 2017, midday**, French time. They shall be submitted using the **Research and Intelligence ("Recherche et Veille") platform** (in French), available via the websites of Anses and the co-sponsors of the call for proposals. The platform will be operational around at the **beginning of November 2017**.

The project coordinator should carefully read eligibility rules listed in the present call for letter of intent or project stages. All compulsory items must be filled before the closing of the platform. An incomplete application will not be considered.

The letters of intent will then be evaluated and the result ("authorized to submit a full project or not") will be transmitted to the project manager. For projects submitted to the present call it is desirable that the text is written in English to allow evaluation on a broader scale. For those whose letters of intent are shortlisted, complete applications must be submitted by the scientific project managers:

- 1) Online, on the same platform, no later than **April 19, 2018 midday**, French time. Following electronic applications, an acknowledgment of receipt will be automatically sent to the scientific project managers.
- 2) By sending Anses a certificate which is published by the platform after the application is submitted. One printed copy of this certificate, with all required signatures⁶, must be sent by post to the following address no later than **May 25, 2018, midnight**:

Anses-DRV
APR EST RF 2018
ACI-COP-2-028
14 rue Pierre et Marie Curie
F-94701 MAISONS-ALFORT Cedex
France

⁶ It is recommended to gather all signatures on a single certificate. Nevertheless several certificates are accepted. Scanned signatures are not accepted.

Provisional key dates

November 2017	Opening of the call
November 2017	Opening of the platform for electronic submission
19 December 2017, midday	Deadline for submission of letters of intent
March 2018	The initial selection results sent to the scientific project managers.
19 April 2018, midday	Deadline for submission of full projects
25 May 2018, midnight	Deadline for submission of certificate
September 2018	Transmission of results to the scientific project manager

X. CONFIDENTIALITY

Members of the Scientific Committee of the research program, as well as experts called in the scientific evaluation of projects are subject to strict confidentiality on the content of the projects submitted to the call.

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

For projects selected for funding, the research content will be kept confidential. However, Anses publish the summary of the project as submitted to the present call. On the other hand, each funder may use this work for its internal needs in the terms he will define in agreement with the carrier. Finally, scientific reports issued at the end of the work will be submitted to the reviewers who therefore have access to their content.

For all administrative or scientific information requests or questions, please contact the CRP unit :

Scientific issues	Laetitia Dubois	recherche@anses.fr
Administrative issues	Aurélie Pajon	recherche@anses.fr 01 56 29 52 86
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ANNEX 1: Research Items

These questions are focused on the effects of radio frequencies, defined in the present project as frequencies in the range from 8.3 kHz⁷ to 300 GHz. In the case of projects about electromagnetic hypersensitivity, taking into account a broader frequency range can be useful and is thus authorized. The effects of electromagnetic fields can be studied for these fields alone or in combination with a cofactor. In addition to the signals corresponding to the current exposures, project leaders are invited to address new sources of exposure and associated signals (such as connected objects) and to the effect of various modulations used for mobile communication.

For these projects, the selection criterion "methodological quality and scientific feasibility" of Section VII includes: characterization of the exposure of target populations, implemented exposure protocols (frequency, duration, etc.) or exposure situations for observational studies (eg data operators), including electromagnetic sources, applicators or antennae used, the exposure environment (space, faraday cage, etc.) and the means for measuring the exposure (sensor type, bandwidth, frequency etc.).

Research for action mechanisms of radiofrequencies at the cell level

1. In vitro, in vivo and clinical studies on the mechanisms of action of radiofrequency at the molecular or cell level, in particular :
 - repair of DNA using deficient models for key factors of repair systems and adaptive response,
 - oxidation of nuclear and mitochondrial DNA,
 - expression of genes, epigenetic impact,
 - communication between cells, interrelation between organelles inside cells, and genetic metabolism,
 - carcinogenesis, from induction to the development of various types of cancer
 - pathologies associated with cell degeneration,
 - female fertility,
 - studies revisiting previous works on biological effects (see list in the "RF and Health" report (Anses, October 2013), pages 342 and following.)

⁷ Value set by the International Telecommunication Union

Research for physiological responses or health effects of radiofrequencies

This research will have to take into account the evolution of the electromagnetic environment: deployment of connected objects, new generations of mobile phones (4G, 5G), evolution of uses and therefore of exposure situations, etc.

