

**SR-4. Systematic reviews of exposure to radiofrequency fields and adverse reproductive outcomes (animal and *in-vitro* studies studies)**

The World Health Organization's (WHO) Radiation Programme in the Department of Public Health, Environmental and Social Determinants of Health (Geneva, Switzerland) has an ongoing project to assess potential health effects of exposure to radiofrequency electromagnetic fields in the general and working population. To prioritize potential adverse health outcomes, WHO conducted a broad international survey in 2018. Ten major topics were identified for which WHO will now commission systematic reviews to analyze and synthesize the available evidence.

Through this Call, WHO invites eligible teams to indicate their interest in undertaking a systematic review on radiofrequency fields and adverse reproductive outcomes, in particular **impaired male fertility and adverse pregnancy and birth outcomes** (experimental animal and *in-vitro* studies).

Participating review teams will receive ongoing methodological guidance from WHO Secretariat. The team's contribution of a systematic review will be acknowledged in the official WHO publication on radiofrequency fields. The systematic reviews will be submitted for open-access international peer-reviewed publication(s).

***Scope of the research***

The review team should conduct a systematic review on the topic of exposure to radiofrequency fields and adverse reproductive outcomes for the following three PECO<sup>1</sup> questions:

1. Effect of exposure to radiofrequency fields (E) on male fertility (O) compared to sham exposure (C) in experimental animals (P)
2. Effect of exposure to radiofrequency fields (E) on male fertility (O) compared to sham exposure (C) in using *in-vitro* human semen (P)
3. Effect of exposure to radiofrequency fields (E) on adverse pregnancy and birth outcomes (O) compared to sham exposure (C) in experimental animals (P)

***Systematic review approach***

The systematic reviews should be conducted according to the quality requirements for systematic reviews as formulated in the [WHO Handbook of Guideline Development](#) and should be reported according to the [PRISMA standard](#). WHO will provide review teams with a detailed draft protocol stating the PECO questions and methods for conducting the systematic review based on state-of-the-art methods. The systematic review teams will be asked to finalize the protocols and to register them in the [PROSPERO](#) database. The systematic reviews will then be conducted according to the lines set out in the protocols. The final deliverables are systematic reviews in scientific article format. A small contribution towards the operating costs for the conduct of the systematic review will be available.

---

<sup>1</sup> PECO is an acronym for the four elements that should be considered in any question governing a systematic search of the evidence: (P) population, (E) exposure, (C) comparator and (O) health outcome.

### ***Requirements and process***

The systematic review team will be selected from the submitted expressions of interest and based on the members' qualifications and skills (see specifications below). The team should be composed of at least two members to enable study selection, data extraction and risk of bias analysis in duplicate. Geographical diversity is encouraged.

The systematic review team leader must provide information regarding the composition of the team (proposed team members, their organizational affiliations and their relevant expertise and skills), description of similar assignments, examples of relevant reports or publications using the enclosed *curriculum vitae* for each team member. The team members will participate in their individual capacity rather than as a representative of their employer. Each member will also need to complete the standard [WHO Declaration of Interest form](#), which will be assessed for conflict of interests. Expressions of interest must be delivered electronically to the WHO Secretariat at [emfproject@who.int](mailto:emfproject@who.int) with subject line: “**Expression of interest for SRT-4**” no later than 16:00 (CET) on **7 February 2020**.

The team leader may be asked to further elaborate the expression of interest in a video meeting with the WHO Secretariat. The final candidates will be selected through a competitive process in accordance with WHO's policies and procedures.

### ***Expected deliverables and timelines***

The systematic review should be completed within a 12-month timeframe. It is anticipated that the systematic review will begin as soon as practicable.

1. Final version of protocol and registration in Prospero (+ 1 month from start)
2. Operational search strategies for all relevant databases as listed in the protocol (+ 1 month)
3. Risk of bias assessment tool(s) developed, including aspects related to exposure assessment (+ 1 month)
4. List of references to be checked as full-text studies (+ 1 month)
5. List of included and excluded studies (+ 1 month)
6. Tables on (i) characteristics of included studies, (ii) effects of exposure to radiofrequency radiation on the outcome, and (iii) risk of bias in included studies (+ 3 months)
7. Draft manuscript ready for peer review (+ 1 month)
8. Final manuscript for journal submission (+ 1 month after receipt of comments)

### ***Qualifications and skills required***

The successful teams would have to fulfil all the following criteria:

- Expertise in the above-mentioned adverse reproductive outcomes;
- Background in experimental animal and *in-vitro* studies;
- Expertise in RF dosimetry in experimental settings;
- Demonstrated experience in conducting systematic reviews in environmental health;
- Experience in scientific writing and communications on environmental health and/or experimental studies;
- Strong communication skills in English, both written and oral.