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National Research Programme for Environmental and Occupational Health
2022 Call for Projects

Deadline for submitting letters of intent: 6 January 2022
Deadline for submitting complete proposals: 7 April 2022

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 of the Environment, Agriculture and Labour, and also involves several co-funding partners[1], including ADEME and ITMO Cancer from the AVIESAN Alliance. For this 2022 edition of the PNR EST, additional funding will be allocated by ANSES to finance research projects on air quality, and by the Ministry of the Environment to finance research projects on endocrine disruptors. Moreover, further funding from the Ministry of the Environment will fund projects on the health effects of radiofrequencies.

The National Research Programme for Environmental and Occupational Health (PNR EST) promotes knowledge production in support of public policymaking for environmental and occupational health and safety, for the benefit of public health, and disseminates this knowledge to stakeholders. This gives the programme a leading role in fostering interactions within the scientific community, which helps ANSES mobilise researchers for its collective expert assessments of health risks.

This programme therefore organises calls for research projects. Two calls will be funded in 2022: this one, of a general nature, covering a wide area and including, for the fourth year running, a budget devoted to research on endocrine disruptors; and a second call dedicated to the theme "Radiofrequencies and health".

[1] This funding scheme plays a significant role in determining the way projects are selected, with regard to the criterion "impact on public policies". Project managers are advised to consult Annex I.

II. OVERVIEW OF THE CALL FOR PROJECTS

This call for research projects (CRP) is issued each year to motivate scientific communities in the fields of environmental and occupational health to develop new methods and tools at all stages of risk assessments for health or ecosystems, particularly in order to document research issues raised by the relevant ministries and government agencies. **Particular interest is paid to research topics whose results can be used rapidly by public policymakers** and will lead to sustainable progress in the area of human health, in the general population or in the workplace, or in the quality of different ecosystems. These research projects should be able to contribute to a better understanding of issues that are now identified as critical and important: those of multiple exposure, characterisation of the exposome and its effects on health, impacts related to climate change, biodiversity, improving risk assessment methods, and including socio-economic dimensions and systemic approaches, or impact assessment methods such as multi-criteria analysis. Research projects are selected based on their originality and scientific quality and should strengthen knowledge, in particular, on critical points in the assessment or management of risks to health or ecosystems, with the ultimate goal being to inform decision-makers in support of public policymaking in the field.

At the national level, this call for research projects supplements other calls published in 2021 or for 2022. These include:

- ANR calls for projects (see the ANR 2022 action plan)
- Ecophyto calls for projects
- ADEME calls for research projects:
  https://www.ademe.fr/recherche-innovation
  - BAT-RESP – Towards Responsible Buildings: launched in September 2021
    https://agirpourlatransition.ademe.fr/entreprises/aides-financieres/20210910/batresp2021-167
  - GESIPOL – Integrated management of polluted soil: launching in 2022
  - Call for thesis applications: opened in the first quarter of 2021

III. SCOPE OF THE CALL FOR PROJECTS

The programme concerns the assessment and analysis of environmental risks to human health, in the general population or in the workplace, as well as risks to ecosystems or to the quality of different environments.

The scope of the CRP covers a wide range of risks from emerging through to known risks, including complex risks that are still scientifically controversial. The topics covered by the CRP in 2022 are listed in Annex 2. Each of them is accompanied by a

list of research questions of interest to potential users of the research results, who can refer to them during risk assessments or when developing risk management measures.

The programme seeks to stimulate original, multidisciplinary research projects that address one or more of these research questions.

- It is open to researchers working in the human and social sciences, biological and health sciences, physical and chemical sciences, engineering and environmental sciences.
- Proposals combining multidisciplinary approaches, especially those including human and social science approaches, are encouraged[2].
- The programme excludes studies on food in the strict sense (including drinking water), apart from the study of contaminants to which humans may be exposed by this route.

The call for proposals also encourages researchers to:

- use data made available to research communities according to the FAIR principles: biobanks, databases from national or international biomonitoring studies, occupational health data collected by health services, registers, etc.
- take gender into account in the studies.
- develop approaches that take uncertainty and the weight of evidence into account.

