INDIAN COUNCIL OF MEDICAL RESEARCH

CALL FOR EXPRESSION OF INTEREST (EoI)

Integrated Assessment of Occupational Pesticide Exposure and Preventive Intervention Strategies Among Agricultural Workers

Under the SEHAT Mission (Science Excellence for Health through Agricultural Transformation)

Context

Agricultural workers are routinely exposed to pesticides during mixing, loading, spraying, cleaning of spraying equipment, handling treated crops and re-entering treated fields. Exposure may occur through dermal contact, inhalation and accidental ingestion. Despite the availability of pesticide safety information and personal protective equipment (PPE), their consistent use in agriculture remains inadequate. Documenting exposure alone is therefore insufficient; it is necessary to identify modifiable occupational practices and to test whether a structured intervention can lower exposure and promote safer working behaviour. Moving beyond exposure assessment, the project will be focused on actionable risk reduction by identifying unsafe work practices and evaluating a targeted safety intervention.

The **SEHAT Mission (Science Excellence for Health through Agricultural Transformation)**, a joint national mission of ICMR and ICAR, seeks to strengthen the evidence linking agriculture and health. Within this framework, there is a need to identify and evaluate the pesticide exposure among agricultural workers and the intervention strategies that reduce the exposure and ensure safe agricultural practices in India.

ICMR invites researchers and institutions across India to submit **Expressions of Interest for research studies evaluating Preventive Intervention Strategies of Occupational Pesticide Exposure among Agricultural Workers.**

The proposed research may include, but need not be limited to, **pesticide exposure assessment methods examining occupational and behavioural factors among agricultural workers, pre- and post-intervention evaluation methods, tools to assess pesticide-use practices, PPE compliance, hygiene, storage and disposal; laboratory analysis of biological samples; an AI-enabled smart spraying system; ergonomically and interactive training programmes for ultimate reduction of pesticide exposure among agricultural workers.**

Research Question

What is the extent of occupational pesticide exposure among agricultural workers, and how effectively does a structured, multi-component intervention (ergonomic equipment design, targeted training, and AI-enabled spraying technology) reduce this exposure and improve safe work practices?

Objectives

The initiative aims to:

1. To characterize pesticide-use practices among agricultural workers and identify barriers to adoption of pesticide-safety practices.
2. To identify occupational and behavioural factors associated with pesticide usage.
3. To implement a structured intervention comprising ergonomically improved equipment design and targeted exposure-reduction strategies to promote better hygiene and work practices.
4. To carry out a pre and post intervention, biomonitoring study to assess efficacy of structured intervention program amongst the agricultural workers.

Scope of the EoI

Proposals may focus on, but are not limited to:

- Pesticide exposure assessment methods focusing on the occupational and behavioural factors associated with pesticide usage among agricultural workers, assessed pre- and post-intervention.
- The tools for assessment of pesticide-use practices, including application patterns, mixing/loading procedures, equipment decontamination, re-entry intervals, PPE compliance, hygiene, storage and disposal practices, and self-reported acute health outcomes.
- Laboratory facilities equipped with analytical methods and equipments required to assess the extent of exposure in various biological samples.
- An AI-enabled smart spraying system that guides the user on the correct extent, amount, and method of application, accounting for the physicochemical characteristics of the pesticide, while preventing the use of highly concentrated or incorrectly prepared mixtures and detecting conditions likely to cause pesticide drift.
- Ergonomically designed sprayers that enable correct, strain-reducing delivery of pesticides, incorporating appropriate weight distribution, grip, nozzle positioning and sensor integration to support safe handling during prolonged application.

- Curating training and awareness programmes to help workers understand exposure outcomes through an easy-to-follow routine, with particular focus on the highly exposed/target body areas identified through the study.

Who Can Apply?

Researchers and institutions across India, including ICAR and CSIR institutes, DBT-supported institutions, universities, medical colleges, agricultural universities, engineering and technical institutions, public research institutions, and other eligible research organisations, are invited to submit Expressions of Interest (EoIs).

ICMR scientists are not eligible to apply under this call as PI. However, ICMR scientists can be a co-investigators in these projects, but no funds will be given for ICMR institutions or scientists in these cases.

Multidisciplinary collaborations involving expertise in **Agricultural Engineering, Ergonomics, Analytical Chemistry, Occupational Health, Artificial Intelligence, Sensor Engineering, Biochemistry or related fields** are encouraged.

Suggested Study Approaches

The proposed research may include:

- Human intervention studies;
- Quasi experimental design;
- Broader policy and extension programmes;
- Occupational and behavioural-based interventions;
- Translational studies evaluating AI-based and Ergonomic interventions;
- Any other study

Proposals should clearly describe the intervention strategies, exposure assessment methods, study design and expected pathway to the reduced exposure of pesticides.

Duration of the project: 3 to 5 years

Budget: upto 8 crore

Review and Selection

All submitted EoIs will be reviewed by a **Technical Advisory Group constituted by ICMR**. Proposals will be considered based on scientific merit, novelty, strength of rationale, relevance to occupational pesticide exposure prevention/management,

potential health impact, feasibility and alignment with the objectives of the SEHAT Mission.

Shortlisted applicants may subsequently be invited to develop a **detailed research proposal** for further consideration under the SEHAT Mission.

What Should the EoI Include?

The EoI should be brief and include:

1. Title of the proposed research
2. Name and affiliation of Principal Investigator and collaborating investigators
3. Occupational and behavioural practices assessment methods
4. Intervention strategies to reduce the exposure
5. Proficiency in artificial intelligence and machine learning methodologies appropriate to the study
6. Pre- and Post-Exposure Assessment methods
7. Rationale and existing evidence
8. Proposed study design
9. Potential mechanism
10. Expected key outcomes
11. Key references

Last date for submission: 20th November 2026

Please submit the EoI online through the Google Form**:**

https://forms.gle/ez8Vs7RS4GtGPuFr5

Please note: ***Only shortlisted PIs will be contacted via email for data submission***.

Submission Timeline:

Start Date: 2nd November 2026
End Date: 20th November 2026

For any inquiries please contact: Dr. Swati Allen, Scientist C at missionsehat.icmr@gmail.com