1. In vivo or clinical studies on physiological responses to radiofrequencies, in particular :
 - on sleep (relying for man on objective criteria such as the ones defined by the American academy of sleep medicine)
 - on circadian rhythms
 - on metabolism (metabolomics analysis)
 - on reproduction and development on several generations of animals
 - on the autonomic nervous system (analysis of ortho / parasympathetic balance from heart rate variability and other exploration techniques);
 - on functional and brain development, according to age (in utero, juvenile, adult and elderly) through adulthood. Longitudinal studies in animals to identify possible vulnerability time windows;
 - on cognitive function (memory, reasoning, executive functions and attention):
 - in animal models, together with the study of the morphology and brain plasticity (electrophysiological approaches, metabolic markers, or hemodynamic or immuno-histochemical, etc.)
 - for humans: by conducting studies of provocation with adults and children at different ages of development , in situations of exposure to radiofrequencies or not, using psychometric instruments properly calibrated to brain imaging techniques and / or records of brain electrical activity (EEG) (including evoked potentials) in basal conditions or stimulation (cognitive tasks);
 - To check previous studies suggesting physiological or health effects (see list in the "RF and Health" report (Anses, October 2013), pages 342 and following.)
2. Epidemiological⁸ studies on possible effects of RF energy on health, including cancer, fertility disorders, neurodegenerative diseases, etc. ; and circadian rhythms and long-term effects of sleep physiological changes related to radio frequencies. In particular, studies involving more sensitive populations (epileptic patients, children, etc.) or less well documented (women, pregnant women, elderly) or especially vulnerable (workers);
3. Study of the effects of co exposures, approaching the actual exposure situations and to analyze the combined effects of RF and other environmental factors (physical or chemical).
4. Study of the effects of radio frequencies on the environment, including animal behavior.

⁸ Particular care will be taken to consider of confounding factors in particular in connection with the use of radio equipment

Electromagnetic hypersensitivity

1. Clinical characterization of functional symptoms (sleep, headache and migraine, digestion) experienced by people declaring themselves "EHS" (measurement or detailed questionnaires (internationally recognized or at least carefully optimized with respect to investigated symptoms)). People declaring themselves "EHS" can be their own control (with and without exposure), or they can be compared with non-EHS people.
2. Investigation of tools to characterize subjects declaring themselves people declaring themselves "EHS", physiological markers, biological markers, specific genetic markers.
3. Investigation of mechanisms which could explain electromagnetic hypersensitivity (for instance neurotransmitters, cryptochroms)
4. Investigation of links between certain characteristics of electromagnetic fields and the symptoms experienced by persons declaring themselves EHS (provocation experiments that take into account, in particular, the diversity and evolution of the electromagnetic environment, continuous exposure measurements and the collection of symptoms, etc.).
5. Investigations to explain relationship between EHS and multiple chemical sensitivity, migraine, tinnitus, fibromyalgia, and more generally medically unexplained syndromes
6. Investigation of vulnerabilities factors (for example comparative studies using control populations and populations with medically unexplained syndromes);
7. Research on the use, the effectiveness and possible side effects of therapeutic measures (management of symptoms such as tinnitus, migraine) for subjects declaring themselves "EHS".
8. Investigation on metabolism and cerebral blood flow, the blood-brain barrier (using high resolution imaging techniques) for people declaring themselves "EHS"
9. Research on the effects of an MRI (tolerance) test on individuals reporting EHS, in comparison with control subjects.
10. Sociological studies to understand the caregiver-care relationship for people declaring themselves "EHS".
11. Sociological comparison of subjects declaring themselves "EHS" in different countries.

Exposure characterization

1. Research on the characterization of the uses of different radio devices by children (types of devices, frequency and duration of use, depending on age, etc.)
2. Research on the actual exposure of children to radio frequencies when using radio devices (tablets, telephones, etc.);

ANNEX 2: Chargeable expenses

ELIGIBLE EXPENSES

Chargeable expenses should correspond to actual expenditure and should be strictly linked to the project's execution, exclusive of any profit margin. In particular, only expenses made between the start and the end of the project, as stipulated in the agreement, will be taken into account. It should be possible to prove the genuine nature of expenses incurred at any time. The recipients shall keep for four years all documents that justify the expenditure incurred under the project and shall submit them if requested by Anses.

Personnel expenses

The only expenses accepted are : wages of fixed-term contract personnel, and professional fees, including social contributions and taxes on wages.

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, involve the permanent personnel of public entities.

Overhead expenses and small-equipment expenses

The following expenses are accepted, including non-recoverable VAT:

- laboratory costs (procurement of products or consumables),
- office supplies,
- purchasing of patents or licenses,
- publication costs,
- travel expenses of permanent or temporary personnel assigned to the project, particularly for participation in Anses communication and dissemination events,
- conference registration fees related to the project,
- outsourced work (photos, etc.),
- maintenance of equipment purchased for the project,
- procurement of small equipment whose unit cost is less than €1,600 excl. tax
- allowances for trainees

Equipment expenses

Equipment expenses are 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 this equipment, if it is not reusable after the project's completion, (non reusability 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.

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 with justification.

Service delivery

Regardless of their legal status, recipients 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 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 on it if the recipient of a grant fails to respect its obligations. Services are provided exclusively for and under the supervision of the grant's recipient. In accordance with the rules in force, the recipient 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 department) of the beneficiary of the grant (coordinator or partner of the Project). 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 to the exclusion of any profit margin. These expenses must comply with the eligibility rules described in this Annex.

NON-ELIGIBLE EXPENSES

The following expenses cannot be covered 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.