IV. PROPOSAL CHARACTERISTICS

Proposals shall be designed as research projects with a clearly identified goal and duration. This excludes projects that may only appear as contributions to larger research programmes and projects without specific deliverables identified under the terms 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 leader 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 3.

[2] https://www.anses.fr/en/content/social-sciences-anses

The research projects submitted must comply with the principles of scientific integrity and ethics of the French Charter of Ethics for Research Professions.

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 this is required by the project's nature, and provided the request is justified.
- 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, who will assess the scientific value of the submitted projects.
- The research programme's steering committee (COPR). It is made up of funding bodies[3] and ministries involved in the scope covered by the call, as well as the ANR. The steering committee chooses the projects to be funded from the list drawn up by the scientific committee.

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, from among the shortlisted letters of intent.

The submission timetable and terms are described in Section IX.

[3] As defined in Annex 1

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 scientific committee will assess the letters of intent, taking into account the scientific assessment criteria defined in Section VII. Members of the steering committee may also be consulted regarding the third assessment criterion 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 scientific committee to evaluate the relevance of the proposal. Only proposals whose letters of intent are shortlisted 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. Eligible projects will then go through the following selection process:

1. Collective scientific assessment of the projects by the scientific committee, 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 steering committee.

2. Collective opinion of the steering committee on the funding for projects shortlisted by the scientific committee. This collective opinion also takes into account the budgets and priorities of the funding bodies concerned, which are highlighted in the research questions in Annex 2. The steering committee can also provide advice on the appropriateness of the requested funds with regard to the planned tasks. Under exceptional circumstances, it may recommend project modifications or even consolidation 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 project is made by the funding bodies. The list of selected projects and the funding bodies' identities is published at the end of the selection process on the ANSES website.

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 that is available at each stage. Research projects must meet the same conditions at each stage:

Proposal characteristics

1. The projects must fall within the research domain covered by the call as defined in Section III.
2. The proposals' characteristics must be compatible with those listed in Section IV.
3. The projects must not contain actions that have already been funded under another call for projects. If there is any ambiguity, project managers should describe how any 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 projects is open to all research teams, irrespective of the institution to which they belong[4] (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 has been 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 projects is open to foreign teams or to teams from international organisations. To facilitate foreign partnerships and the independent assessment of projects, the text of the CRP is available in English on the ANSES website and applicants are encouraged to write their proposals in English.

5. A scientific committee member cannot hold any management role in a project (scientific leader of any team involved in the research project).

[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

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 project must 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 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 that is available at each stage. The assessment criteria are as follows:

Letter of intent stage

Letters of intent are reviewed according to the following four criteria:

1) The subject's scientific significance for the research topics of 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.
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 steering committee.
4) Methodological quality, in particular, relevance of the choice of methods and scientific feasibility.

Complete application stage

Projects are assessed based on the following criteria:

1) The subject's scientific significance for the research topics of 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.
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 steering committee.
4) Methodological quality, in particular, relevance of the choice of methods and scientific feasibility.

5) Organisational and partnership excellence (the project must include a provisional project timetable).
6) Consortium excellence. Scientific output of the applicants, in particular of the coordinator, distribution of activities among teams.
7) Appropriateness of the project length 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, 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.).

VIII. AGREEMENT

The funding terms for the selected projects will be specified in the agreement between the funding body and the coordinator's establishment (or the establishments involved in the project, in the event of funding by ADEME). The main rules are listed in Annex 3.

For all funding bodies, 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 the funding body, 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 report and a popular scientific summary that can be used by ANSES and the funding body** in their missions.
- Mention the support provided by the National Research Programme for Environmental and Occupational Health and the funding body on appropriate occasions, in particular in publications, as stipulated in the agreement.

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:

- Deposit the scientific publications (full text) resulting from the project funded under this call in an open archive, either directly in HAL or through a local

institutional archive, under the conditions of Article 30 of the Digital Republic Act (Article L533-4 of the French Research Code)[5]

- **Provide 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 when the work has been completed.

In addition, ANSES recommends giving priority to publication in native open access journals or books[6].

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

IX. PROJECT SUBMISSION TERMS

Letters of intent must be submitted online by the project managers no later than **6 January 2022 at noon (12:00),** French time. Projects shall be submitted using the **Research and Scientific Watch (*Recherche et Veille*) platform** available via the websites of ANSES and the bodies co-funding the call for projects. The platform will be operational in **mid-November 2021**.

Important: The project manager should carefully read the eligibility rules listed in this call for projects, including at the letters of intent stage.
All compulsory sections must be completed before the deadline. Incomplete applications will not be considered. Applicants are therefore advised to prepare in advance.

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

For those whose letters of intent are shortlisted, complete applications must be submitted by the project managers:

1) Online, on the same platform, no later than **7 April 2022 at noon (12:00)**, French time. Acknowledgement of receipt of electronic applications will be automatically sent to the project manager. All compulsory sections must be

[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.

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

2) Then through a certificate[7] confirming receipt, which is issued by the platform after the application is submitted. This certificate should be returned by the project manager electronically, with all required signatures, no later than **10 May 2022 at midnight (00:00)**.

Provisional key dates

November 2021	Opening of the call
Mid-November 2021	Opening of the platform for letters of intent
6 January 2022 at noon	Deadline for submitting letters of intent
February 2022	Project managers informed of the first selection results, based on the letters of intent
7 April 2022 at noon	Deadline for submitting complete applications
10 May 2022 at midnight	Deadline for returning certificates
September 2022	Project managers informed of the steering committee's results on final selection

X. CONFIDENTIALITY

Members of the Research Programme's scientific committee, 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 programme steering committee are 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 projects.

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 projects, along with the names of the partners. In addition, each funding organisation

[7] This certificate commits the partners to the fact that the establishments to which the project leader's team and the partner teams belong have been informed of submission of the project and have given their agreement.

that is a signatory to the agreement with the managing organisation appointed by the project coordinator may use this work for its internal needs according to the terms defined in the agreement signed with the project manager. 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 all questions or requests for administrative or scientific information, please contact the CRP unit:

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Administrative issues	Aurélie Pajon	recherche@anses.fr +33 (0)1 56 29 52 86
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ANNEX 1: Funding bodies

ANSES and its co-funding partners for the call for projects are seeking to implement their research priorities in a common framework, thereby improving this programme's visibility and transparency to the relevant scientific communities.

I. ANSES

The French Agency for Food, Environmental and Occupational Health & Safety is an administrative public establishment accountable to the French Ministries of Health, Agriculture, the Environment, Labour and Consumer Affairs.

Its principal mission is to **contribute to the protection of human health with respect to the environment, the workplace and food**. It also helps to ensure:

- protection of animal health and welfare;
- protection of plant health;
- assessments of the nutritional and functional properties of foods.

Lastly, it conducts missions relating to veterinary medicinal products.

ANSES undertakes **independent and pluralistic scientific expert assessments**. Moreover, in its area of expertise, the Agency defines, implements and funds scientific and technical **research programmes**, particularly through the National Research Programme for Environmental and Occupational Health (PNR EST). These research programmes contribute to its missions in the areas described below.

In the field of environmental health, ANSES assesses the impact of the environment on health, so as to better identify health risks associated with pollution of the living environment (air, water, soil) or with physical agents (fields and waves). The Agency therefore intervenes on major issues (exposure to biological, chemical and physical agents, electromagnetic fields, cancer and the environment, etc.) in order to provide society and the public authorities with the latest scientific knowledge at all times.

In the field of occupational health, ANSES's primary mission is to provide the authorities with the information needed for making decisions on occupational risk prevention and to support the main public policies in this area. The Agency provides scientific knowledge useful for the formulation of national and European regulations, and develops reference values to protect workers.

Since 1 January 2018, ANSES has been entrusted with providing risk assessment expertise and scientific and technical support in the field of vectors, at the request of the Ministries of Health and Agriculture. A number of research projects on this topic may be funded by the PNR EST as part of the support provided by the Ministry of

Agriculture's Directorate General for Food on the "vector control" topic, primarily in the fields of animal and plant health.

For this 2022 edition of the PNR EST, additional funding will be allocated by ANSES to finance research projects on air quality, within the framework of mobilisation of part of the proceeds of penalties paid to the Agency by decision of the Council of State.

II. MINISTRY OF ECOLOGICAL TRANSITION

The Ministry allocates part of its research and innovation budget to the research programme managed by ANSES. The PNR EST is the descendant of the Environment & Health programme that was launched by the then Ministry of the Environment and delegated to AFSSE when it was created in 2002. This budget gives the programme a broad spectrum in the field of environmental health. In addition to ANSES's missions, the Ministry also aims to address emerging issues in the field of research, to anticipate and act in support of the ministry's public policies. ANSES's programme and activities for the coordination and promotion of the research it undertakes contribute to this objective.

In this respect, the fourth National Environmental Health Action Plan 4 (PNSE 4), co-led by the Ministries of the Environment and Health and published on 7 May 2021, includes a significant research component. By integrating the "One Health" principle, its objective is to better characterise the human and environmental exposome, improve knowledge of its effects on health, and better understand the links between society, biodiversity, ecosystem functioning and the emergence of zoonotic infectious diseases. Research projects that integrate issues of multiple exposure and the exposome will help address the challenges of this plan.

The Ministry of Ecological Transition is a major contributor to the funding of this call for projects on many questions. Its choices are determined by its scope of action. The Ministry's responsibilities include health risks related to chemical and physical agents, as well as risks to ecosystems. On the other hand, it does not deal with risks relating to food or drinking water.

III. MINISTRY OF LABOUR

The Ministry of Labour has made research in occupational health one of its priority themes, through its 2016-2020 Occupational Health Plan. It aims to mobilise the scientific community on research questions related to occupational risk assessment for worker health.

As a co-funding partner of the environmental and occupational health research programme led by ANSES since 2005, the Ministry of Labour aims, through the research questions it proposes, to deepen and extend knowledge of factors that impair the physical or mental health of workers, and better prevent health risks in the workplace.

The priority topics that can be financed in response to the research questions for the 2022 call are studies designed to:

- identify/evaluate toxicological mechanisms that are still little known but have a high probability of occurrence in an occupational context (example: multiple exposure);
- identify/evaluate occupational health risks that are known or emerging but in sectors that are not well documented (for example: the non-auditory effects of noise for workers exposed via their workplaces, the exposure of workers to low frequencies, or a chemical agent that has not yet been widely studied in the context of occupational risks);
- develop innovative analytical techniques to facilitate/clarify the monitoring of occupational exposure (e.g. new biomarkers for medical monitoring);
- develop innovative techniques to facilitate/clarify the prevention of occupational health risks (examples: substitution of chemical agents, new collection systems, etc.);
- develop knowledge on the health impacts of new technologies, new forms of work organisation, situations of insecurity, gender-based work situations, etc.;
- develop knowledge on socio-cultural barriers to acceptance of and compliance with regulations, for the sake of effective prevention, by employers as well as employees, especially in micro-businesses and SMEs.

IV. ADEME

The French Environment and Energy Management Agency (ADEME) is a public establishment under the joint authority of the Ministries of Ecology and Higher Education and Research. It implements public policies related to the environment, energy and sustainable development. ADEME makes its expert assessment and consulting capacities available to businesses, local and state authorities, and the general public, and helps them fund projects in various areas (waste management, soil conservation, energy efficiency and renewable energies, air quality) and make progress with regard to sustainable development. ADEME's activities aim to offer prioritised responses to offset the impact of environmental problems. They lead to the promotion of novel practices and new economically and socially acceptable

processes. The social acceptance of projects largely depends on the safety to health and the environment of the solutions that are recommended or implemented.

ADEME's mission therefore includes assessing the environmental and health risks related to new technologies and development projects in its areas of expertise.

In addition, the Agency issues calls for projects related to the social and environmental health impacts of human activities. In particular, it manages the IMPACTS (Impact of interactions between pollutants on humans and their environment), GRAINE (Managing, producing and making use of biomass), CO3 (Co-construction of knowledge for ecological and supportive transition) and TEES (Ecological, economic and social transitions) research programmes, as well as the new CRP on air, AQACIA (Improving air quality: understanding, innovating, acting).

V. ITMO CANCER FROM THE AVIESAN ALLIANCE

The National Alliance for Life Sciences and Health (AVIESAN) has entrusted the Multi-Agency Thematic Institutes (ITMOs) with the task of coordinating national research operators. Nine ITMOs are currently operational, including the Multi-Agency Thematic Institute for Cancer (ITMO Cancer from the AVIESAN Alliance).

The goal of ITMO Cancer from the AVIESAN Alliance is to bring together all the research teams working on different types of cancer, regardless of their affiliation. Its purpose is to propose specific actions to improve the performance and competitiveness of French research, to ensure effective coordination between all the organisations and institutions involved in cancer research, and to stimulate debate and facilitate interdisciplinary exchanges in the cancer community. It was responsible or jointly responsible for the implementation of 17 actions of the Cancer Plan III (2014-2019) including Action 12.5: "Develop observation and monitoring and improve knowledge about cancers related to environmental exposure in the general population". It is now a major player in the ten-year cancer prevention strategy (2021-2030) to which it has actively contributed alongside the French Cancer Institute (INCa).

ITMO Cancer from the AVIESAN Alliance therefore works in partnership with the stakeholders of the various cancer research organisations in order to:

- develop a national strategic vision in the field of cancer
- develop innovative and ambitious projects meeting a real scientific or medical need
- organise cross-cutting contacts between thematic areas
- coordinate the action of public research players, particularly research organisations, universities, university hospitals and funding agencies

- work to improve the value of research by facilitating interactions and partnerships with industry and patient organisations
- make French research more visible and attractive on the European and international scenes

ITMO Cancer from the AVIESAN Alliance is therefore a facilitator of cross-cutting debate and actions, and wishes to continue its financial support for the cancer and environmental exposure topic.

As part of the PNR EST call for projects and with funds managed by INSERM, ITMO Cancer from the AVIESAN Alliance will potentially finance studies that deal with the identification, mechanisms of action, effects and ways to protect against cancer risk factors (chemical, physical, biological or behavioural) in the private or occupational sphere.

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ANNEX 2: Research questions

This annex provides a list of research questions in relation to which the research projects should be defined.
These research questions should be understood as relevant to the area covered by the call as defined in Section III. Their order does not reflect any priority. However, within some topics, **the questions in red are regarded as priorities. Applicants are also advised to refer to Annex 1 presenting the funding bodies.**

Physical agents
Noise pollution
1. Evaluation of extra-auditory effects for the general population and/or workers (for example respiratory diseases, school learning). 2. Evaluation of the health benefits of noise control measures, in particular through modulators of the effects of noise (insulation, green spaces, etc.).
Non-ionising radiation
1. Characterisation and impact of exposure to electromagnetic fields (from static to 8 kHz), including stray currents, on populations and the environment. 2. Characterisation and health impact of individual worker exposure to solar UV radiation, particularly in the context of local climate warming. 3. Characterisation of workers' exposure to artificial optical radiation (wavelength between 100 nanometres and 1 millimetre). Study of the long-term effects of blue light on the retina and for LEDs. Combined effect of blue light with other wavelengths. 4. Occupational exposure and effects associated with MRIs.
Light pollution
1. Characterisation of exposure and impacts of light pollution for the general population and the environment. Combined effect of light and noise pollution.

Fibres and nanomaterials

Mineral fibres

1. Metrology, emissivity and health effects of elongate mineral particles of interest and short asbestos fibres.
2. Fundamental research on the way spherical or fibrous particles migrate in the body, for different exposure routes (inhalation and ingestion).

Nanomaterials and nanoparticles

1. Characterisation, distribution and fate in environmental compartments of nanomaterials to which the general population and living organisms are exposed.
2. Emission potential of nanoproducts under normal or predictable conditions of use.
3. Assessment of human exposure (including via the oral route) to engineered nanomaterials (measurement, modelling), taking the whole product lifecycle into account. Development of global approach methodologies (grouping/read-across): grouping of substances according to their characteristics and behaviour.
4. Ecotoxicology and toxicology of nanomaterials. Methodological research, reference methods, reference materials. Comparison of studies.

Cancer

Studies may be based on a variety of data: clinical, biological, behavioural and socio-economic.

1. Study of cancer risks related to environmental and/or occupational exposure to potentially carcinogenic substances (including a "lifelong" approach).
2. Effects on humans and the environment of low doses of CMR agents (Categories 1A and 1B of the CLP Regulation of the European Parliament) and/or cumulative exposure.
3. Identification of environmental or occupational risk factors for cancer.
4. Gene/environment/behaviour interactions, epigenetic mechanisms.
5. Development of cost/benefit quantification methods applied to the prevention and/or management of cancer.
6. Identification and/or validation of biomarkers to assess risks in environmental or occupational exposure situations.

Chemical agents

This topic encompasses all chemical agents (including plant protection and biocidal products): substances authorised on their own or in formulation, metabolites and degradation products, and substitutes for substances that are prohibited or whose use is restricted.

1. Effects on ecosystems and human health: in particular low-dose effects, cocktail effects and dose-effect relationships.
2. Characterisation of exposures and study, by experimental and epidemiological means, of the health impacts on the general population and on vulnerable, little-studied populations (asthmatics, sufferers of chronic respiratory insufficiency, people who are overweight or obese, those suffering from psychological disorders or in a situation of social vulnerability, etc.)
3. Consideration of multiple exposures and co-exposures in relation to the exposome:
   - Impacts of exposure to chemicals in the workplace and in the general population, particularly multiple or cumulative exposure to chemicals and other types of nuisances (physical, biological, stress-related, organisational, etc.).
   - *In vitro* and *in vivo* animal models: development of global "cocktail effect" indicators for assessing the toxicity of substance mixtures for chronic exposure assessment. Identification of sentinel species for the impacts of chemical pollution.
   - impacts on human health and ecosystems of co-exposures to microbiological and chemical agents.
4. Development of methods and tools for measuring biological concentrations in populations exposed to chemicals, development of biomarkers of exposure and effects, determination of possible critical exposure windows.
5. Assessment of the effectiveness of preventive measures for contaminants posing a risk to human health and ecosystems.
6. Support for the optimisation of chemical assessment protocols: improvement of methods, especially in terms of speed, while maintaining the representativeness of impacts on human health and ecosystems.
7. Quantification of exposure levels and impacts for different exposure routes: dermal penetration (semi-volatile organic compounds, pesticide compounds), respiratory route.
8. Development of an *in vitro* bioaccessibility test to assess the adsorption of organic compounds in the human body, and *in vivo* validation.
9. Improvement of knowledge of chemical metabolites, in particular from plant protection products (identification by non-targeted analysis, mobility and persistence in soil and water, effectiveness of drinking water treatment systems, etc.).
10. Development of new toxicological tools (3D models, synthetic biology) applicable to risk assessment. Validation and limitations of the use of these models.

11. Characterisation of exposure levels at the ecosystem scale for environmental biomonitoring.
12. Construction of tools to establish links between environmental exposure (air, water, soil, food) and contamination of human populations (PBPK modelling, cross-referencing with environmental databases, etc.) in order to identify exposure sources and routes, contamination kinetics, etc., and thus define suitable management and prevention measures.

Endocrine disruptors

Research questions on endocrine disruptors will focus on the health or environmental impacts of all substances of interest, relating to their endocrine-disrupting activity, and for which such an effect is known, presumed, suspected or not yet identified.

Research on compounds that are still authorised will be given greater attention.

1. Development of methods for investigating mechanisms of action (including epigenetic).
2. Study of modes of action with a view to identifying possible endocrine disruption related to the development of metabolic and hormonal diseases, including from the perspective of trans/intergenerational effects.
3. Study of low-dose toxicity and dose-response relationships.
4. Study of cocktail effects (especially for mixtures from the same chemical class).
5. Development of biomarkers of exposure and/or effects for known, presumed or suspected endocrine-disrupting substances.
6. Studies on exposure levels and risk assessment for workers (direct exposure) and for the general population (direct and indirect exposure, for example via food), in particular for vulnerable or sensitive populations (children, pregnant women, people with diseases, etc.). Determination of possible critical exposure windows.
7. Construction of tools to link biomonitoring (internal exposure) / external exposure / health impacts (health reference values) for endocrine disruptors.

Biological agents

1. Links between ecosystem degradation, damage to biodiversity and increased frequency of epidemics involving emerging or re-emerging infectious zoonotic and/or vector-borne diseases:
   - links between degradation of natural habitats (deforestation, mining, agriculture, etc.), increased contact between humans or farm animals and wildlife, and the phenomenon of crossing the species barrier;
   - impacts of biodiversity loss on the functioning of ecosystems in terms of regulating infectious diseases;
   - contributions from biomonitoring of ecosystems and wildlife in terms of prevention and mapping of risk hotspots.
2. Exposure of the general population and/or workers to bioaerosols and to various biological agents (micro-organisms, toxins, mould, pollen, viruses and pathogenic bacteria).
3. Behaviour and fate of pathogens in various environmental compartments, and potential effects on human health:
   - study in aquatic environments,
   - study of the modes of transmission, spread and viability of biological agents in air.
4. Associations between biological agents and disease (such as cancer, and respiratory or skin sensitisation). Long-term health effects in relation to mould exposure. Dose-response relationships in relation to exposure to biological agents (mould, pollen, etc.).
5. Impacts on human health and ecosystems of co-exposures to microbiological and chemical agents.

Cross-cutting human and social science questions on health and environmental risks

1. Citizen contributions (knowledge of laypersons, whistleblowers, scientific watch, vigilance schemes, use of open data, participatory research and expert assessments):
   - to expert assessment processes and to the production of environmental health knowledge, including surveillance schemes,
   - to processes for managing health and environmental crises, including infectious disease outbreaks.

2. Lobbying and interest groups in the production of knowledge and standards, and in risk governance.
3. Effectiveness and impact of information/communication and risk prevention tools on health and environmental risks (health recommendations for reducing exposure, consultation for environmental diseases, disease monitoring schemes, vigilance schemes for adverse effects, etc.) taking the socio/medico-economic dimension into account.
4. Multifactorial approaches (gender, socio-economic situations, geographical, cultural and behavioural factors, etc.) to inequalities in exposure to health and environmental risks.
5. Multi-arena (especially digital) controversies on health and environmental risks.
6. Socio-economic, political and organisational dynamics of product manufacturing and marketing, and of companies' compliance with health regulations (public health, occupational health).
7. New ways of organising work, digital technologies and health: issues and impacts on prevention and protection in occupational health (including mental health).
8. Regimes for producing and validating scientific knowledge in the governance of health and environmental risks.
9. The place of health and environmental issues in innovation strategies, the development of new technologies, and in corporate social responsibility and environmental policies.
10. Approaches and methodologies for socio-economic analysis applied to risk exposure conditions, health and environmental impact studies and regulatory measure assessment.
11. Legal standards, data protection and public access to information.
12. Impact of demographic change/ageing population and sedentary behaviour on occupational health.
13. Assessment of the determinants (economic, social, organisational) of ensuring the safety of personnel and the effectiveness of preventive measures.
14. Study of the consequences of health crises on work organisation and occupational health. Impact on physical and mental health of imposed telework. Impact on the physical and mental health of healthcare professionals, especially those directly exposed. Impact of "long COVID" on the return to work and keeping workers in employment.

Environmental media and contamination

Emerging contaminants

1. Case of plastics (macro, micro, nano): composition and metrology of micro/nanoplastics in various environmental compartments (soil, air, aquatic environments, biotope, etc.); characterisation of the dynamics of plastics and related chemicals between these various compartments; persistence of pathogens on the surface; biodegradability; exposure sources and routes; detection methods and measurements of accumulation in human tissue; associated risks to humans and the environment.
2. Emerging issues: chemical, physical and biological risks to humans and the environment, exposure characterisation.

Air

1. Assessment of exposure and the health impacts associated with chemicals, biological agents including aerobiological agents (e.g. pollen, mould, endotoxins) and particulate matter (according to its chemical composition, size and source) in air, and interaction with other environmental (e.g. climate change) and socio-economic factors:
   - in different industry sectors (building and public works),
   - in the French overseas *départements* and regions,
   - in specific environments (shops, offices, means of transport),
   - associated with dust levels and ingested dust quantities and rates adapted to the French context.
2. Links between air pollution and health impact assessment: research on new tools (e.g. air quality databases, modelling, biomonitoring, etc.) designed to improve the study of the dose-response relationship useful for risk assessment.
3. Assessment of the health effects of exposure to outdoor ambient air particulate matter including "metrics"[8] of exposure other than the mass of PM_{10} and $PM_{2.5}$, in particular for ultrafine particles (UFPs), black carbon and organic carbon.
4. Relevant indicators for assessing chronic and/or cumulative exposure to air pollution (indoor/outdoor).
5. Assessment of the effects (additivity or interaction) of mixtures of substances in air (indoor/outdoor); study of the sensory irritation effect.

[8] "metric" meaning a way/methodology of characterising exposure with a view to determining its link with health effects; research into innovative approaches in this respect is encouraged.

Waste

1. Exposure to waste and its effects on ecosystems and health in the general population and at work, regardless of the study environment (marine waste, soil, fresh water, etc.).
2. Health and environmental risks during the waste lifecycle:
   - associated with the presence of chemicals in recycled waste.
   - related to the presence of pathogens.

Vectors, climate change and health: Management measures

Vectors and vector control

Taking cropping and animal husbandry practices, the role of wildlife and/or climate change into account

1. Vectors and animal or plant health: biology, ecology, vector distribution and surveillance, host-pathogen relationships, pathogen detection, resistance.
2. Vector control and animal or plant health: new active substances and biocidal products, development of innovative technologies (biological control, genetic control, etc.) including the optimisation of trapping and broad-spectrum methods. Effectiveness and impacts of vector control. Cost-effectiveness or benefit-risk indicators.

Climate and management measures

1. Health impacts of climate change:
   - Direct impacts (immediate and long-term health consequences of heat and exceptional climatic events, especially on vulnerable populations and workers).
   - Indirect impacts through the development of emerging diseases.
   - Indirect impacts through the quality of environments and food.
   - Economic consequences.
   - Development of measurement tools and indicators.
2. Epidemiological studies on "health and adaptation" in the French overseas territories.
3. Quantifying the health and environmental benefits of management measures.
4. Impact of biodiversity and green and blue spaces on human physical and mental health.

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ANNEX 3: Chargeable expenses

I. BACKGROUND

The majority of successful applications are managed directly by ANSES (when funding comes from ANSES or ITMO Cancer AVIESAN, which has delegated management to ANSES). The financial rules that will be applied by ANSES are presented in this Annex. They help clarify the expenses that can be covered in the submitted projects.

However, some applications will be directly managed by other co-funding partners (ADEME, French Agency for Biodiversity). ADEME has its own specific funding rules. Its general rules for allocating and paying financial aid, as well as its system of aid for research, development and innovation (RDI), are available for information at:

http://www.ademe.fr/recherche-innovation/financer-theses-recherche-linnovation/systeme-daide-rdi

ADEME contact Hélène Desqueyroux helene.desqueyroux@ademe.fr

To simplify the process, **the rules applicable at ANSES are taken into account on the CRP submission site.** If a project is managed by a co-funding partner, this partner may negotiate modifications with the project managers.

II. 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 beneficiaries (coordinator or participating team) for four years and submitted to ANSES on requested.

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,
- purchase of patents or licences,
- 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, computing, 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 regarded as 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.

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, beneficiaries (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 beneficiary, 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 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 or

participating team). In accordance with the rules in force, the recipient (coordinator 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 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.

III. 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.